Program & Abstracts
for the 11th Annual
Pacific
Undergraduate
Research &
Creativity
Conference
PURCC-2011
University of the Pacific
Stockton, CA 95211
April 21 & 30, 2011
Sponsored by The Pacific Fund
Program Volume edited by
Dr. Lydia K. Fox
Director of Undergraduate Research
Program

April 21

Oral Session I
5:00 – 8:00 PM
DeRosa University Center, Room 211A/B

Oral Session II
5:00 – 8:00 PM
DeRosa University Center, Room 214

Oral Session III
5:00 – 8:00 PM
DeRosa University Center, Room 215

Poster Session
6:00 – 8:00 PM
DeRosa University Center, Ballroom

Senior Art & Design Show
Reception: 6:00 – 9:00 PM
Reynolds Art Gallery

Junior Art Show
Reception: 6:00 – 9:00 PM
Reynolds Art Gallery

April 30

Engineering Senior Project Demonstrations
2:00 – 3:30 PM
School of Engineering & Computer Science
<table>
<thead>
<tr>
<th>Time</th>
<th>Student</th>
<th>Project Title</th>
<th>Faculty Mentor</th>
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</thead>
<tbody>
<tr>
<td>5:00</td>
<td>David Allen</td>
<td>Comprehensive Immigration Reform: A examination of systemic failures in US immigration policy</td>
<td>Analiese Richard</td>
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<td></td>
<td><em>International Relations &amp; Global Studies</em></td>
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<td><em>International Studies</em></td>
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<tr>
<td>5:20</td>
<td>Kristal Leonard</td>
<td>Migrant Women Workers in China</td>
<td>Analiese Richard</td>
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<td><em>Global Studies &amp; East Asian Studies</em></td>
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<tr>
<td>5:40</td>
<td>Petra Anderson</td>
<td>Historical Context and the Elucidation of a New Musical Whole in Heroes’ Salute: A Musical Tribute to Veterans</td>
<td>Robert Coburn</td>
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<td><em>Music Composition</em></td>
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<td><em>Music Studies</em></td>
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<td>6:00</td>
<td>Jane Frost</td>
<td>Gender-Bending: Claude Cahun and Masculine Identity</td>
<td>Merrill Schleier</td>
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<td><em>Self-Designed: Visual Studies/Public Relations</em></td>
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<td>6:30</td>
<td>Noah Fang</td>
<td>Organic Synthesis and Theoretical Basicity Calculations of Oligopeptides</td>
<td>Jianhua Ren</td>
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<td><em>Medicinal Chemistry</em></td>
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<td>Kamile Jureviciute</td>
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<td><em>Biology &amp; Pre-Dentistry</em></td>
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<td>6:50</td>
<td>Lydia Mae Johnson</td>
<td>Avatar’s True Entertainment Value: How James Cameron’s Avatar is Changing the Future of Film</td>
<td>Teresa Bergman</td>
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<td>7:10</td>
<td>Chelsea Kelleher</td>
<td>Section 8 Vouchers and Crime: A Comparison of Six Neighborhoods in Stockton, California</td>
<td>Keith Smith</td>
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<td><em>Political Science</em></td>
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<td>7:30</td>
<td>Allyson Seals</td>
<td>“Dear Diary…”: Women’s Real Literature of the 20th Century</td>
<td>Amy Smith</td>
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<td>5:00</td>
<td>Jenna Babione</td>
<td>The Values Communicated to Society on MTV’s Jersey Shore and its Effects on People’s Behaviors and Beliefs: Not Your Average Reality Television</td>
<td>Qingwen Dong Communication</td>
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<td>5:20</td>
<td>Lorna Crenshaw</td>
<td>Strengthening the Chinese Dragon: Building Economic Power Through International Investment</td>
<td>Arturo Giraldez Spanish &amp; International Studies</td>
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<td>Monica Cortez-Guardado</td>
<td>The Gendered Lives of the Eighteenth Century in Art: Two Portraits by Henry Benbridge</td>
<td>Merrill Schleier Visual Arts</td>
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<td>History and Gender Studies</td>
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<td>Theresa Cortez-Guardado</td>
<td>Nancy Spero’s Maenad: Reimagining Feminism, Does it Work?</td>
<td>Merrill Schleier Visual Arts</td>
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<td>Stephanie Wojda</td>
<td>The Perceived Credibility of Online and Print Sources</td>
<td>Qingwen Dong Communication</td>
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<td>Business Management &amp; Human Resources</td>
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<td>6:50</td>
<td>Nellie Luna</td>
<td>Gender, Assertive Communication and Use of Subtext</td>
<td>Qingwen Dong Communication</td>
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<td>7:10</td>
<td>Christine Burke</td>
<td>The Effects of Mass Media on Audience Perception of People with Disabilities</td>
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<td>Chris Chang</td>
<td>Perception of Internet Health Information and Health Professionals</td>
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<td>5:00</td>
<td>Gloria Gunn</td>
<td>The Process of Othering: Relations Between Stocktonians and Pacificans</td>
<td>Laura Bathurst</td>
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<td>5:20</td>
<td>Erik West</td>
<td>Pilgrimage and Social Change in China's Western Development</td>
<td>Laura Bathurst</td>
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<td>Andrew Basham</td>
<td>Crosiers &amp; Communists: The Catholic Church and the Overthrow of Communism</td>
<td>Keith Smith</td>
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<td>Elizabeth Croisetiere</td>
<td>Comfort Women: Sexual slavery by the Japanese Imperial Army during World War II</td>
<td>Greg Rohlf</td>
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<td>Robert Siess</td>
<td>Slavery in California</td>
<td>Greg Rohlf</td>
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<td>6:50</td>
<td>Cetoya Alexander</td>
<td>The Emperor is my distant cousin: Religion &amp; Japanese history</td>
<td>Greg Rohlf</td>
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<td>7:10</td>
<td>Danielle Procope</td>
<td>The African American Slave Narrative and their Contribution to English Literature</td>
<td>Jeffrey Hole</td>
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<td>7:30</td>
<td>Cassandra Stevens</td>
<td>Facebook’s Effects on GPA Scores</td>
<td>Kenneth Day</td>
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<td>1</td>
<td>Daniel Lu&lt;br&gt;Biochemistrys</td>
<td>Vitamin D3 Inhibits RAD51 in Human Breast Cancer</td>
<td>Joana Albala&lt;br&gt;Biological Sciences</td>
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<td>Julia Chen, Gurbi Gudial, Patricia Kao, Emerald Khoo, Huyn Kim, Hyunguk Kim, Scarlet Kim, Stephen Kim, Kyuuun Lee, Jenny Ng, Julie Nguyen, Rajneet Padda, Aileen Sy&lt;br&gt;Biological Sciences</td>
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<td>2</td>
<td>Gracie Castillo&lt;br&gt;Biological Sciences</td>
<td>Function of the vocal folds in the treefrog Leptolopis flavomaculatus</td>
<td>Marcos Gridi-Papp&lt;br&gt;Biological Sciences</td>
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<td>3</td>
<td>Krishly Cantarero, Pauline Montemayor&lt;br&gt;Biological Sciences</td>
<td>Morphological specializations for low-frequency hearing in túngara frogs</td>
<td>Marcos Gridi-Papp&lt;br&gt;Biological Sciences</td>
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<td>Mongoose&lt;br&gt;Biological Sciences &amp; Visual Arts</td>
<td>Individual variation in call amplitude of male túngara frogs</td>
<td>Marcos Gridi-Papp&lt;br&gt;Biological Sciences</td>
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<td>Anirudh Srikonda, Kimberley Rector, Chi Ho, Weilan Cui, Sarah Anne Wong, Mary Paduano&lt;br&gt;Biological Sciences</td>
<td>Frequency range of hearing in African frogs</td>
<td>Marcos Gridi-Papp&lt;br&gt;Biological Sciences</td>
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<td>5</td>
<td>Kimiko Agari, Dilpreet Singh, Lauren Ma, Nikita Kuppanda, Jun Weaver&lt;br&gt;Biological Science</td>
<td>Expression of spider silk proteins MaSp1, PySp2, and TuSp1 in Pichia pastoris</td>
<td>Joan &amp; Geoff&lt;br&gt;Lin-Cereghino&lt;br&gt;Biological Sciences</td>
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<td>6</td>
<td>Maria Nattestad, Tejas Mulye, Kristin Oshiro&lt;br&gt;Biological Sciences</td>
<td>Analysis of the 5’Untranslated Region (5’UTR) of the Alcohol Oxidase 1 Gene as a Regulator of Translation in Pichia pastoris</td>
<td>Joan &amp; Geoff&lt;br&gt;Lin-Cereghino&lt;br&gt;Biological Sciences</td>
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### Poster Session – DeRosa University Center Ballroom

<table>
<thead>
<tr>
<th>Poster</th>
<th><strong>Student Presenter(s)</strong></th>
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<tr>
<td>9</td>
<td>Carolyn Stark, Biological Sciences</td>
<td>Improving Secretion Efficiency of <em>Pichia pastoris</em> by Mutagenesis of the Mat-Alpha Secretion Leader</td>
<td>Joan &amp; Geoff Lin-Cereghino, Biological Sciences</td>
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<td>10</td>
<td>Lauren Epperson, Pre-Pharmacys</td>
<td>Polyploidy in <em>T.laxa</em> and Geographic Distribution</td>
<td>Dale McNeal, Biological Sciences</td>
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<td>11</td>
<td>Steve Han, Youn Joong Suh, Biological Sciences</td>
<td>Song synchronization in female-female duets of Kloss gibbons (<em>Hylobates klossii</em>)</td>
<td>Richard Tenaza, Biological Sciences</td>
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<td>12</td>
<td>Jason Smith, Biological Sciences</td>
<td>Sex and age differences in thermoregulatory sand-flipping in northern elephant seals (<em>Mirounga angustirostris</em>) in their Piedras Blancas breeding colony</td>
<td>Richard Tenaza, Biological Sciences</td>
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<td>13</td>
<td>James Chun, Chris Nguyen, Patrick Kang, Jaey Lee, Biological Sciences</td>
<td>Cracking the Shell</td>
<td>Craig Vierra, Biological Sciences</td>
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<tr>
<td>14</td>
<td>Cynthia Co Ting Keh, Nick Ng, Carolyn Tran-Math, Biological Sciences</td>
<td>Investigation of Metal-Binding Activity of Spider Coating Peptide (SCP-1)</td>
<td>Craig Vierra, Biological Sciences</td>
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<td>15</td>
<td>Joelle Guanzon, Michael Lee, Brian Liu, Nancy Nguyen, Alex Reynon, Biological Sciences</td>
<td>Exploring the Function of Egg Case Protein-3, A Novel Protein Found In Spider Egg Case Silk Fibers</td>
<td>Craig Vierra, Biological Sciences</td>
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<td>16</td>
<td>Danny Kim, Juan Kim, Adrienne Nguyen, Steve Oh, Aneesha Sharma, Biological Sciences</td>
<td>Investigation of the Structural Role and Function of Egg Case Protein-2 (ECP-2) in <em>Latrodectus hesperus</em></td>
<td>Craig Vierra, Biological Sciences</td>
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<td>17</td>
<td>Nick Leon-Guerrero, Robert Tinoco, Christian Mariano, Linda Truong, Niharika Mandadi, Biological Sciences</td>
<td>Expression of the ECP-2 C-Terminus in <em>Latrodectus Hesperus</em></td>
<td>Craig Vierra, Biological Sciences</td>
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| Poster | Student 
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<th>Project Title</th>
<th>Faculty Mentor(s)</th>
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</table>
| 18 | Albert Lin, Andy Lee, Raymond Pandez  
Biological Sciences | The Histidine-rich C-terminus of the peptide SCP-1 confers metal binding ability | Craig Vierra  
Biological Sciences |
| 19 | Taylor Rabara, Frances Pham, Christine Ho, Melody Tsai  
Biochemistry/Biological Sciences/Chemistry | Direct Usage of Taq Polymerase in Live E. coli for PCR | Craig Vierra  
Biological Sciences |
| 20 | Rojin Amiri  
Pre-Denistry  
Biological Sciences | Regulation of Myosin phosphatase by PHI 1 | Douglas Weiser  
Biological Sciences |
| 21 | Sejal Bhayani, Jalpa Patel  
Biological Sciences | CPI-17 Likes To Move It Move It! | Douglas Weiser  
Biological Sciences |
| 22 | Jasper Visser  
Biochemistry | Variable diastereoselectivity in acylation of 2-substituted cyclohexanols | V. Samoshin  
Chemistry |
| 23 | Justin Kozoski  
Chemistry | Synthesis of Thiazole Orange derivatives as DNA G-quadruplex binding ligands | Liang Xue  
Chemistry |
| 24 | Andy Lee  
Pre-Pharmacy | Synthesis of nucleobase-calix[4]arene conjugates and evaluation of their self-assembly ability using NMR | Liang Xue  
Chemistry |
| 25 | Emily Frost, Lubna Javaid  
Communication | The Effects of Negative Political Advertising: How Negative Is Too Far | Kenneth Day  
Communication |
| 26 | Bart Platow, Ray Zulueta, Ryan Spencer  
Communication | Personality Traits as Predictors of Video Game Use | Kenneth Day  
Communication |
<table>
<thead>
<tr>
<th>Poster</th>
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<tr>
<td>27</td>
<td>Elizabeth Rotticci, Angela Myers</td>
<td>Women’s Body Dissatisfaction Due to Exposure to Magazines</td>
<td>Kenneth Day Communication</td>
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<td>28</td>
<td>Marvin Cotton, Nyika Williams, Demetrece Young</td>
<td>The Effect of Music on Athletic Performance</td>
<td>Kenneth Day Communication</td>
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<td>Tricia Juanitas</td>
<td>Social Media’s Impact on Satisfaction with Relationships</td>
<td>Qingwen Dong Communication</td>
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<tr>
<td>30</td>
<td>Luke Crawford</td>
<td>Generating Digital Geologic Maps in GIS from Preexisting Legacy Format Data</td>
<td>Kurtis Burmeiste Earth &amp; Environmental Sciences</td>
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<td>31</td>
<td>Gabriella McDaniel</td>
<td>Aftermath of sulfur mining: The fate of toxins in a watershed in Oakland, Ca</td>
<td>Laura Rademacher Earth &amp; Environmental Sciences</td>
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<td>Ye Rong</td>
<td>Coastal marsh sediments from Bodega Harbor: Historical environmental changes at the tidal land</td>
<td>Laura Rademacher Earth &amp; Environmental Sciences</td>
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<td>John Sayer</td>
<td>World War II and Public Memory</td>
<td>Jennifer Helgren History</td>
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<td>Yeoil (Steve) Yun</td>
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<td>Sarah Merz Mathematics</td>
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<td>Sarah Miceli</td>
<td>Made in_______, by Your Child</td>
<td>Keith Smith Political Science</td>
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<td>36</td>
<td>Alexander Anderson, Victoria Almague, Alixandria Henley, Kris Kiriu</td>
<td>TigerLeaks</td>
<td>Gary Howells Psychology</td>
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<td>37</td>
<td>Aryan Bimar, Alyssa Musto, Sherry Ziegler</td>
<td>In Government We Trust: Or Do We?</td>
<td>Gary Howells, Psychology</td>
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<tr>
<td>38</td>
<td>Edgar Cardoza, Palwasha Etimadi, Jennifer Jones, Alexis Touros</td>
<td>The Effects of Media Exposure on Cognition and Attitudes Towards War</td>
<td>Gary Howells, Psychology</td>
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<tr>
<td>39</td>
<td>Andrew Carrillo, Katelin Smith, and Genoa Minyard</td>
<td>Stress Reactions to War Narratives</td>
<td>Gary Howells, Psychology</td>
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<td>40</td>
<td>Connie Castro, Christina Pheng, Holly Purcell, Jamie Thompson</td>
<td>Follow the Leader: A Analysis of Gender Behavior</td>
<td>Gary Howells, Psychology</td>
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<td>41</td>
<td>Nashay Cole, Erica Ruiz, David Hernandez, Jamie Hee</td>
<td>To Protest or Not To Protest – Assessing the Effects of Framing on People’s Attitudes Towards Protesting</td>
<td>Gary Howells, Psychology</td>
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<td>42</td>
<td>Erika Gloria, Sarah Hidalgo, Tina Saeteurn</td>
<td>Forced Compliance, Cognitive Dissonance, and Attitudes</td>
<td>Gary Howells, Psychology</td>
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<tr>
<td>43</td>
<td>Valerie Segura, Paul Nocito, Zak Conger</td>
<td>Can Exposure to Media Change your Opinion about the War?</td>
<td>Gary Howells, Psychology</td>
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<tr>
<td>44</td>
<td>Esther Kelly Rush</td>
<td>Prompts or Proximity: Recycling Old Techniques for a New Population</td>
<td>Carolynn Kohn, Psychology</td>
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<td>Edgar Cardoza</td>
<td>“SmartPhone” Pedometer Validation</td>
<td>Matthew Normand, Psychology</td>
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<td>46</td>
<td>Ana Garcia, Lecletus Griffith, Megan Jordan</td>
<td>Is Reality Television Becoming Your Reality?</td>
<td>George Lewis, Sociology</td>
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<td>47</td>
<td>Dara Tawarahara, Joey Gullikson, Dianna Snyder</td>
<td>Beyond our Gates: Mobilizing community partnerships to improve physical activity opportunities for at-risk youth</td>
<td>Lara Killick, Sport Sciences</td>
</tr>
<tr>
<td>48</td>
<td>Benedict Leong, Jessee Newumann</td>
<td>Alternative Currencies, Bane or Boon?</td>
<td>Thomas Pogue, Business Forecasting Center</td>
</tr>
</tbody>
</table>
## Senior Art & Design Show

<table>
<thead>
<tr>
<th>Artist(s)</th>
<th>Title</th>
<th>Faculty Mentor(s)</th>
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<tbody>
<tr>
<td>Camille Brockett</td>
<td>Golden Rule</td>
<td>Maire Lee</td>
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<td>Brett DeBoer</td>
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<td>Shiloh Gastello</td>
<td>Bowls: Impressions of a Community</td>
<td>Trent Burkett</td>
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<td></td>
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<td>Maire Lee</td>
</tr>
<tr>
<td>Anne LaFreniere</td>
<td>Simple Resolutions</td>
<td>Maire Lee</td>
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<td>Teddy B Nishimura</td>
<td>Tying Torn Shoes</td>
<td>Maire Lee</td>
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<td>Brett DeBoer</td>
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<tr>
<td>Cindy Quan</td>
<td>Design for Japan</td>
<td>Maire Lee</td>
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<td>Nate Eisler</td>
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<td>Taylor Sutton</td>
<td>Sammy Cakes</td>
<td>Maire Lee</td>
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<td>Marie-Clare Teseder</td>
<td>Art and Afghanistan</td>
<td>Jennifer Little</td>
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<td>Anastasya Uskova</td>
<td>A Journey of a Thousand Miles: Preservation of the Dimen Kam Culture</td>
<td>Maire Lee</td>
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<td>Brett DeBoer</td>
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## Junior Studio Seminar Exhibition

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<tr>
<th>Artist</th>
<th>Title</th>
<th>Faculty Mentor</th>
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<tbody>
<tr>
<td>Jessica Fong</td>
<td>Eradication of a Mechanical Virus</td>
<td>Merrill Schleier</td>
</tr>
<tr>
<td>Jennifer Sese</td>
<td>As Long as You Look Fabulous</td>
<td>Merrill Schleier</td>
</tr>
<tr>
<td>Amanda Zimmerman</td>
<td>Second Shift Transference</td>
<td>Merrill Schleier</td>
</tr>
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## Bioengineering

<table>
<thead>
<tr>
<th>Student Presenters</th>
<th>Project Title</th>
<th>Faculty Mentor</th>
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<tbody>
<tr>
<td>Evan Angeli, Pei Hsin Cheng, Annie Cheung, Elysa Wadler</td>
<td>Automatic Tourniquet Project</td>
<td>James Eason</td>
</tr>
<tr>
<td>Andrew Londgraf, Tyler Van Hensenbergen, Mike O'Brien, Kyle Glick</td>
<td>Ergonomic Control System for a Powered Human Exoskeleton</td>
<td>James Eason</td>
</tr>
<tr>
<td>Niharika Mandadi and Pooja Shah</td>
<td>The Smart Cane</td>
<td>James Eason</td>
</tr>
<tr>
<td>James Toste, Roy Lee, Fanny Mui, Sneha Parmar</td>
<td>Infant Incubator Monitoring Device: Temperature and Humidity Sensors</td>
<td>James Eason</td>
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</tbody>
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## Civil Engineering

<table>
<thead>
<tr>
<th>Student Presenters</th>
<th>Project Title</th>
<th>Faculty Mentor(s)</th>
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<tbody>
<tr>
<td>Kyle Accornero, Kelsi Oshiro, Courtney Supe</td>
<td>New Gravity Thickener Tank, Water Reclamation Plant, Livermore, California</td>
<td>Scott Merry, Mary Kay Camarillo, Luke Lee</td>
</tr>
<tr>
<td>Shannon Barcal, Matthew Lemmon, Margaret Wild</td>
<td>Lodi Grape Bowl Main Entrance &amp; Accessibility Improvements</td>
<td>Scott Merry, Camilla Saviz, Luke Lee</td>
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<tr>
<td>Rene Guillen, William Grant, Noe Meza, and Michael Zubrzycki</td>
<td>Yolo Bypass Aquatic Restoration and Planning Implementation Project</td>
<td>Gary Litton</td>
</tr>
<tr>
<td>Matthew Jesse, Andria Ellis, Vegerd Veskimagi</td>
<td>Natomas Pump Station No. 2 - Value-Engineered Alternative</td>
<td>Scott Merry, Camilla Saviz, Luke Lee</td>
</tr>
<tr>
<td>Linh Nguyen, Allison Ichikawa, Jeff Valeros, and Justin Pyun</td>
<td>Renovations of the Amos Alonzo Stagg Memorial Stadium and Surrounding Facilities, University of the Pacific, Stockton, California</td>
<td>Scott Merry and David Fletcher</td>
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<td>Hunter Steers, Jeff Neuenburg, Ruben Solis</td>
<td>New Pedestrian Bridge, University of the Pacific, Stockton, CA</td>
<td>Scott Merry, Luke Lee, Hector Estrada</td>
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<td>Student Presenter(s)</td>
<td>Project Title</td>
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<tr>
<td>Thamer Alhajri</td>
<td>Security Aspects of IPv6</td>
<td>Martin Maxwell</td>
</tr>
<tr>
<td>Michael Bruckel, Graham Heaton</td>
<td>Netizar Social Networking Website</td>
<td>Michael Doherty</td>
</tr>
<tr>
<td>Brendan Chan, Sharon Chavez, Tony Hoeurn, Garret Miramontes</td>
<td>San Joaquin County Health Services Website</td>
<td>Michael Doherty</td>
</tr>
<tr>
<td>Douglas Frisbie</td>
<td>Aerodynamically Accurate Aircraft Simulation</td>
<td>Michael Doherty</td>
</tr>
<tr>
<td>Elysha R. Mayer</td>
<td>The Right Spot for Your Furry Friend: Arrowpoint Kennel Intake Management System</td>
<td>Michael Doherty</td>
</tr>
<tr>
<td>Travis Moy, Daniel Fedor-Thurman</td>
<td>Zardoz – Gesture-Based Mouse Control</td>
<td>Michael Doherty</td>
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<tr>
<td>Parker Ruhstaller</td>
<td>The Evolution of Code Through Development of Multiple Websites</td>
<td>Michael Doherty</td>
</tr>
<tr>
<td>Jessica Semler, Kathryn Crader</td>
<td>Stockton Commons Web Portal</td>
<td>Michael Doherty</td>
</tr>
<tr>
<td>Huaguang Song</td>
<td>An Online Platform for Collaborative Network Monitoring</td>
<td>Jinzhu Gao</td>
</tr>
<tr>
<td>Michael Yasutake</td>
<td>APANTLI Data Collection System</td>
<td>Michael Doherty</td>
</tr>
</tbody>
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## Electrical & Computer Engineering

<table>
<thead>
<tr>
<th>Student Presenters</th>
<th>Project Title</th>
<th>Faculty Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Arriaga</td>
<td>Semi-Intelligent Wind Turbine</td>
<td>Rahim Khoie</td>
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<td>Ahmen Al-shammasi</td>
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<td>Todd Heino</td>
<td>Photovoltaic Forecasting using a Sensor Network of Wireless Optical Cameras</td>
<td>Rahim Khoie</td>
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<td>Rigel Taylan</td>
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<td>Kyle Pace, Lor Yang</td>
<td>Characterizing the Wind of the San Joaquin Valley</td>
<td>Rahim Khoie</td>
</tr>
<tr>
<td>Samuel Winlock, Alan Joe</td>
<td>Developing a Sensor Network for Applications in Structural Health Monitoring</td>
<td>Rahim Khoie</td>
</tr>
</tbody>
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## Mechanical Engineering

<table>
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<tr>
<th>Student Presenter(s)</th>
<th>Project Title</th>
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<tr>
<td>Robert Berry, Steven Cai,</td>
<td>Fluid Flow Aeration Tank</td>
<td>Kyle Watson</td>
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<tr>
<td>Carl Weinstein</td>
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<tr>
<td>Brad Road</td>
<td>Powered Human Exoskeleton</td>
<td>Kyle Watson</td>
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</table>
The Emperor is my distant cousin: Religion & Japanese history

Cetoya Alexander

Faculty Mentor: Greg Rohlf

The purpose of this paper is to observe Japanese history from a religious perspective. From the Shinto, Buddhist, & Confucian religions, we can trace the effects these religious ideas had over Japanese law & people. This paper also looks closely at the bushido code & its influence on Japanese culture. One of the points proven in this paper are Ancestor worship & the Shinto religion made it easier to implement imperial rule during the Meiji period. This paper relies heavily on Meiji-era books by Japanese authors. I chose this topic because it is my theory that religion has a strong influence on cultures throughout history.

Comprehensive Immigration Reform: A examination of systemk failures in US Immigration policy

David Allen

Faculty Mentor: Analiese Richard

In the past two hundred years, America has redefined its role in the international system through war and revolution, rapid industrialization, increasing international economic power, cultural and media exports, and scientific and technological advances. In conjunction with continued globalization and an interdependent international system, instant communication and economic trade have drastically affected human movement and transitions. Nations have built their economies around specialized products and crops causing a severe disparity between nations as lesser developed countries have catered to the demands and whims of industrialized countries. As social mobility and per capita income have skyrocketed in the last fifty years within these industrialized nations, so has the flow of immigration as individuals seek out a better life to provide for themselves and their families. I argue that the U.S. immigration system has not adapted to these changes and remains mired in time by setting stringent and inflexible legal limits on immigration. As human migration between countries has increased, the racial stereotypes and cultural insensitivity involved in this issue have become inflamed and contentious. My policy proposal examines the structural problems of the current immigration process and their consequences it has on immigrant families and the U.S. economy. I propose a comprehensive immigration reform package to remedy these failures.
Oral Session Abstracts

Historical Context and the Elucidation of a New Musical Whole in Heroes’ Salute: A Musical Tribute to Veterans

Petra Anderson

Faculty Mentor: Robert Coburn

*Heroes’ Salute: A Musical Tribute to Veterans* was created as an undergraduate artistic/research project during the summer of 2010. The project was to create a new artistic work that combines originally composed music, theater, and digital visual staging. The theme of the work focuses on the heroism of American service men and women through the ages.

The music was created with an ear to history, but *Heroes’ Salute* is a new musical work, not a carbon copy of America’s musical past. Research into the music theory of each time period was just as important to the story telling as investigation of oral history and primary sources. This presentation is about compositional process, and how a new musical whole was created from musical fragments of history. Historical investigation and invocation in fresh execution found fertile ground in a variety of sources:

- The tradition of military marching cadences
- The Civil War’s bugle calls, spirituals, and hymnody
- Traditional Iraqi Maqams
- Swing-era jazz

I will demonstrate how the theoretical analysis and musical understanding of each time period was foundational to the new pieces created. I will also discuss the artistic impetus for the contemporary voice with which the music was created as a whole, resulting in bending, blending, changing, transforming, or convolving the historical frameworks.

The Values Communicated to Society on MTV’s Jersey Shore and its Effects on People’s Behaviors and Beliefs: Not Your Average Reality Television

Jenna Babione

Faculty Mentor: Qingwen Dong

When something is televised, it has enough significance to be aired by that specific network, and is therefore perceived by society as something that is notable. The reality television show *Jersey Shore* on MTV portrays specific and “real” aspects of the characters’ lives to society. The purpose of my research was to discover what values *Jersey Shore* communicates to society and determine if watching the show alters people’s behaviors or beliefs. The quantitative data was collected through an online ten question survey that resulted in 204 responses. The qualitative research was obtained from sources in books, online journals, television shows, and websites. One conclusion from the research indicates that if *Jersey Shore* continues to air on television, viewers will continue to lose respect for American society and culture. Also, results implicated that the show communicates negative values, but it doesn’t deter people from watching the show. The presentation regarding my research will discuss the rest of the findings from both of my quantitative and qualitative research.
Crosiers & Communists: The Catholic Church and the Overthrow of Communism

Andrew Basham

Faculty mentor: Keith Smith

Since the end of the Cold War, scholars have devoted countless resources to studying the forces which led to the fall of global Communism and the spread of democracy. To add to the understanding of this topic, I attempt to answer the question: what role did the Catholic Church play in the fall of Communism in Eastern Europe?

In order to shed some light on this question I focus on Poland, Czechoslovakia, and Hungary, the three Catholic countries of the Eastern Bloc. By utilizing the relatively new theoretical framework of “ethical civil society” expounded by notable political scientists such as Juan Linz and Alfred Stepan, I illustrate the Church’s role as both a rival source of moral legitimacy to Communist regimes and a cultivator of underground ethical civil society.

I test two hypotheses implied by this theory: first, that the strength of civil society increases as the Church’s role within it grows; and second, that as the strength of civil society increases, the collapse of Communism in that country is hastened.

Using quantitative and qualitative data quelled from world news reports of the time, scholarly publications, and biographical writings, I will show that the currently available data tentatively supports both hypotheses. I will conclude by arguing, in line with the available data, that the Church successfully fostered an ethical civil society in Poland, leading to the first collapse of a Communist government in that state, while it met with less success in fostering ethical civil society in Czechoslovakia and Hungary.

The Effects of Mass Media on Audience Perception of People with Disabilities

Christine Burke

Faculty Mentor: Qingwen Dong

This research paper set out to examine the relationship between the mass media and its effects on audience perception of people with disabilities. This study built upon previous research that examined whether or not viewing mass media in which a disabled person was portrayed shaped the audience members perception of people with disabilities. A survey was distributed amongst 357 undergraduate college students asking them to answer six statements that assessed the respondent’s attitudes towards people with disabilities and their subsequent portrayal in television programming. The results of the study showed that audience members had a high amount of respect and admiration for people with disabilities but did not believe that they were accurately portrayed in the media. Respondents also thought that people with disabilities needed more assistance from society overall. These findings implicate that mass media programming does not directly affect an audience’s perception on people with disabilities.
Oral Session Abstracts

Perception of Internet Health Information and Health Professionals

Chris Chang

Faculty Mentor: Qingwen Dong

A survey of 357 college students at a Northern California four-year private university examined the students’ perception of online health information versus health information from licensed health professionals. The study found that those who used health information websites regularly were likely to trust the information and agreed that the Internet is changing the public’s reliance on health professionals. The Internet is becoming a resourceful complement to traditional patient-doctor interactions. Demographics, gender, limitations of the study, and suggestions for future studies were also discussed.

The Gendered Lives of the Eighteenth Century in Art: Two Portraits by Henry Benbridge

Monica Cortez-Guardado

Faculty Mentor: Merrill Schleier

The focus of my paper is an examination of the changes that took place in eighteenth century American society as represented in the portraiture of colonial painter Henry Benbridge. In The Archibald Bulloch Family of 1775 and Thomas Middleton of Crowfield and His Daughter Mary of 1776, Benbridge renders the changing gender roles status of men, women, and children which occurred at this time. Women in the eighteenth century were desexualized, as their duties as wives and mothers became recognized as essential to domesticity. Female children were subordinated as male children were increasingly recognized as possessing masculine characteristics. In response to the changing roles in the nuclear family, men assumed a more paternalistic role. As men and women were separated biologically with the acceptance of the two-sexed body, men could be interested fathers without fear of any association with the feminine. In order to prove this I will employ four specific methods that will allow close analysis of the portraits. Formal analysis of the paintings will reveal initial gender inscriptions, while the methods of gender theory, cultural and social analysis, and historical analysis will allow me to place the paintings, and artist, in a particular time period. By looking at the dominant ideologies of the time and how they changed, it can be seen how they shaped the lives of colonial Americans and how they came to be remembered in portraits.
Nancy Spero’s Maenad: Reimagining Feminism, Does it Work?

Theresa Cortez-Guardado

Faculty Mentor: Merrill Schleier

My paper concerns Nancy Spero’s problematic attempt to redo the classical female figure in her painting Maenad (1999) in terms of twentieth century feminist ideals. Although she appropriates the figure, she does little to change its original meaning. She does not change the vase painting in which she took the image from, which was most likely informed by Euripides’ text. Despite her claims to empower women by giving them a voice, she fails to consider the delineation of maenad women in Greek mythology. Rather she appropriates an image that was completely a male invention without sufficiently disentangling the maenad from her patriarchal context. Formal analysis will be used to show that Spero’s representation did not reinvigorate the figure with power, but instead further obscured it. Literary analysis of Euripides’ Bacchae (404-5 BC) will be used in order to examine how the classical maenad figure represented was a male invention. Finally, gender theory and feminist theory will be used to consider how Spero tried to make the figure a symbol of female strength. I plan to prove that while Spero made a good attempt at reinterpreting the maenad in the context of twentieth century feminist ideals, in the end her efforts fall short.

Strengthening the Chinese Dragon: Building Economic Power Through International Investment

Lorna Crenshaw

Faculty Mentor: Arturo Giraldez

China’s export-oriented policies have led to unprecedented economic growth, as seen when China became the world’s second largest economy last year. Subsequently, China has built up trillions in foreign exchange reserves during this time. These reserves are largely made of United States Treasury Notes, but over the past five years China has diversified these holdings into other currencies, commodities, Western financial institutions, infrastructure projects around the world, and more. However, as China’s investments are made through state-run institutions (such as the China Investment Corporation, the State Administration of Foreign Exchange Investment Company and the National Social Security Fund), there is concern over the political motivation behind them.

How are these investments promoting China’s strategic economic interests? This question is answered through analysis of news reports, official statements, books and academic journals. The conclusion shows how these investments are securing China’s energy and commodity needs in the future, furthering China’s international political relations, and strengthening China’s financial sector.
Oral Session Abstracts

Comfort Women: Sexual slavery by the Japanese Imperial Army during World War II
Elizabeth Croisetiere
Faculty Mentor: Greg Rohlf
This paper discusses the Japanese Imperial Army’s employment of comfort stations throughout Asia during World War II. This has been gaining more publicity due to a lawsuit filed against the Japanese government by former comfort women. The paper examines the history of comfort women and the technical logistics behind the comfort stations. For this paper I looked at firsthand accounts by comfort women, in particular, the horrific, graphic story of Rosa Henson, a Filipina woman. I also read journal entries from Japanese military officials. This paper shows that the idea for comfort stations was driven by economics and politics, but turned into an unprecedented human rights violation.

Organic Synthesis and Theoretical Basicity Calculations of Oligopeptides
Noah Fang and Kamile Jureviciute
Faculty Mentor: Jianhua Ren
Peptides are building blocks for enzymes that perform almost all functions in a living organism. The peptide’s shape or conformation is critical to its function. This research project is part of a larger study to evaluate how peptide conformations are influenced by having basic amino acid residues on different positions within a peptide of various lengths. A pair of peptides with different sequences of lysine and alanine, such as Ac-Lys-Ala$_3$ and Ac-Ala$_3$-Lys, was synthesized. These peptides were synthesized using the solid phase peptide synthesis (SPPS) method. SPPS started with a solid anchor and amino acids are added one by one to build a fully sequenced peptide. The peptide's sequence was verified by Mass Spectrometry analysis. The three-dimensional structures of the peptides were examined through molecular modeling. Using various computational programs, a large number of conformations were examined and the most stable conformers were collected and their energies were calculated. Theoretical basicities were calculated from these lowest energy conformers. Preliminary data show that a positive charge on the lysine residue influences the intrinsic conformation of the oligopeptide. Furthermore, the conformation influences the basicity as seen with the theoretical calculations. Ultimately changes in basicity result in structural and functional differences of proteins in biological organisms.
Gender-Bending: Claude Cahun and Masculine Identity

Jane Frost

Faculty Mentor: Merrill Schleier

Donning disguises that prefigured postmodernist feminism, Claude Cahun's risqué constructions of a manipulated identity have only been recognized recently. Her self-depiction in scenes that explore gender and sexual identity issues, have named the French Surrealist photographer as Cindy Sherman's predecessor. Superseding the labels of queer, woman, and Jew, Cahun produced a wholly new person. She attempted to remove herself from the constraints of femininity through the grotesque representation of herself, deflecting the heterosexual male gaze, and replacing it with a body that rejected society's labels. Through the creation of this new identity, Cahun renounced homophobia and conventional gender roles in Europe between the 1920s and 1940s. This transformation of her appearance is often labeled as androgynous. This essay deconstructs art historians’ prevailing understanding of Cahun's self portraits (specifically those taken during the 1920s) as gender ambiguous and instead establishes that it is a masculine identity which is portrayed, contradicting the previous notion of her submission to a feminine gender position. Employing gender theory in the analysis of Cahun's performances along with the historical context of her activism, the self-constructed in these photographs emerges. By removing herself of visible genitalia, long hair, and feminine poses, Cahun formulated a new masculine identity.

The Process of Othering: Relations Between Stocktonians and Pacificans

Gloria Gunn

Faculty Mentor: Laura Bathurst

“Othering” is the process by which groups come to see themselves as different from other groups. It typically occurs when a community of individuals negatively evaluates members of another community to support positive evaluation of their own group’s identity in the age-old practice of “us” versus “them”—also called “oppositional identity formation.” This research project investigates the process of othering within the city of Stockton. In particular, I focus on different forms of stigmatization that occur between members of two communities: the University of the Pacific and the city of Stockton, beyond Pacific’s gates. Based on ethnographic research, including participant observation and ethnographic interviews, my research suggests that members of each group tend to notice and speak about particular kinds of differences which distinguish their group from the other, while simultaneously ignoring other kinds of differences that occur within their own group. Further, this selective attention serves to support their feelings of belonging to their own group. In this paper I present evidence that comparisons between the University of Pacific and the city of Stockton are important contributors to the self identities of each.
**Avatar's True Entertainment Value: How James Cameron’s Avatar is Changing the Future of Film**

**Lydia Mae Johnson**

**Faculty Mentor: Teresa Bergman**

James Cameron’s Avatar is a film that everyone has heard of. With such a globally popular film, the messages that it conveys have the power to change our world whether we like it or not. It is essential then to discover what messages Avatar is communicating to its audience members and the effect that it is having. Several focus groups were conducted and then the data was coded into seven groups that described the different subjects that the participants discussed. The seven categories were religion, gender, ethnocentrism, military, environment, entertainment and extratextual. The two most popular topics based on number of responses were entertainment and extratextual. The entertainment category was based on the discussion of the use of graphics for the film. Graphics were essential to the popularity of the film due to the fact that they do not have to be understood, they only have to be viewed. The implications of the research are that film narratives are changing due to globalization and that in the future we can expect to see more simple narratives coupled with technological advancements in the future like that of Avatar.

**Section 8 Vouchers and Crime: A Comparison of Six Neighborhoods in Stockton, California**

**Chelsea Kelleher**

**Faculty Mentor: Keith Smith**

Is there a relationship between crime and Section 8 housing? In 2008, Atlantic Monthly journalist Hanna Rosin published an article investigating the relationship between high crime rates in the Memphis area and newly formed clusters of Section 8 recipients. Using research done by criminologist Richard Janickowski and his wife, sociologist Phyllis Betts, she concludes that the Section 8 program is responsible for the rise in crime rates for Memphis, Tennessee. She extends this conclusion to the rest of the United States, implicating a whole host of housing programs. Housing advocates and policy makers were quick to respond to these allegations, arguing that Rosin had established no causal link between Section 8 and crime, and that her findings could not be verified for the country as a whole. This paper seeks to test the hypothesis that the presence of Section 8 housing increases crime rates in an area. To do this I use a controlled comparison of crime rates in six Stockton neighborhoods in 2009, using three pairs of neighborhoods matched by similar demographic characteristics. Drawing from crime statistics from the Stockton Police Department, I then examine their crime rates in comparison to their matches, before finally drawing a conclusion. The results reveal that there is insufficient evidence to state that there is a relationship between Section 8 and crime. This presentation will cover relevant theories of crime, as well as the methods, research design and results of my study.
Migrant Women Workers in China

Kristal Leonard

Faculty Mentor: Analiese Richard

China attracts many foreign firms to open up factories along their coasts because of their lax worker protection laws and their abundant source of cheap labor. But who are these people who toil for twelve hours a day to make our toys, garments, or other cheap plastic materials? Economic opportunities have long drawn poor peasants from the countryside to take up factory jobs because these peasants can earn dramatically more than they could by staying in the village. Women especially have become the majority of migrant workers because of the factories preference for women workers. Migrant women also want to contribute economically to the household, but often lack the education or experience to find a better job. According to the Chinese census in 2000, 60% of the ten million migrant workers in the industrial stronghold of Guangdong were women. But because of institutional and societal values, these women are often exploited and put in great danger just to create cheap products for export. In order for policy makers and NGOs to develop policies and programs that can help these women, it is important to see how all these institutions and cultural mindsets are intertwined to create these situations.

Gender, Assertive Communication and Use of Subtext

Nellie Luna

Faculty Mentor: Qingwen Dong

A group administered survey sampled 357 undergraduate students to determine the connections between gender and its role in assertive communication and subtext. The study aimed to answer whether men or women use more assertive communication tactics, which can be perceived as directive in conversation. Additionally, this study introduces the concept of subtext in an attempt to study meaning in what is spoken. Results indicated that there was no significant difference in whether males or females use more assertive communication. Results also indicated that males are marginally more subtle in their communicative strategies. Discussion on the limitations and suggestions for future are also included within the text.
The African American Slave Narrative and their Contribution to English Literature

Danielle Procope

Faculty Mentor: Jeffrey Hole

African American slave narratives are oftentimes relegated to the particularized field of ante-bellum black American history. This underutilizes the slave narrative because it functions as much more than what directly pertains to the institution of slavery. The slave narrative is a repository of sentimentalism, political activism, philosophy, and powerfully intervenes in current ideologies of their time. Slave narratives directly refute Thomas Jefferson’s popular claim that “their [black people’s] existence appears to participate more of sensation than reflection.” The slave narrative has had a paramount influence on modern literature, specifically twentieth century African American literature, not because it merely relates specific slave experiences in a meaningful way, but because it is a literary genre that deserves increased academic consideration.

In this presentation, I will explore the ways in which the slave narrative supersedes the narrow confines of ante-bellum black American history and contributes to the whole of English literature.

I will accomplish this by specifically examining the works of Olaudah Equiano and Mary Prince. Both Equiano and Prince demonstrate their ability to use political and philosophical logic and the autobiography along with sentimentalism, the hero’s journey, and suspense to captivate their audience and rouse them to action. In this way, their narratives produce a counter discourse of African Americans and slaves. I will borrow and extend from scholar Dwight A. McBride’s Impossible Witnesses to discuss the slave narrative’s ability to intervene on its own behalf through rhetoric and literary maneuvering, despite the disenfranchised position of blacks.

“Dear Diary…”: Women’s Real Literature of the 20th Century

Allyson Seals

Faculty Mentor: Amy Smith

The First Wave of Feminism in the United States was the launch of many historical feminist documents, such as the Declaration of Sentiments, produced at the Seneca Falls Convention of 1848. The First Wave brought new light and focus onto women’s issues and their lack of freedom from the domestic space; however, the First Wave lacked one major item of information: documents from “real” women of the time period—women that were wedged within the home.

This research project focuses on those “lost” documents—the ones that were not analyzed in great depth. It utilizes two diaries of women from the early 20th Century as a focal point. These diaries were both pulled from Pacific’s archives.

The project strives to answer two main questions: (1) How do diaries have both historical and literary value? What do these specific diaries say about the time period? (2) What is defined as “literature” and how do diaries fit into the concept of literature as a genre?

By researching deeply into the time period, looking into scholarly peer-reviewed articles, and by analyzing the text from the two primary sources, the project has developed some intriguing conclusions. For example, I have argued that diaries are comparable to other genres of literary merit and deserve much of the same accreditation. They utilize literary techniques, plotline, and mood to portray abstract ideas. Also, I have discovered that much of the “missing” voices of the First Wave can be found through diary documentation.
Slavery in California
Robert Siess

Faculty Mentor: Greg Rohlf

When one hears California mentioned in the context of slavery, one usually imagines the state as staunchly Free Soil. However, documents located in the Holt-Atherton Special Collections of the University of the Pacific indicate slavery may have been tolerated despite California's constitutional ban on the practice. By contextualizing these documents to obtain a clearer picture of what slavery was like in California, this paper suggests that the Peculiar Institution was only gradually abolished in the years prior to the Civil War. This is accomplished by considering the status of chattel slavery prior to Anglo settlement of the region; the 1846 case study of “Mary,” the first documented slave imported into California; the attitudes of whites toward the prospect of both slave labor and free blacks, especially in the years surrounding the California Gold Rush; California's role in national politics, including the Compromise of 1850; California's first constitution and the failure to provide an enforcement mechanism for its ban on slavery; and the cause célèbre of Archy Lee, a slave who successfully sued for his freedom in 1858, the same year as the now-infamous Dred Scott decision.

Facebook’s Effects on GPA Scores
Cassandra Stevens and Kimberly Kay

Faculty Mentor: Kenneth Day

This purpose of this study is to determine whether Facebook has the effect of lowering University students’ grade point averages (GPA’s). The majority of studies have shown that Facebook users have lower GPAs than non-users. This study will use the survey method administered as a questionnaire. The survey will be conducted amongst University students and it will be administered anonymously. This study predicts that heavy Facebook use will be positively correlated with lower academic performance.
Oral Session Abstracts

Pilgrimage and Social Change in China's Western Development

Erik West

Faculty Mentor: Laura Bathurst

Pilgrimage has long played an important role in many of the world's religions; examples include the Muslim hajj, visitations to St. Peter's Basilica in Vatican City, and trips to the Holy Land in Abrahamic religions. There are a multitude of others. My research focuses on the specific meanings, functions, and forms of Buddhist pilgrimage. I examine Buddhist pilgrimage traditions as they changed through history and look for evidence of the mechanisms by which they are re-created and reinvented in new forms. To this end, I draw on available anthropological and historical literature. In addition, I analyze translations of pilgrimage guides and oral histories from Tibetan areas in order to identify and understand differences between how pilgrimage is described in authoritative accounts and how it is actually practiced. This research is part of a larger, long-term project which seeks to understand the relationship between development in western China and its influence upon traditional Buddhist pilgrimage practices. More specifically, I'm interested in how changing tourist infrastructures have contributed to changes in Buddhist pilgrimage. China's regional development plan has taken an east to west approach, and the western provinces are just now beginning to see rapid infrastructure change. This project contributes to a deeper understanding of the reality of contemporary pilgrimage in the context of modernization.

The Perceived Credibility of Online and Print Sources

Stephanie Wojda

Faculty Mentor: Qingwen Dong

A sample of 357 college students examines the relationship of online and print source credibility. The study found that credibility is an important factor to most participants, however, it is not the most prevalent aspect in searching for online information. Results confirmed that while the Internet and printed publications are both credible sources, non-credible Internet sources are often used for simplicity and convenience. As the use of the Internet on a daily basis increases, so does the perceived credibility of the sources located within the World Wide Web. Limitations of the current study and suggestions for future studies are also provided.
Expression of spider silk proteins MaSp1, PySp2, and TuSp1 in *Pichia pastoris*

Kimiko Agari, Dilpreet Singh, Lauren Ma, Nikita Kuppanda, Jun Weaver

Faculty Mentor: Joan Lin Cereghino

*Pichia pastoris* is a yeast known to efficiently express and secrete heterologous proteins. We used *P. pastoris* to try to express segments of the proteins encoded by MaSp1, PySp2, and TuSp1 of the black widow spider, *Latrodectus hesperus*. These proteins are components of spider silk. The most successfully expressed strain of the three was MaSp1; however, there were problems with expressing PySp2 and TuSp1. We hypothesize that these two proteins may not have been properly folded to be secreted. Therefore, we are working on co-expressing the chaperone protein disulfide isomerase (PDI) with PySp2 and TuSp1 to assist with the folding of the proteins and thus improve secretion.

Regulation of Myosin phosphatase by PHI 1

Rojin Amiri

Faculty Mentor: Douglas Weiser

Gastrulation is the rearrangement of cells during embryonic development driven by cell migration. Convergence and extension are two of the driving forces of gastrulation where cells migrate to the dorsal side of the embryo. Many of the same genes involved in controlling this process are also involved in controlling cancer. This is the reason why many scientists take particular interest in the regulatory proteins involved in gastrulation which set up cell patterning. Myosin phosphatase, a complex of Protein phosphatase 1 and the scaffolding protein Mypt1 controls many types of cell movement, including cell migrations and interactions seen in gastrulation. MYpt1 is a highly regulated complex. One of the regulatory mechanisms of this protein that we are particularly interested in is the CPI-17 family which binds to and inhibits the myosin phosphatase. The CPI-17 family is predicted to have emerged at a relatively late stage in evolution because it is expressed in zebrafish and other vertebrates but not in invertebrates. PHI1, one of the CPI-17 homologs is known to contain the PHIN domain unique to the CPI-17 family members. Many studies have led to the discovery of the CPI-17 mechanisms. We know that PHI1 is present in early development and that its over expression can cause a gastrulation defect but not much else is known about this protein. Our focus is on the mechanisms of regulation by PHI1. By isolating the PHI1 gene and subcloning it into vectors for bacterial and mammalian cell expression we can learn more about its biochemistry.
TigerLeaks
Alexander Anderson, Victoria Almague, Alixandria Henley, Kris Kiriu
Faculty Mentor: Gary Howells

Previous research has indicated that whistle blowers of America are often criticized. (Lindblom, 2007). Information needs to be exposed, but often those who share the information are looked down upon, which can lead to people being fearful of being a whistle blower. (Marcia, Near, & Roach). The current study sought to investigate the effects of school involvement in war activities and students’ willingness to individually participate. Participants were undergraduate students at a small liberal arts university in Northern California. They were confronted with a fabricated statement claiming that their school was paying the military to recruit on their campus using tuition funds. Participants were then asked whether they would sign a petition, being either anonymous or knowing they could face possible consequences. It was predicted that women would be more willing to expose the truth regardless of consequence. Analyses on a set of 113 individuals yielded that our hypothesis was correct, and women were more willing to expose the truth even if they were to face possible repercussions.

CPI-17 Likes To Move It Move It!
Sejal Bhayani, Jalpa Patel
Faculty Mentor: Dr. Doug Weiser

The phosphorylation of myosin II is an important cellular control mechanism for cell migration processes in many organisms. Cell migration is an important process in cell physiology and often times is misregulated in cancer. Phosphorylation of myosin II is regulated by the activity of CPI-17 (C-kinase potentiated protein phosphatase-1 Inhibitor Mr = 17 kDa), which is a protein phosphatase-1 (PP1) inhibitor protein. Myosin phosphatase helps in the relaxation of actin and myosin in the cell. CPI-17 inhibits myosin light chain phosphatase which is comprised of MYPT1 and PP1. Multiple kinases signal through this mechanism, many of which are not fully understood. Much remains to be learned how CPI-17 affects cell migration. To learn more about CPI-17 we cloned CPI-17 from zebrafish and are researching to observe the role of CPI-17 in embryonic development of zebrafish. The CPI-17 cDNA was amplified using PCR and cloned into a pGEX4T vector to form a bacterial construct, which was verified by sequencing. To further validate the construct protein expression, the protein was purified from the bacterial cells. We are currently working on assembling a mammalian construct with CPI-17, which will allow us to express the protein and understand its affect on cell contraction by using cells to see actin myosin contractility by assaying cell shape.
In Government We Trust: Or Do We?
Aryan Bimar, Alyssa Musto, Sherry Ziegler

Faculty Mentor: Gary Howells

Supporting or protesting government's actions is a freedom that U.S. citizens possess. This can be done using both lawful and illegal means of protesting. There are, however, consequences in both supporting and protesting against the government. Past literature demonstrates that people's fears of negative consequences (e.g. embarrassment to deviate against the social norms, confrontation, or self worth) are by and large the reasons why people do not get active when they disagree with governmental actions (Cook & Gronke, 2005; Schyns & Koop, 2009). Other reasons for the lack of initiative may include lack of time, initiative, social views, and diffusion of responsibility. The purpose of the current study was to investigate whether being exposed to a positive or negative video would influence willingness to protest and sign a petition against the current wars in the Middle East. Participants were undergraduate students at a small liberal arts University in Northern California who were randomly assigned to one of the three conditions. Participants watched a video that either propagated a positive view of the government (condition 1), a video that propagated a negative view (condition 2), or a neutral video (condition 3). Participants were then asked to complete the Attitude Scale Toward War survey (Ericksen, 1948). The researchers hypothesized that the participants exposed to a short video about past political scandals and issues of unnecessary war (negative video) would have higher scores on the survey and would be more likely to protest and sign a petition against war. Preliminary analyses conducted on a subset of 36 individuals (Mean age= 20.83, SD = 2.27) indicated marginal significance. Final results will be discussed.

Morphological specializations for low-frequency hearing in túngara frogs

Krishly Cantarero and Pauline Montemayor

Faculty Mentor: Marcos Gridi-Papp

Studies of sound production and hearing in mammals have shown that the sizes of the larynges and middle ear ossicles affect the frequencies of the sounds produced and heard by these animals. As a consequence, larger anurans hear and produce sounds at lower frequencies than smaller anurans. Túngara frogs (Engystomops pustulosus) are small, but can hear and produce sound at much lower frequencies than expected for their size. We hypothesized that the sensitivity to lower frequency hearing in this frog is due to some anatomical specialization within the middle ear. This hypothesis was tested through comparative studies, using dissection and histology, of the middle ear ossicles of the túngara and other anuran species. Preliminary data show that túngara frogs have a highly enlarged extracolumella in the middle ear, which loads the eardrums, making them respond best to low frequency sounds. These findings indicate that there may be greater variation among hearing systems of anurans than previously noted. Understanding these variations and the mechanisms involved can further our appreciation of ear design and performance in other organisms.
“SmartPhone” Pedometer Validation

Edgar Cardoza,

Faculty Mentor: Matthew P. Normand

Mechanical devices, such as pedometers, can be used to measure physical activity behavior. Some of the advantages of using pedometers include the ability to quantify physical activity, freedom from researcher bias, and low researcher and participant burden (Oliver, Schofield, & Kolt, 2007). With the growing popularity of smartphone applications, the purpose of this study was to validate the accuracy of an iPhone pedometer application with adults. Four graduate student assistants (ages 20-30) participated. An iPhone accelerometer pedometer application, All-In Pedometer by Arawella Corporation, was validated against a criterion measure of manually counted steps. In addition to a manual step count, the previously validated NewLifestyles NL-2000 pedometer (Schneider, Crouter, Lukajic, & Bassett, 2003) served as an additional criterion measure. Participants wore the NL-2000 pedometer on the hip of their waistline and the iPhone was placed in the adjacent hip pocket. Participants were asked to run and walk on a 100m path. The run and walk conditions were counterbalanced and replicated. Participants were video recorded for the purpose of manually counting steps with a hand tally counter. Bland-Altman plots revealed that the All-In Pedometer application closely estimated steps ($p < 0.05$) when compared to the criterion measures during the walk and run conditions. It is important to have objective, accurate measures to assess changes in physical activity as the previous research has often depended on unreliable self-report measures (McIver, Brown, Pfeiffer, Dowda, & Pate, 2007).

The Effects of Media Exposure on Cognition and Attitudes Towards War

Edgar Cardoza, Palwasha Etimadi, Jennifer Jones, Alexis Touros

Faculty Mentor: Gary Howells

Exposure to antisocial or prosocial media (i.e., music, television, and videogames) has been shown to have short-term and long-term effects on one’s behavior and cognition (Greitemeyer, 2011; Guéguen et al., 2010; Smith, 2006). Exposure to prosocial songs can increase helping behaviors and empathy and decrease antisocial behaviors and thoughts (Greitemeyer, 2009). Thus, it is important to examine the effects of exposure to anti-war or pro-war media on cognition and attitudes towards war. Participants were shown a music video about war and asked to write a 50 word description using a list of emotions (e.g., content, optimism, relief, sadness, and disgust) and opinions (e.g., necessary, essential, important, unnecessary, and avoid) about the message of the music video and their feelings about war. Finally, participants were asked to complete a modified version of the Peterson War Scale (Jones-Wiley et al., 2007). Preliminary analysis conducted on a subset of 6 individuals (mean age= 21.3, $SD=2$) indicated that exposure to an anti-war or pro-war music video did not impact the type of words that participants used in their description and their attitudes towards war. Results will be discussed in the context of the impact media has on one’s cognition and attitudes.
Stress Reactions to War Narratives
Andrew Carrillo, Katelin Smith, and Genoa Minyard
Faculty Mentor: Gary Howells

Patients with Post-Traumatic Stress Disorder have shown to have strong emotional response to aversive stimuli (Adenauer et al., 2010). Moreover, narrative exposure therapy is often used to treat PSTD patients (Robjant & Fazel, 2010). The current study used aversive and positive narratives depicting two extreme arguments regarding United States warfare in Iraq and a neutral unrelated topic condition. Participants in this study were undergraduate students from a small liberal arts university in Northern California who were randomly assigned to one of three conditions. Participants in condition one listened to a short narrative on death counts and war atrocities in Iraq while viewing graphic pictures, condition two described some positive benefits of the war in Iraq while viewing pictures of soldiers aiding the Iraqi people, and condition three served as a control with neutral stimuli. Following the exposure, participants in each condition were prompted to rewrite the narrative they had heard from memory and complete the Zung Self-Report Anxiety Scale. Analyses on a subset of two participants yielded no significant differences between the aversive, positive, and neutral conditions in regard to effects on anxiety. Final results will be discussed in the context of understanding the effects of exposure to anxiety inducing situations.

Function of the vocal folds in the treefrog Leptopelis flavomaculatus
Gracie Castillo
Faculty Mentor: Marcos Gridi-Papp

Frogs and humans have analogous vocal structures which produce sound through a pair of vocal folds. A key difference, however, is that when air is experimentally passed through a passive frog larynx, it produces sounds at the same frequencies that are found in the frog's natural calls, whereas in mammals and humans one has to artificially position the vocal folds to obtain the frequencies produced in life. The purpose of this study is to discover the feature of the frog larynx that gives it the intrinsic ability of positioning the vocal folds to produce sound. We chose the frog Leptopelis flavomaculatus for this study due its simple call structure and large size. A computer-controlled source of humid air was connected to the larynx of an euthanized frog to produce sound. Laryngeal air pressure, airflow and generated sounds were recorded in an anechoic chamber. Although this project is in its preliminary stages, the initial data show that in a passive frog: 1) the vocal folds are partially open, 2) at low pressures, air flows between the vocal folds without producing sound, 3) at higher pressures the vocal folds close, blocking off the passage of air and 4) at even higher pressures, the vocal folds start to vibrate, allowing the passage of air and producing sound. At the onset of sound, the frog larynx resembles reed-based wind instruments in which increases in pressure reduce airflow, and such valve action has not been described in vertebrate vocal systems.
Follow the Leader: A Analysis of Gender Behavior

Connie Castro, Christina Pheng, Holly Purcell and Jamie Thompson

Faculty Mentor: Marcos Gridi-Papp

The purpose of the current study was to assess conformity at the Wendell Philips Center (WPC) at the University of the Pacific as well as a doctor’s office in Stockton, California. Researchers posted a “man” sign on one entrance doors and a “woman” sign on the other entrance. Based on previous studies, researchers predicted that females would be more likely to conform and go through their gender specified door than males would. It was also expected that individuals would be more likely to conform when they were by themselves than in larger groups. Materials used for the study included pictures of a man and woman similar to the symbols seen outside bathroom doors. The entrance to the WPC and doctor’s office was videotaped as well as pictures were taken so that researchers could view back tapes and calculated inter observer agreement. Preliminary findings indicate that females are more likely to conform than males. Larger groups have been scarce but they have demonstrated to be more resistant and less conforming to the posted signs. Limitations to the current research are that they are limited to a college campus setting and there have been more females than males. Future research should attempt to replicate this study in a public area.

Variation in stem and calyx trichomes in perennial Monardella (Lamiaceae)


Faculty Mentor: Mark Brunell

The genus Monardella consists of approximately 30 species of plants in the mint family, occurring throughout the Western U.S., especially in California. The two major perennial species in Northern California are M. odoratissima which occupies the Sierra Nevada mountains above about 2000 feet elevation, and M. villosa which occupies the Coast Range. These two species are known to blend together (intergrade) in the vicinity of Snow Mountain near the Lake/Colusa County border. In an effort to better understand the morphological boundaries of these species, a study of calyx and stem trichomes by scanning electron microscopy (SEM) is being conducted. Trichome types, lengths, widths and densities are being measured on sepal tips, the calyx tube’s veins and intervein regions, and on the stem. Results indicate the presence of large and small glandular hairs, and unicellular and multicellular hairs. Variation in trichomes is not highly correlated with geography. Results bearing on the taxonomic separation of the two species will be presented.
Cracking the Shell

James Chun, Chris Nguyen, Patrick Kang, Jaey Lee

Faculty Mentor: Craig Vierra

The black widow spider, *Latrodectus hesperus*, produces seven different silk proteins that can be spun into various kinds of silks. One of these fiber types, called tubuliform silk, has been shown to be composed of at least three different proteins TuSp1, ECP-1 and ECP-2. Tubuliform silks are found in egg sacs and serve to protect spider embryos during development. Analyses of mRNA levels have shown that ECP-2 is expressed at higher levels relative to ECP-1. The ECPs have been hypothesized to constitute the outer layer of the tubuliform silk fibers. To elucidate the structural role of ECP-2, we have attempted to express part of the protein in bacteria. In order to accomplish this task, we amplified a segment of the ECP-2 cDNA coding its N-terminus. The ECP-2 cDNA was amplified using PCR, ligated into a prokaryotic expression vector and transformed into *E. coli*. Following transformation, the recombinant protein was induced and its expression level was analyzed by western blot analysis. Here we show that the N-terminus of ECP-2 can be expressed in high levels in bacteria, which should make purification of large amounts of ECP-2 for structural analyses feasible.

To Protest or Not To Protest – Assessing the Effects of Framing on People’s Attitudes Towards Protesting

Nashay Cole, Erica Ruiz, David Hernandez, Jamie Hee

Faculty Mentor: Gary Howells

The purpose of the study is to assess the impact of framing effects on people’s attitudes towards protesting behaviors. Research that has assessed people reactions when being shown images of situations they disagreed with, has found a positive relationship between how disturbing the image was and the likelihood people would join a protest (Jasper and Poulsen, 1995). Moreover, when show protests images of protests depicting high levels of conflict, the evaluations of the protest and protestors were more negative (Arpan et. al., 2006). Participants in the current study were undergraduate students at a small liberal arts university in Northern California who were randomly assigned one of two conditions. They were asked to complete a survey assessing demographic information as well as their attitudes towards war. Participants in condition one were shown a video of individuals engaging in peaceful protest while as participants in condition two watched a video of a protest with high levels of hostility. Subjects then completed a survey assessing their attitudes towards the protests and protesters. Preliminary results on a subset of 4 individuals (mean age = 20, SD = 2.06) indicated significances between the groups. Findings will be discussed in the context of understanding the effects of framing on protest behavior.
Investigation of Metal-Binding Activity of Spider Coating Peptide (SCP-1)

Cynthia Co Ting Keh, Nick Ng, Carolyn Tran-Math

Faculty Mentor: Craig Vierra

Known for its tensile strength, spider silk can potentially be used industrially and medically. Spider silk is also extremely flexible, which gives it an added dimension for commercial possibilities. The cDNA under study, SCP-1, or spider coating peptide 1, was retrieved from a cDNA library prepared from the abdominal gland tissue of the Black Widow Spider, *Lactrodectus hesperus*. The SCP-1 peptide is coated on the surface of several different spider silk fiber types. Analysis of the translated cDNA for SCP-1 reveals five histidine residues clustered in the C-terminus of SCP-1. Based upon this observation, we hypothesize that SCP-1 binds to metal ions. To test this hypothesis, the SCP-1 cDNA was amplified via PCR and inserted into the plasmid, pBAD-TOPO. SCP-1 expression was induced in bacteria and its levels were monitored by western blot analysis. Western blot analysis showed that SCP-1 was expressed in high levels. To demonstrate that SCP-1 had metal binding ability, we tested the ability of SCP-1 to bind a nickel resin. Our studies demonstrate that SCP-1 can bind to nickel resin, suggesting it may potentially have antimicrobial activity.

The Effect of Music on Athletic Performance

Marvin Cotton, Nyika Williams and Demetrece Young

Faculty Mentor: Kenneth Day

This study investigates the effect of music on athletic performance. The study was conducted using members of the Pacific Men’s and Women’s Basketball Team. Players were randomly assigned to listen to 20 minutes of upbeat music or 20 minutes of downbeat music. The design was balanced for gender and type of music. After listening to music, basketball shot 10 free throws. The number of successful free throws was recorded as the measure of athletic performance. The study predicts that players who listen to upbeat music will make more successful free throws than those who listen to downbeat music.
Generating Digital Geologic Maps in GIS from Preexisting Legacy Format Data

Luke Crawford

Faculty Mentor: Kurtis Burmeister

Legacy format geologic map data from two adjacent areas (Kingston orocline and Rosendale natural cement regions) within the northern Appalachian fold-thrust belt of east-central New York State were recently converted using a new procedure into a digitally georeferenced geodatabase within ARCGIS. The method was developed during the digitization of the Kingston map (printed on paper) and then expanded to aid in the digitization of the Rosendale map (digital vector graphic format). Currently, most published geologic map data are in legacy formats (e.g., paper, digital images, etc.) that cannot be manipulated in GIS. Translating legacy format maps into digital geodatabase formats makes these data available to policy makers that rely on GIS datasets to make informed decisions about social, economic, and environmental policies.

The paper Kingston map was scanned and imported into ESRI ARCCATALOG, where it was georeferenced and digitized into a geodatabase. Our geodatabase structure follows a model developed by Sue Priest (USGS) that uses a set of feature classes to efficiently store geologic map data. Linear features (unit contacts, faults, and folds) are digitized first, followed by point features (bedding and foliation attitudes). Polygon feature class data are digitized last, because polygons (areas of geologic unit exposure) can be derived from preexisting linear features. Originally compiled in ADOBE ILLUSTRATOR, the Rosendale map was imported into ARCGIS and used as a basemap for digitizing geologic feature data. Upon successful completion of digitizing both legacy format maps, the maps were then combined into a single geodatabase, thereby creating a single geologic map encompassing both regions.

Polyploidy in *T.laxa* and Geographic Distribution

Lauren Epperson

Faculty Mentor: Dale McNeal

Polyploidy is of particular interest in plants as it can result in reproductive isolation which can lead to speciation. *Triteleia laxa* (Amaryllidaceae) is an example of polyploidy in a species that shows very little morphologic variation across several different chromosome counts. Prior to our investigation diploid chromosome numbers of 14, 16, 21, 24, 28, 32, 42, and 48 were reported in the literature (Johansen, 1932; Burbanck, 1942). Our investigation has revealed that in addition to the previously discovered chromosomes series with base numbers x=7 and x=8, there is also a chromosome series with x=6. Newly observed chromosome counts of 2n=12 and 2n=18 lead to this conclusion. We present distribution maps of all chromosomal races and photomicrographs of all known chromosome complements.

The Effects of Negative Political Advertising: How Negative Is Too Far

Emily Frost and Lubna Javaid

Faculty Mentor: Kenneth Day

This study explores the boomerang effect of negative political advertising. Students in undergraduates will watch two versions of negative political ads, one that is extremely negative. They then will rate their support both the candidate attacked and the candidate originating the negative political ad. The study predicts that extremely negative political ads will lower support for the candidate engaged in the attack.
Is Reality Television Becoming Your Reality?
Ana Garcia, Lecletus Griffith, and Megan Jordan
Faculty Mentor: George Lewis

Reality TV is a popular genre deserving sociological investigation. But, to what extent do watching these shows create a change in ones perception of what is “real” and what is not real? Our study explores how alcohol consumption is perceived by those watching Reality TV--does it change the consumption rates (how many alcoholic beverages an individual consumes) because of what they think is, on these shows, “real?” We ask “Does attraction or dislike for Reality TV viewing have any relation to one's reported consumption of alcohol?” Our preliminary findings suggest that there is an increase in alcohol consumption connected to increase in watching Reality TV shows. Subjects responded they did feel that drinking is a good way to meet people and that consuming alcohol is socially acceptable. A small number of respondents themselves as binge drinkers and have also reported a high degree of watching and enjoying Reality TV. The next step includes the correlation of education level, age and employment status to pinpoint how relevant is alcohol consumption with Reality TV, and which show.

Forced Compliance, Cognitive Dissonance, and Attitudes
Erika Gloria, Sarah Hidalgo, Tina Saeteurn
Faculty Mentor: Gary Howells

Cognitive dissonance is characterized by the discomfort a person may experience when being forced to say something that is contradictory to their private opinion (Festinger & Carlsmith, 1957). Research has demonstrated that under certain circumstances a person’s private opinion may change to match their behavior (Festinger & Carlsmith, 1957). The purpose of this study was to investigate the effects of forced compliance on a person’s opinion. Participants were given a list of either positive or negative words and pictures of war. Participants were prompted to write a story using the list of words and pictures for five minutes. After completing their story they were asked to read it out loud. Upon completion participants were asked to fill out the Peterson-Thurstone War Attitude Scale and asked to rate pictures using the Self-Assessment Manikin (SAM) Scale for Valence. Preliminary analysis were conducted on a subset four individuals (Mean age= 20.5, SD= .58) indicated to significant differences regarding attitudes towards war. Moreover, no significant differences were found for participant’s scores on the SAM scale. Overall, this suggests that a person’s overt behavior does not affect a person’s private opinion, which is contradictory to past research.
Exploring the Function of Egg Case Protein-3, A Novel Protein Found In Spider Egg Case Silk Fibers

Joelle Guanzon, Michael Lee, Brian Liu, Nancy Nguyen, Alex Reynon

Faculty Mentor: Craig Vierra

Spider silk is composed of proteins that allow for its ductility and high tensile strength, making spider silk an ideal substance for stitching wounds, bandaging, and other medical uses. By synthetically producing spider silk proteins in vitro, ample amounts of spider silk can be synthesized for medical purposes more quickly than via natural spider silk production. Egg Case Protein-3 (ECP-3) is a 6 kD protein that is spun into tubuliform silks. The mRNA transcripts of ECP-3 are expressed and produced in the tubuliform glands of the abdomen of the spider. Since ECP-3 transcripts are expressed in the tubuliform gland and the protein spun into fibers, we hypothesize that ECP-3 has an important structural role in the tubuliform silks. To test this hypothesis, ECP-3 cDNA was amplified using primers and placed into a prokaryotic expression vector to produce recombinant ECP-3. ECP-3 protein induction was monitored by Western blot analysis. Following ECP-3 expression, we decided to express ECP-3 in a large scale format, purify the protein and attempt to spin synthetic fibers.

Song synchronization in female-female duets of Kloss's gibbons (Hylobates klossii)

Steve Han, Yoon Joong Suh

Faculty Mentor: Richard Tenaza

We analyzed song synchronization of two female Kloss’s gibbons (Hylobates klossii) in Professor Tenaza’s laboratory in the University of the Pacific Department of Biological Sciences. Gibbons are small, monogamous, arboreal apes of South East Asia. We concentrated the study on one species that is endemic to the Mentawai Islands off the west coast of Sumatra, Indonesia, Kloss’s gibbon (Hylobates klossii). One thing very interesting about this species is that song synchronization happens in same sex unlike other 11 species of gibbons. Only 2 species of gibbons have this unique property. We focused our study on female-female duet. The female Kloss’s gibbons meet on shared territorial boundaries and sing together, in duets. The study was performed with two main software; Pro Tools and Raven Pro. Pro Tools is a sound mixing software that helped us to catalog and organize gibbons sound recorded by Professor Tenaza long time ago. Raven Pro is sound analysis software, designed by Cornell University, to examine the spectrogram of the animal sound. Our study indicated that there was a certain degree of synchrony in each song phrase. During the synchrony, each female sang a repetitive song phrase, which last for average 31 seconds with time difference of 0.5 seconds between the leader and the follower. This cooperation is unique property, because animals are believed to interact competitively in most cases. This study may help us in the future, since gibbons and human share about 95% of genetic materials.
Social Media’s Impact on Satisfaction with Relationships

Tricia Juanitas

Faculty Mentor: Qingwen Dong

This study investigates the effects that social media has on the satisfaction of relationships with family and friends. Using a self-administered survey collected from students who attend a Northern California four-year university (N=357), the author tested the correlation between the participants Internet and Facebook use and the satisfaction of their relationships with family and friends. The findings of the study suggest that using the Internet for social media purposes with the intent to keep in touch does correlate highly with good relationships which consequently correlate with high satisfaction. This research contributes to the ongoing debate about what the Internet is doing to people and their relationships that they have with others, embracing the idea that the Internet does not alienate people.

Investigation of the Structural Role and Function of Egg Case Protein-2 (ECP-2) in Latrodectus hesperus

Danny Kim, Juan Kim, Adrienne Nguyen, Steve Oh & Aneesha Sharma

Faculty Mentor: Craig Vierra

Due to certain characteristics of spider silk, such as high elasticity and tensile strength, continued research in discovering different spider silk genes can result in many industrial uses. Ultimately, the goal is to be able to produce a spider silk-like protein for artificial fiber spinning. An important gene involved in spider silk formation is ECP-2. Egg case silk from the tubuliform gland is identified to be pretty extensible in comparison to dragline silk, which is known to be the strongest fiber made by the black widow spider. However, the precise functions of the gene are still unknown. Using quantitative real-time PCR to analyze the protein, it was found that ECP-2 is predominantly expressed in the tubuliform gland. It is known that this gene plays an important role in the formation of the egg case silk fiber, but the exact manner in which it works has not yet been discovered. It is hypothesized that ECP-2 covers the exterior of the egg case protein fibers. The goal was to induce the Full Length ECP-2 cDNA to express the recombinant protein. To do this, a cloning vector was ligated with ECP-2 cDNA insert and transformed into bacterial cells. Induction followed using arabinose, and then the cells were lysed, and a western blot was performed to check for target protein expression. The purpose was to acquire enough purified protein to do further research on the qualities and properties of the protein.
Synthesis of Thiazole Orange derivatives as DNA G-quadruplex binding ligands
Justin Kozloski

Faculty Mentor: Liang Xue

G-quadruplex, a unique DNA secondary structure that inhibits the telomerase activity at the end of the chromosomes, has become a novel target in oncology in recent years. The formation of G-quadruplex structures is facilitated by small molecules (G-quadruplex binding ligands) that contain extended and fused aromatic rings. Thiazole Orange (TO), an example of G-quadruplex binding ligands, is known to bind to both DNA duplex and G-quadruplex. Upon binding, TO fluoresces, which makes it an attractive probe for studying ligand-DNA interactions. However, the selectivity of TO binding to DNA duplex and G-quadruplex is minimal. In the present work, we sought to investigate the feasibility to increase the TO selectivity toward G-quadruplex DNA by introducing side chains to enhance the binding specificity. TO derivatives containing various side chains were synthesized and their binding to G-quadruplex DNA was evaluated using UV denaturation. The synthesis of TO derivatives and biophysical measurements will be presented.

Synthesis of nucleobase-calix[4]arene conjugates and evaluation of their self-assembly ability using NMR
Andy Lee

Faculty Mentor: Liang Xue

In the past few decades, a myriad of self-complementary compounds, which are able to undergo assembly, have been designed and synthesized. However, few of them have been made based on the DNA complementary base paring rule. This lack of progress could be due to the weak interactions between adenosine (A) and thymine (T) or uracil (U) and the difficulty of making suitable structures containing cytosine (C) and guanine (G). In this study, a series of analogues, nucleobases calix[4]arene conjugates, have been designed and synthesized by using “click” chemistry. The $^1$H-NMR solution studies, involving concentration, temperature and solvent dependence and NOE studies, have been carried out to determine the extent of assembly as well as what interactions occur between the bases. These studies demonstrate that small molecules containing nucleobases may be used to probe interactions in chemical and biological systems and to develop novel biological targeting agents. The molecules’ synthesis and the $^1$H-NMR studies of the assembly will be presented.
Expression of the ECP-2 C-Terminus in *Latrodectus Hesperus*

Nick Leon-Guerrero, Robert Tinoco, Christian Mariano, Linda Truong, Niharika Mandadi

Faculty Mentor: Craig Vierra

Spider silk’s high tensile strength and elasticity, as well as its biocompatibility, can potentially be used to revolutionize medicine and technology. Current research is focused on elucidating the silk manufacturing process and determining a means for mass production of the silk. The egg case protein 2 (ECP-2) was isolated from the egg case silk fibers from the black widow spider, *Latrodectus hesperus*, and its cDNA sequence was determined using reverse genetics. ECP-2 is 826 amino acid residues long and has a fibroin like structure that contains a highly conserved N-terminus as well as a C-terminus rich in GA repeat residues. ECP-2’s location suggests that it acts as a wrapper or casing for the fibers. The ECP-2 cDNA was amplified using PCR and then placed into the prokaryotic expression vector pBAD-TOPO. The amplified segment corresponded to the C-terminus of the full-length ECP-2 protein. After ligation, the vector was transformed into *Escherichia coli*. Cells carrying the expression vector were induced and ECP-2 levels were analyzed using a western blot. Following the confirmation of ECP-2 expression, we plan to express and purify large amounts of the ECP-2 C-terminus for structural studies.

Alternative Currencies, Bane or Boon?

Benedict Leong, Jesse Neumann

Faculty Mentor: Thomas Pogue

From at least the 16th century to the space age, to the computer age, the world has been in an ever increasing trend towards increasing globalization. This globalized world we live in is now extensively interconnected through trade, commerce, and communications, with multi-national operations characterized as increasingly interconnected and knowledge intensive economies. However, there exists a seemingly anomalous counter trend: localization. Localization comes in many forms ranging from “locavore” restaurants, to buy local movement and local currencies. This paper analyzes the potential economic costs and benefits of one of these features of localization: local currencies. These currencies help to encourage spending at specific, local locations within the city or region of its origin. A latest example of this phenomenon may be found in the city of Davis, California, and it’s “Davis Dollar’ instituted by Davis Dollars, a startup non-government organization. There are several pros and cons to be found in relation to having a local currency. This currency could, theoretically, allow governments such as Davis to gain macroeconomic decision policy independence, away from the United States Federal Bank. As a result of this independence, governments could influence consumer spending behavior, therefore affecting its trade deficits or surplus. On the flipside, instituting local currencies could bring about certain negative aspects. When spending is kept within the local economy, it reduces trade with neighboring cities and counties, and thus diminishes the benefits of trade for the region. As a result, these regions could have a smaller consumer market from a producer’s perspective, allowing for limited expansion and less specialization by companies. A secondary market exchanging the local currencies and the US dollar may also be created, theoretically adding to complications for large national corporations to enter the local markets. This paper investigates the question, what would happen if a similar currency were to be introduced into San Joaquin County, which is a region hit hard by the Great Recession and the protracted recovery. Through this analysis, it critically examines whether “going local” with the implementation of a local currency could be a useful policy to stimulate local economic growth in a world of global markets and financial contagion.
The Histidine-rich C-terminus of the peptide SCP-1 confers metal binding ability
Albert Lin, Andy Lee, Raymond Pandez
Faculty Mentor: Craig Vierra

Spider silk has been a focus of research due to the potential benefits of its extraordinary mechanical and biochemical properties. Its exceptional high tensile strength combined with high extensibility, gives the silk a unique application for different industrial and medical uses. The adhesive coating of egg case sacs, gumfooted lines, and web scaffolding connection joints were found to be coated with a common peptide that is expressed by the flagelliform gland of the spider Latrodectus hesperus. The isolated cDNA of the peptide has been named spider coating peptide -1 (SCP-1). It is notable that the C-terminus of the SCP-1 is histidine rich which suggests a potential ability to bind to metal ions and exhibit antimicrobial activity to lengthen the life of the silk fibers. To test whether SCP-1 can bind metal ions, the cDNA for SCP-1 was amplified by PCR and then was placed into the prokaryotic expression vector pBAD. Plasmid DNA was isolated from fifteen colonies and cDNA inserts were verified by gel electrophoresis after performing restriction digests using Pmel and Ndel restriction enzymes. The colonies that tested positive were induced for protein expression and the cellular extracts were used for western blot analysis to determine protein expression of SCP-1. A nickel resin was employed to test if the recombinant protein could endogenously bind to the metal ions and our results will be discussed.

Vitamin D3 Inhibits RAD51 in Human Breast Cancer
Daniel Lu
Faculty Mentor: Joanna Albala

Breast Cancer is the second most common form of cancer in women. We are investigating the role of Vitamin D on the DNA repair protein, Rad51, in a breast cancer cell line, MCF7. Rad51 is a protein that participates in repair of DNA double-strand breaks and impairment in Rad51 function in some types breast cancer may be part of the initiation of the disease. The active form of vitamin D, Vitamin-D3 (VD3), inhibits cell proliferation and initiates cell death or apoptosis. My research examined the effect of VD3 on the expression of Rad51 in the MCF7 cell line. MCF7 cells were cultured, treated with VD3, and harvested. Analysis of Rad51 expression was performed by Western blot analysis using several Rad51-specific antibodies. In addition, I have used a cell-based array to perform cell culture in a miniaturized format. By this technique, multiple treatments may be applied to a several cell populations, in parallel, in a cost and time efficient manner. The preliminary conclusion is that treatment with VD3 does inhibit the growth of MCF7 cells. More importantly, this works shows that VD3 decreases the expression of Rad51, which may in turn lead to cell death if repair of DNA double-strand breaks is reduced. These results are similar to what our lab has found in a head and neck cancer cell line. Future experiments will examine whether there is reduced DNA repair capacity of Rad51 and increased apoptosis that may be important to induce cell death in breast cancer cells.
Aftermath of sulfur mining: The fate of toxins in a watershed in Oakland, Ca

Gabriella McDaniel

Faculty Mentor: Laura Rademacher

The purpose of this research is to understand whether small, upstream, urban reservoirs act as sources and/or sinks for contaminants. The Lion Creek watershed in Oakland, CA, includes three tributaries, which merge into Lion Creek and then discharge into Lake Aliso. One of the tributaries drains a former sulfur mine and produces acid mine drainage (AMD). Currently, Lake Aliso alternates between full (summer) and empty (winter) seasonally. Water samples were collected from all three tributaries and the inlet and outlet of Lake Aliso. The geochemistry of each tributary and the lake inlet and outlet were measured to understand the cycling of contaminants through Lion Creek watershed.

Results suggest that AMD causes elevated conductivity and sulfate and low pH in the tributary that drains the former sulfur mine. Tributary mixing dilutes water from the sulfur mine, decreasing the conductivity and sulfate and increasing the pH. However, not all changes in water chemistry can be explained by simple dilution and mixing; other factors have to be considered, such as the impact of microorganisms and storage of chemicals in the sediment. In addition, water quality at the lake inlet and outlet differ significantly when the lake is full suggesting Lake Aliso may act as a sink for contaminants. Alternating oxic and anoxic laminations in preliminary sediment cores also suggest periodic changes in the nature of lake geochemical cycling. Results from ongoing research will expand our knowledge of biogeochemical cycling in the watershed and provide a scientific foundation for sound water management plans.

Made in_______, by Your Child

Sarah Miceli

Faculty Mentor: Keith Smith

While globalization is becoming an increasingly important function in today’s world the international community has emphasized the need for a universal order to ensure international relations run effectively. This is where international treaties and conventions come into action yet the reality is that many states sign and ratify these agreements but do not or cannot actually fulfill the components. I specifically look into Convention No. 182 which concerns the prohibition and immediate action for the elimination of the worst forms of child labor. Why have some countries implemented Convention No. 182 while others have not? What factors or characteristics lead a country to actually implement the components of a signed treaty? Through a comparative analysis of 19 countries including each country’s GDP, GDP growth, and access to primary education I am hoping to find that when a country is given certain measures compliance will be met. This Convention was created to try and help the rights of the child but what I have found so far is that the higher a country’s Gross Domestic Product the higher probability the country will comply, which means it is almost impossible for poorer countries to comply. There are still 215 million children worldwide trapped in child labor and while the children working may not be our direct responsibility, what if it was your child?
Individual variation in call amplitude of male túngara frogs

Mongoose

Faculty Mentor: Marcos Gridi-Papp

Túngara frogs are a model organism for studies on communication and sexual selection. Calling behavior and frequency structure have been studied in detail in the field and in the lab. Call amplitude has received less attention, however, because of the difficulties involved in dealing with the complexity of the acoustics of natural environments. In this study, we circumvented the problem by monitoring the frogs under controlled acoustic environments in the lab, and have analyzed differences in call amplitude over the course of a single night and across multiple nights. We asked if differences in call intensity between males were consistent along the night and among nights. We used a computerized monitoring system to record and analyze all calls produced by 10 male frogs during 2 months in the laboratory. We are currently analyzing the data but preliminary results indicate that differences among males are consistent within a night but might fluctuate over the season. This finding will introduce a novel angle to the analysis of male-male competition, that should allow us to better explain findings on male mating success and improve the current understanding of the reproductive behavior of frogs.

Analysis of the 5' Untranslated Region (5' UTR) of the Alcohol Oxidase 1 Gene as a Regulator of Translation in Pichia pastoris

Maria Nattestad, Tejas Mulye and Kristin Oshiro

Faculty Mentors: Joan and Geoff Lin-Cereghino

- **Introduction:** Pichia pastoris is a yeast commonly used for foreign protein expression. The coding sequences of foreign proteins are inserted after the AOX1 promoter. The 5’ untranslated region (UTR) is part of the mRNA before the coding sequence, which affects the rate of translation (protein production) by ribosomes.
- **Objective:** We are trying to figure out the correlation between 5’ UTR structure and degree of protein expression.
- **Methods:** Oligonucleotide primers were used in mutagenesis to make deletions in the 5’ UTR on a plasmid that contains the beta-galactosidase gene (encoding a reporter protein) as the coding sequence. We used beta-galactosidase assays to measure protein expression in the yeast.
- **Results and Conclusions:** All deletions caused decreased beta-galactosidase expression in the yeast, suggesting that they all enhance translation. No negative-acting sequences have ever been found.
Personality Traits as Predictors of Video Game Use

Bart Platow, Ray Zulueta, and Ryan Spencer

Faculty Mentor: Kenneth Day

This study attempts to use personality traits to predict preference for video games, particularly violent video games. The survey is conducted with a questionnaire on surveymonkey.com. The survey instrument uses the Big Five Personality inventory and time spent playing video games of different types. The study predicts that neuroticism will be correlated with violent video game playing.

Direct Usage of Taq Polymerase in Live E. coli for PCR

Taylor Rabara, Frances Pham, Christine Ho, and Melody Tsai

Faculty Mentor: Craig Vierra

Taq polymerase is an essential enzyme and commonly used in PCR reactions. DNA polymerase is isolated from the bacteria Thermus aquaticus, which lives in hot springs, giving the enzyme heat stability with an optimum temperature around 75-80 °C. This allows Taq to elongate the target DNA fragments at high temperatures without denaturation. To date, most labs require purification of Taq polymerase from E. coli for PCR reactions. This process can be time consuming and expensive. The purpose of our studies was to find a faster, more convenient method to perform PCR without the need to purify Taq polymerase from bacteria. In our project, we attempted to run PCR reactions using intact bacterial cells that were expressing Taq as our source of DNA polymerase. Here we demonstrate that PCR can be successfully performed without the need to purify Taq polymerase from bacteria. We show that intact bacterial cells expressing Taq polymerase can be lysed directly during the initial steps of PCR, providing a functional DNA polymerase for amplifying DNA templates. Lastly, we demonstrated that the bacterial cells can be stored and subject to freeze thawing without the loss of DNA polymerase activity. This enables lab researchers to have more efficient, convenient, and economic way to use Taq polymerase in PCR reactions. This technique has been successfully proven, and can be applied in a large variety of lab research.
Coastal marsh sediments from Bodega Harbor: Historical environmental changes at the tidal land
Ye Rong

Faculty Mentor: Laura K. Rademacher

Coastal marsh sediments provide an important archive of environmental changes at the environment where they deposited and in this case, the studied area is the tidal land in Bodega Harbor. Over the last century, humans have significantly altered the coastal environment near Bodega Bay, California, through alteration of natural hydrologic patterns (dredging and filling), sediment sources (stabilization of sand dunes), and the dominant ecosystem (land use and management). Previous investigations of recent coastal marsh sediments (<50 years) suggest that physical barriers, such as roads, which limit the connection between Bodega Bay and the marshes, alters biogeochemical cycling (including carbon storage) in the coastal environment. The present study extends the record of changes in biogeochemical cycling in the coastal marshes back more than 100 years (approximately 90 cm) through the use of grain size analysis, C and N isotopes, and age dating.

Sediments were analyzed for grain size distribution, the amount of carbon and nitrogen, and the stable isotopes of carbon and nitrogen in 1 cm intervals throughout the core. In addition, a subset of eight samples was analyzed for sediment age using a combination of Pb-210 and Cs-137 techniques. Sediments from the top third and bottom third down the core have a lower percentage of finer grained sediment (<2%). In addition, these sediments also contain lower levels of total organic carbon and nitrogen, lower C:N ratios, as well as lighter carbon and nitrogen isotopic signatures. The sediments likely correspond to a pre-1900 depositional environment based on Pb-210 dates, when development induced human activities in the region was increasing. The observed results also suggest that there are several significant transitions occurring at the depth of 18-19cm, 41-42cm, 47-48cm and 71-72cm. These results suggest a stronger influence of the marine environment during that time and the significant transitions are associated with massive human activities such as dredging, filling and stabilization of sand dunes historically. The significant shift in sediment properties suggests a less stable environment with greater communication between the terrestrial and marine environments. Results from this investigation suggest that the Bodega Bay coastal marshes are continually evolving in response to environmental changes, and insights from this research will lead to greater understanding of the impacts of increasing population, construction, and changing vegetation and hydrology on the coastal environment.

Women’s Body Dissatisfaction Due to Exposure to Magazines
Elizabeth Rotticci and Angela Myers

Faculty Mentor: Kenneth Day

The study looks at women’s body dissatisfaction as a result of exposure to advertising and other content in fashion and health magazines. A survey was administered to approximately 100 female students in undergraduate classes at the university of the Pacific. The survey measured body satisfaction using The Body-Esteem Scale (Franzoi & Shields, 1984). Amount of exposure to four magazines (Shape, Women’s Health, Fitness and Cosmopolitan) were also recorded. The study predicts that those with more exposure to these magazines will show higher body dissatisfaction.
Prompts or Proximity: Recycling Old Techniques for a New Population

Esther Kelly Rush

Faculty Mentor: Carolynn Kohn

Sign posting and container proximity manipulations have been shown to be effective methods of increasing recycling in university and corporate settings. The generalizability of these methods to other populations is unknown. The current study examined recycling behavior in an adult mental health population at a local socialization center. The distance between trash and recycling containers and the presence of posted signs were manipulated. Results indicated that placing recycling and trash containers in close proximity (with or without signage) yielded the greatest overall increase in recycling behavior. Future research will extend these findings and examine interventions to decrease energy usage on a college campus.

World War II and Public Memory

John Sayer

Faculty Mentor: Jennifer Helgren

The purpose of this research project is to explore how the memory of World War II has changed between the end of the war and now. Through a careful examination of media produced during this period, I will attempt to describe any shifts in the portrayal of the war. To further explore how the ways the war is remembered, I will administer a survey to two groups of the public, the first being college students and the second persons over 60 years old. From the responses, I will attempt to graph any statistical trends that arise. The results of my research will be compiled in a paper, and will be presented in poster form at the PURCC presentation.

Can Exposure to Media Change your Opinion about the War?

Valerie Segura, Paul Nocito, Zak Conger

Faculty Mentor: Gary Howells

Previous research has shown that exposure to media can change perception or behavior of participants exposed to it (Tal-Or, 2010). The present study sought to expand on these effects by assessing the attitudes of war and/or torture after the presentation of war/anti-war media. Participants were undergraduate students recruited from a small private university in Northern California. They were randomly assigned to one of two conditions and asked to complete 20 true and false questions assessing their preexisting attitudes of war. Condition one consisted of showing a short pro-war video, whereas condition two participants watched a short anti-war video. Following the video participants were asked to complete the same true and false questionnaire to assess whether attitudes toward war have changed post-media. Upon completion of the survey the participants were asked if they would like to sign up for either a pro or anti-war website. Preliminary analyses conducted on a subset of two individuals indicated that participants in the anti-war condition had a significantly lower attitude towards war than any of the other condition. Additionally participants who watched the anti-war video were more likely to sign up for a protest website. Results will be discussed in the context of the impact media has on people’s beliefs.
Sex and age differences in thermoregulatory sand-flipping in northern elephant seals (*Mirounga angustirostris*) in their Piedras Blancas breeding colony

Jason Smith  
**Faculty Mentor: Richard Tenaza**

Elephant seals lying belly-down on beaches habitually use their front or pectoral flippers to scoop sand from the beach and throw it onto their backs. One study indicated that this behavior is thermoregulatory: allowing moisture evaporating from the sand cooling the seal’s skin. This is the first study of sex and age differences concerning this behavior. We gathered data in two ways. In January 2010 we made video recordings of sections of the seal colony and later tallied sand flipping from them back in the laboratory. In January 2011 we gathered data by assigning students in Dr. Tenaza’s Animal Behavior and Marine Birds & Mammals classes to observe one adult male, one adult female, and one pup each to tally. In total, 45 students counted sand flipping of three animals each for 150 minutes. Adult females consistently performed the behavior significantly more frequently than males and pups did, and all animals performed more sand flipping in the afternoon and under direct sunlight than they did in the morning and under overcast skies. We discuss our findings in terms of color and surface: volume ratios.

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Frequency range of hearing in African frogs

Anirudh Srikonda, Kimberley Rector, Chi Ho, Weilan Cui, Sarah Anne Wong and Mary Paduano  
**Faculty Mentor: Marcos Gridi-Papp**

While mammals have a chain of three ossicles linked to each eardrum, frogs have a single ossicle with cartilaginous ends. This has been used to explain why frogs can hear only up to ~5 kHz whereas humans can hear up to 22 kHz and other mammals up to 120 kHz. Recent studies, however, revealed two species of Asian frogs that can hear up to 34-38 kHz, demanding a reevaluation of frog hearing. Comparisons with other species could reveal specializations that allow Asian frogs to hear ultrasound, but to date very few species have been examined. Most of the data on eardrum vibrations have been obtained from American and European frogs, therefore, we examined the performance of the ears of an African frog (*Leptopelis flavomaculatus*), in order to reveal if its hearing resembles that of American frogs, Asian frogs, or neither. As part of a larger study assessing structure and function in several groups of frogs, we are examining the vibration of the eardrums and the neural signaling at the midbrain in response to sound. Our preliminary data indicate that the performance and anatomy of *L. flavomaculatus* groups it with the low-frequency hearing American and European frogs, as opposed to the Asian frogs. The inclusion of African species in the analysis provides an enlarged pool of variation with which to compare the high-frequency hearing Asian frogs, and it facilitates the identification of specializations in ear design that promote the hearing of ultrasound in frogs.
Improving Secretion Efficiency of *Pichia pastoris* by Mutagenesis of the Mat-Alpha Secretion Leader

Carolyn Stark

**Faculty Mentors:** Joan and Geoff Lin-Cereghino

- **Introduction:** The yeast *Pichia pastoris* is extremely useful to the biotechnology industry because it can efficiently express and secrete foreign proteins. This ability allows manufacturers to produce and purify medically important proteins such as angiostatin and endostatin. Previous research has show that a small leader peptide, known as Mat alpha mating factor (Matα), can be attached to the N-terminus of a protein construct, where it acts as an “address label” that signals the *Pichia* cell to secrete the foreign protein into the surrounding culture medium.

- **Objective:** The goal of this project was to develop a stronger version of Matα, which would result in higher yields and more efficient secretion of heterologous proteins from *Pichia*.

- **Methods:** Using computer modeling of the Matα secondary structure, I discovered several sequences of amino acids in this gene which might play a role in the secretion pathway. I then used site-directed mutagenesis to create mutant *Pichia* strains which lacked these target sequences and tested their secretion efficiency using a reporter-gene assay.

- **Results and Conclusions:** Several mutant strains were found to have significantly greater secretion levels than wild-type *Pichia pastoris* cultures, indicating that the targeted amino acid sequences could play an essential role in the export pathway.

Beyond our Gates: Mobilizing community partnerships to improve physical activity opportunities for at-risk youth

Dara Tawarahara, Joey Gullikson, Dianna Snyder

**Faculty Mentor:** Lara Killick

Discussions around the health climate of the US have reached unparalleled levels of concern (Time, 2004). Research suggests that while physical activity rates are in decline, obesity and associated health problems such as diabetes, asthma and heart disease are rapidly increasing (WHO, 2000, 2004, 2008a). These observations have led the Surgeon General (2010) to conclude that we are in the midst of an obesity epidemic, which threatens the long-term health of our nation. However, studies suggest that the burden of this epidemic is being borne more heavily by particular groups in society, most notably our youth, low income and ethnic minority populations (WHO, 2008b). Our research project contributes to efforts to reverse these trends. We mobilized community partnerships to implement an 8-week after-school physical activity program at a high-need school in Stockton, CA. Our Tiger P.R.I.D.E (physical activity, recreation, inclusion, development & enjoyment) program was designed to improve the attendees' physical activity levels, their cognitive understanding of the importance of leading physically active lives and enjoyment of physical activities. This poster identifies the aims and objectives of Tiger P.R.I.D.E and evaluates the success of the program in providing quality physical activity opportunities for at-risk youth. The authors call for the increased mobilization of community partnerships to produce low-cost, sustainable activity programs in areas where cultural disparities in health are evident.
Variable diastereoselectivity in acylation of 2-substituted cyclohexanols
Jasper Visser
Faculty Mentor: V. Samoshin

The ratio of diastereomeric products A and B in acylation of 2-substituted cyclohexanols was found to depend dramatically on the nature of substituents, solvent and additives. Unusual inversion of diastereoselectivity upon change of a solvent or addition of tertiary amines was found for certain combinations of reactants and conditions.

$k_{1,2}(NC7) > 1$
Yeoil (Steve) Yun
Faculty Mentor: Sarah Merz

Originally derived from the idea of food webs of predator and prey, the relationship between digraphs and their competition graph has been a wonder in the world of mathematics since 1962. An exploration of (1,2)-step competition graphs and their relation with the number of isolated vertices. An introduction to the proof of $k_{1,2}(NC7) > 1$ beginning with simple examples of $k_{1,2}(P_n) = 1$ leading to a proof of a vital lemma used in the final proof that $k_{1,2}(NC7) > 1$. 
Golden Rule
Camille Brockett
Faculty Mentors: Marie Lee and Brett DeBoer

The Golden Rule, or the Ethic of Reciprocity is one of the most consistent and prevalent moral teaching throughout history.

Whenever possible I aim to create designs that inspire viewers to action. I knew I wanted to inspire and instill a positive message through my work and within the viewer. As I began to think of potential messages and causes to devote this project to, I came to the conclusion that the most basic, universal moral would be my focus.

The positivity and altruistic qualities of the Golden Rule embody a concern for the human experience. Its prevalence throughout history, the earliest versions dating back to 2000 BCE and the global span of this teaching is simply awe-inspiring.

Through the use of type, I emphasize the words and overall message from each culture. The use of gold is also symbolic, as historically it is seen as one of the purest metals and an ancient measurement for value and wealth.
Simple Resolutions

Anne LaFreniere

Faculty Mentors: Marie Lee and Brett DeBoer

Simple Resolutions is intended to bring awareness to ways of moving around San Francisco and to help reduce the amount of traffic, solve parking problems, and decrease pollution.

The purpose of Simple Resolutions is to promote an awareness of public transportation options and alternative modes of finding your way around the city of San Francisco. The posters and other promotional items will help influence residents and tourists of San Francisco to become more environmentally friendly, decrease traffic build-up, and reduce carbon emissions.

San Francisco is known for being a busy city, full of thousands of people trying to navigate their way through the grid of streets at the same time. Commuters in the Bay Area are slowed down a total of 60 hours a year due to traffic congestion, making traffic build-up in the San Francisco and the surrounding Bay Area the second worst in the nation. To help reduce traffic congestion, it is essential to create a campaign that focuses on the environmental impact of transportation because the city of San Francisco strives to be eco-friendly. Simple Resolutions is intended to bring awareness to ways of moving around San Francisco and to help reduce the amount of traffic, solve parking problems, and decrease pollution. The various modes of transportation that will be promoted for this campaign will include, but are not limited to biking, walking, cable cars, buses, trains, and cars.
Tying Torn Shoes
Teddy B Nishimura
Faculty Mentors: Marie Lee and Brett DeBoer

The problem with the public school system is that all students are not receiving a sufficient education for the pursuance of life-long learning. There is no single solution to fixing the shortcomings presented daily in our society’s classrooms, but there are steps we can take in ensuring that every child experiences an outstanding education. *Tying Torn Shoes* is a visual package with critical information that gives a deeper look into the issues at hand for the city of Stockton. Through the revamping of Dr. Lynn Beck’s, Dean of the School of Education at the University of the Pacific, “Unpacking Local Educational Concerns” and the photo capturing of rising Roosevelt Elementary students the project hopes to awaken the closed eyes of potential change makers.
Design for Japan

Cindy Quan and Nate Eisler

Faculty Mentors: Marie Lee and Brett DeBoer

The recent events in Japan have shocked the world and demonstrated its unpredictable nature, not only this but it has changed the lives of so many and as well inspired others to help to make a difference. This event showed us the unity, care and love that can exist in our world. It has demonstrated a compassion for one another, one that pays no attention to geological location or ethnicity, but purely on the respect for life and well-being. This compassion is what we are tapping into and striving to spread throughout the world. We are creating an eight poster series to engage the viewer into reacting with the same feeling and desire to help Japan and the world. We will do this through the symbolic representation of the actual event, increasing awareness and inspiring insight. We will juxtapose these four images with symbolic representations of hope and support, to inspire change, action and reaction.
Sammy Cakes
Taylor Sutton

Faculty Mentors: Marie Lee and Brett DeBoer

Promoting your business is promoting yourself. With the monopolization of large corporations around the world, it is becoming more and more difficult to find the quality and customer service that can be observed through the hard work that small businesses must display to keep up. Promotion then becomes key to making your small business stand out and succeed. Sammy Cakes demonstrates unique and eye-catching materials that will make this business stand out and succeed among today’s brutal competition.
A Journey of a Thousand Miles: Preservation of the Dimen Kam Culture

Anastasya Uskova

Faculty Mentors: Marie Lee and Brett DeBoer

In the summer of 2010, I spent five weeks with my professor, Marie Anna Lee, in the small village of Dimen, tucked away in the mountains of China's Guangzhou province. My purpose was to observe and document the ancient crafts practiced by the village's elderly artisan matriarchs, whose children had moved to cities and were not present to receive and perpetuate the traditions. As the artisans died, so did their unique techniques.

When I look back at that summer, I am struck with a sense of terrible beauty and contradiction. The struggles the Kam people endure, the treasured heritage they keep, and the limitless nature that surrounds them is unlike anything I'd ever experienced - and I believe that this experience is what can help the Kam preserve their heritage while still growing economically and technologically. My work, heavily photographic at this stage, centers around allowing the international community to interact with the Kam people without interrupting or exploiting them, through the use of photography, storytelling and the creation of a virtual cultural space.

Although by no means a solution to the issues the Kam will face over the next decade, immortalizing their culture in a neutral, international, digital space can allow for exposure without the physical deterioration associated with tourism. By bringing awareness to their cultural treasure, both internally and internationally, my hope is that the Kam will be able to rebuild their traditions in a modern context.
Bowls: Impressions of a Community
Shiloh Gastello

Faculty Mentors: Trent Burkett and Marie Lee

The bowl is one of the oldest and most widely used objects. Its form, which is open and rounded, conforms to the hands comfortably, while displaying its contents to the holder with utter and open honesty. Although its function may seem to be simple, and its contribution to our wellbeing overlooked, the bowl is still just as relevant today as it was thousands of years ago.

The bowl has been around for at least 18,000 years. The earliest bowls, found in graves, often contained essential foods such as rice and soup that nourished its owners. Since that time, bowls have functioned as ceremonial vessels and important gifts that unified nations. Communities would often share a bowl of food to show solidarity among their members. In many cultures, bowls were passed down for generations as heirlooms and protective symbols in communities. As long as humanity needs to sustain itself physically, the bowl will continue to be a permanent fixture in all communities as it has been for thousands of years.

My work reflects my respect for the bowl and its legacy through the intrinsic use of the formal elements including rhythm, repetition, and texture. The open form serves as an invitation to the viewer to hold a bowl and partake of the same hospitality offered to members of a community, while the rough bare clay recalls the earliest bowl's texture. The repetition of the bowls' shape and their close proximity to one another in a line creates a visual rhythm that hints on way societies organize themselves to protect and prosper as a whole.
Art and Afghanistan

Marie-Clare Teseder

Faculty Mentor: Jennifer Little

Ascending multiculturalism stands in the way of progress, whatever cultures exist — the inhabitants deserve the freedom to choose to follow said culture or be free of it. Nowhere is this need more noticeable than in the women of Afghanistan. Their notably nonexistent sights and sounds in the global culture are a loss to all. The old adage, “A picture is worth a thousand words” is at play in my decision to document my desires through the contemplative medium of photographic art, alongside my war-torn brother's photojournalism from Afghanistan. The result, I hope, is a stirring of the soul, a provocation to activity. Not only in the actual depictions of the horrid conditions which surround the little girls of Afghanistan, but the long-laden misconceptions we Westerners have had about the mysteries of the East (think provocateurs like Matisse's sexualization of the repressed Muslim woman played by the free white one). I feel a kinship towards all of my sex, and otherwise. I feel for the woman who wore the hijab out of necessity before I did for art's sake. I only ask that you do the same.
Junior Artist Statements

Eradication of a Mechanical Virus

Jessica Fong

Faculty Mentor: Merrill Schleier

“Eradication of a Mechanical Virus” is a series of prints that explores the power struggle between nature and man-made machines. It brings awareness to the destruction man-made machines have had on the natural world.

In the attempt to take control of organic processes, humans have created machines and altered the environment, going against a natural cycle. My work portrays nature’s reaction and need to reclaim autonomy. In spite of the devastating effects of the mechanized world, nature is able to adapt, purify, and thrive. The dialogic relationship between the natural and man-made is a power struggle for survival.

The printmaking processes of woodblock, etching, and monotype, combined with abstract imagery, are associated with balance and act as a pertinent medium to create this body of work. Physically, they involve restraint and agitation. Philosophically, they are a mesh between craft and fine art. Emotionally, they communicate tranquility and disarray. Creating the work through these processes reiterates the tension through physically and intuitively reflecting the dialogue between organic and mechanical.

“Eradication of a Mechanical Virus” is based on the study of machines and botany. Conceptual research on machine and plant imagery started with historical studies on the ancient Near East and California flora. Contemporary artists such as Swoon, Rauschenberg, Judd, and Hesse provided formal influences in their use of materials. They provided me with a vocabulary to show the frail structure of life while simultaneously exploring society’s perceptions of what is organic and what is manufactured.
As Long as You Look Fabulous

Jennifer Sese

Faculty Mentor: Merrill Schleier

Faceless figures are placed in a contemporary park setting with characteristic motifs of the Rococo: a cupid statue, a large fountain, and a tall, feathery tree. They are seen at leisure, play, or admiring each other. They wear contemporary attire; however, colors that are associated with masculinity or femininity are playfully switched around between the androgynous figures. Although the figures are arranged specifically, viewers are offered the opportunity to reframe them around in order to create new interactions. In addition, viewers are also given the opportunity to record their changes to the composition in a journal accompanying the work. Allowing viewers to interact with the figures sets up a work that creates relaxation, non-confrontation, and most of all, fun. By breaking the barrier of viewing artwork, viewers too are also simultaneously breaking barriers that revolve around how people perceive gender.

I was primarily influenced by the Rococo era. I utilize the warm palette and gestural figures of the Rococo drawings and paintings from well-known artists such as Fragonard and Watteau. I also utilize androgynous characteristics commonly seen in the figures of Matisse’s *The Dance* (1909). The combination of influences helps to emphasize the main theme of gender ambiguity without disturbing the audience. I break the stereotype of confrontational and sometimes grotesque approaches to conveying contemporary gender issues by welcoming the viewer to the artwork.
Junior Artist Statements

Second Shift Transference

Amanda Zimmerman

Faculty Mentor: Merrill Schleier

This series of color, digital photographs of still life objects is a narrative that expresses the historical and current connection that women have with the kitchen. For centuries, women have assumed and often struggled with their domestic roles as homemakers and primary nurturers. My intent with these photographs is not to convey these responsibilities as a burden, but to simply recognize their underlying presence as women go about their lives. I want this series to express the many sides of the inherited connection women have with household duties, and the various roles outside the home, including mother, student, and worker.

The book Mechanical Brides by Ellen Lupton was the inspiration for this body of work. She cites the research of Arlie Hochschild who showed that working, “women still were doing most of the housework, a burden assumed during the ‘second shift’ following a day of paid labor” (Lupton 18). Hochschild’s findings resonated with me because I have struggled with my own “second shift” since my son was born.

I also took formal inspiration from artist John Fredrick Peto, whose paintings included subject matter such as cryptic papers, broken items, and personal objects, which are both symbolic and autobiographical. In accord with Peto, I want my photographs to tell a story. To convey my struggle with balancing the different roles that I play as a woman, I deliberately place items such as broken eggs and smashed potatoes into my composition to create a sense of tension.
Automatic Tourniquet Project
Evan Angeli, Pei Hsin Cheng, Annie Cheung, Elysa Wadler
Faculty Mentor: James Eason

Tourniquet technology has remained relatively unchanged since the beginning of its usage. Though this technology is sufficient for the tourniquet to perform its function - aiding in the drawing of blood - hazards in the application of tourniquets pervade in even the best of modern hospitals. The most dangerous of the hazards regarding these tourniquets has been nurses’ forgetting to remove the tourniquet. The automatic tourniquet is designed to aid medical personnel in safely and efficiently drawing blood from a patient, eliminating the chance of a tourniquet being left on a patient too long which could lead to serious injury. The automatic tourniquet applies sufficient pressure for blood drawing, has an adjustable size, automatically releases the pressure after a predetermined period, includes a manual release as a fail-safe, and does not harm the patient or user. The automatic tourniquet uses the two-way shape memory Nitinol wire as a means of clamping the rubber tubing in place for the duration of drawing blood. After the tubing is pulled through the device, the user pushes a set button that holds the tubing in place and starts a timer. Once the timer’s duration has run out, a signal is sent to a small battery that provides a current to alter the shape of the wire. The second shape of the wire will be to release its hold on the tubing. There is also a manual release button that releases the tubing using the same mechanism but ignoring the timer’s duration.

Ergonomic Control System for a Powered Human Exoskeleton
Andrew Londgraf, Tyler Van Hensenbergen, Mike O'Brien, Kyle Glick
Faculty Mentor: James Eason

Mechanical exoskeletons allow human users to lift greater weights and experience less fatigue during physical activities. Human exoskeletons need to be, not only, lightweight, durable, and strong, but they also require a sophisticated control interface. When operating a human exoskeleton, the user should be able to control the mechanical limbs as if they were an extension of their own body. If the control system is not intuitive enough or improperly designed, the advantages of the exoskeleton can be severely diminished.

A team of senior Bioengineers at the University of the Pacific have taken on the task of improving the control system of a powered human exoskeleton arm. Using a custom designed control handle, the user can control the mechanical arm with ease. The handle utilizes force sensing resistors to detect pressures and movements of the operator's hand, which are then translated into mechanical movement. The control handle allows for flexion and extension in the elbow and shoulder joint, allowing the exoskeleton to mimic biological motion. The force sensors not only interpret motions of the arm, but also control a pneumatic system, allowing the exoskeleton to move at variable speeds.
The Smart Cane
Niharika Mandadi and Pooja Shah
Faculty Mentors: James Eason, Jeff Burmeister and Chi-Wok Lee

Ordinary walking canes are designed to aid a user in detecting objects which are 3-4 feet ahead of them on the ground. This is helpful when it comes to a path which lacks any obstacles above the ground; however, most paths always come equipped with interferences which make it more difficult for a blind patient to maneuver. The client here is one who can very easily run into an object, because their cane could not reach more than the span of 4 feet nor could their cane touch the ground and detect objects simultaneously. The cane designed uses an ultrasonic sensor which detects objects 3 meters in front of the user and 2 feet to the right, left, above and below the sensor. The ultrasonic sensor sends out a “PING” to an object and when an object is detected it returns a signal to the sensor. The reading that the sensor receives will be fed into the program “Basic Stamp 2,” a microcontroller, which will ultimately provide feedback to the user, in the form of a vibration, alerting them that an object is within the allotted distance. The ultrasonic sensor and microcontroller are mounted in the front, under the handle of the cane, stored neatly in a casing, while the vibration motor is placed in the handle itself, allowing the user to feel the alert quickly and efficiently. The cane is then tested on an artificially built pathway, detecting objects 3 meters in front and 2 meter below the sensor.

Infant Incubator Monitoring Device: Temperature and Humidity Sensors
James Toste, Roy Lee, Fanny Mui & Sneha Parmar
Faculty Mentor: James Eason

Preterm birth refers to the birth of an infant whose organs have not yet matured completely to allow for postnatal survival. Infants that are born prematurely run the risk of many short or long term complications, therefore it is essential that certain precautions are taken. Incubators help to reduce the risk of complications and ensure that the infant is placed in a controlled environment. In developing countries most incubators are donated in a condition that is not up to standard specifications. Therefore, many of the incubators provided to developing countries are not reliable in controlling temperature and humidity inside the incubator. This produces a risk of overheating and dehydration to the infant. In order to combat this problem we have designed monitoring sensors that detect the temperature and humidity inside the incubator. The temperature sensor incorporated in this device detects when temperature is out of the range of 34-38 degrees Celsius sending off a red LED light and an alarm to notify the users. The humidity sensor integrated into the monitoring device will trip a red LED light if the relative humidity drops below 30% inside the incubator. With the Infant Monitoring System developing countries will be able to have a second validation test for their incubators, therefore limiting deaths due to malfunctioning incubators.
New Gravity Thickener Tank, Water Reclamation Plant, Livermore, California

Kyle Accornero, Kelsi Oshiro, Courtney Supe

Faculty Mentors: Scott Merry, Mary Kay Camarillo, and Luke Lee

Representatives of the City of Livermore’s (CoL) Water Reclamation Plant (WRP) are currently planning to install a fourth digester to accommodate the city’s rapid growth, but are seeking for a more cost efficient alternative. The proposed solution is to install a Gravity Thickener (GT) system to aid in the solids handling process. The advantage of the GT is the possible increase in the percent solids sent to the digesters, thus yielding a potentially greater efficiency out of the digesters. The GT tank must be of sufficient size to create the necessary hydraulic residence time, yet small enough to fit within the limited existing space at the WRP. The design of the GT system includes the pumping and piping network to transport the flows to and from the GT, structural design of the cast-in-place, reinforced concrete GT tank, cost analysis of the system replacement, and a site plan detailing the layout of the new pumping and piping systems. The deliverables for this project include a written report stating the design and cost estimations of the GT design, drawings of the new piping systems and GT tank, and an oral presentation.

Lodi Grape Bowl Main Entrance & Accessibility Improvements

Shannon Barcal, Matthew Lemmon and Margaret Wild

Faculty Mentors: Scott Merry, Camilla Saviz, and Luke Lee

The historic Grape Bowl Stadium in Lodi, California was built under the Works Progress Administration of the Great Depression and was completed in 1940. The project provided a great boost for the local economy during the depression era and has served as the focal point of city events for 70 years, but it does not meet accessibility requirements set forth by the Americans with Disabilities Act of 1990.

The improvements planned for the Grape Bowl Stadium project include those required to achieve compliance with California accessibility standards and those necessary to increase the usability and accessibility of the stadium. The proposed improvements for the stadium have been split into two phases. Phase One renovations will achieve compliance with California accessibility standards which will utilize the money that the City of Lodi currently has available for the project.

The renovations for Phase One, which are being designed by Calimont, include: removal of a section of the earthen berm on the west end for the paving of an open plaza; installation of wheelchair accessible ramps; installation of wheelchair accessible seating; design of maintenance access roads; installation of a new scoreboard; foundations for new prefabricated buildings for ticket booths, concessions, and restrooms; and construction details and specifications. Project construction began in April 2011.
Civil Engineering – Senior Project Abstracts

Yolo Bypass Aquatic Restoration and Planning Implementation Project
Rene Guillen, William Grant, Noe Meza, and Michael Zubrzycki

Faculty Mentor: Gary Litton

The purpose of the Yolo Bypass Aquatic Restoration and Planning Implementation Project is to design a series of detention basins to facilitate research for investigating the de-methylation mechanisms important in the Yolo Bypass of California. The Yolo Bypass is 59,000 acres of floodplain and wildlife area located on the west side of the lower Sacramento River in Solano and Yolo counties. The primary purpose of the Yolo Bypass is to provide flood control for runoff generated from the Sacramento River watershed. Secondary purposes of the bypass include farming and wetland habitat.

Methylmercury (CH3Hg+) is a neurotoxin. Studies have shown that methylmercury contamination in aquatic ecosystems has led to diminished reproductive success of fish, fish-eating birds, and mammals. This has the potential to disrupt the ecosystem and reduce available food supplies, as well as cause human health problems. The Yolo Bypass contributes the highest levels, approximately eighty percent, of methylmercury to the Sacramento-San Joaquin Delta. Inorganic elemental mercury enters into the Yolo Bypass wetland through influent creeks that pass through the Yolo Bypass’s flooded fields. The mercury is methylated in these flooded fields and then discharged into the Delta. The purpose of this project is to design a series of detention basins that may be used to facilitate research to reduce methylmercury concentrations from the Yolo Bypass ecosystem.

The projects sponsors include the Department of Fish and Game, the Yolo Wildlife Area, the Central Valley Regional Water Quality Control Board, and the California Waterfowl Association.

The scope of work to accomplish the project includes:

- Preliminary planning and research;
- Field surveying and topographic mapping;
- Geotechnical analysis of site conditions and proposed construction;
- Environmental and hydraulic design of proposed basins;
- Facility design and document preparation; and
- Project management
Civil Engineering – Senior Project Abstracts

Natomas Pump Station No. 2 - Value-Engineered Alternative
Matthew Jesse, Andria Ellis, Vegerd Veskimagi
Faculty Mentors: Scott Merry, Camilla Saviz, and Luke Lee

The Natomas Basin, located near Sacramento, California, is subject to heavy rainfall that requires multiple pump stations and levees to contain and regulate water run-off into the Sacramento River. JVE Engineerings objective is to redesign Pump Station No.2 along the Garden Highway in order to fulfill flow needs while maintaining cost effectiveness for the relative load it is intended to bear. In 2006, foundation analysis revealed that the levee adjacent to Pump Station No.2 was susceptible to under-seepage. The levees in Natomas Basin are susceptible to seepage and under-seepage because the soil used to build the levee was dredged from the bottom of the Sacramento River. These materials consist of sands and gravels that easily transmit in water during flood conditions leading to eventual damage of the levee. During a storm, these conditions prompted emergency repair. The existing station was removed, and several hundred feet of the levee were excavated and reconstructed without existing plans to replace Pump Station No.2. The current design for this project, designed by Mead&Hunt, has an engineering estimate of roughly 9 million dollars. JVE Engineerings objective is to reduce these costs by redesigning the foundation and elevation of the pump station, re-evaluate the proposed weighted filters and grading done to the northern canal, select a pump (or pumps) that fulfill the flow requirements, and structurally redesign the proposed inlet and sump.

Renovations of the Amos Alonzo Stagg Memorial Stadium and Surrounding Facilities, University of the Pacific, Stockton, California
Linh Nguyen, Allison Ichikawa, Jeff Valeros, and Justin Pyun
Faculty Mentors: Scott Merry and David Fletcher (Professor Emeritus)

Cloud Engineering seeks to provide engineering design of renovations for the University of the Pacific’s Amos Alonzo Stagg Memorial Stadium. Proposed renovations include demolition of the existing stadium and replacement with a new soccer stadium having a smaller footprint. The site for the stadium will be regraded to a leveled surface and moved closer to the levee, which is located along the northern limit of the project. The soccer stadium will have an open field design with bleachers on western end of the field and grass berm on the eastern end, providing a seating ground for both the soccer field and the tennis courts. A new structure is proposed at the south end of the soccer field. The structure will be a two-story clubhouse that includes a VIP lounge, an equipment room, locker rooms, and restrooms. South of the stadium, the parking lot will be refurbished to increase parking capacity. Additional land along the eastern and southeastern limits of the project will be available for tennis courts and an additional swimming pool. The renovation aims to bring a better appeal and utilization of the space by the students, athletes, faculty, and alumni of the campus. Engineering services in support of these proposed improvements include: geotechnical, structural, water resources and environmental services. The scope of work to accomplish the project includes:
- Project Management
- Civil planning of site layout
- Geotechnical analysis of the site conditions
- Structural design of a two-story clubhouse
- Environmental compliance through CEQA.
- Design of water supply lines, storm water drainage and sewer drainage
New Pedestrian Bridge, University of the Pacific, Stockton, CA

Hunter Steers, Jeff Neuenburg, Ruben Solis

Faculty Mentors: Scott Merry, Luke Lee, and Hector Estrada

The University of the Pacific desires to create a more direct pedestrian route between the main campus to the south of the Calaveras River and the Pharmacy College that is located on the north side of the Calaveras River. Hence, the objective of this project is to design a new pedestrian/bicycle bridge across the Calaveras River that will connect these two portions of the campus. The design concept faced two major challenges. First, the United State Army Corps of Engineers has restrictions regarding penetrations in the levees that exist along the side of the Calaveras River as well placement of structural foundations within the base of the river. Second, an existing private parking lot and neighboring Brookside Drive create traffic flow pattern issues at the northern terminus of the bridge. To address these challenges, NSS proposes a 625-foot long clear-span, cable-stayed bridge that will extend from the lawn area in front of the Pharmacy College to the levee on the south side of the Calaveras River without significant penetrations in the levee or placement of structural columns within the defined limits of the river. The project consists of a 40-percent design level deliverable, including civil layout, structural modeling, and foundation design.
Security Aspects of IPv6

Thamer Alhajri

Faculty Mentor: Martin Maxwell

The internet is one of society's most influential cyber technologies, it practically surrounds everyone’s life, and the Internet Protocol (IP) has a large influence in the structure of the internet. The introduction of the internet was a phenomena; it reached every geographical area in the world with lightning speed. But the expansion of the internet could not have taken part as it did without IP being a major protocol of TCP/IP suit. The most recent version of IP is IPv4, this version has enhanced the power of the internet to allow a completely new level of use. IP has given the internet a new potential through the innovative applications that it allows users to utilize through the internet. Like all technology, the Internet gets reconstructed and reprogrammed to support more innovative technology, and this doesn’t leave behind IP. IPv4 has now been upgraded to the powerful new protocol called IPv6. My presentation will be describe different sections of the IPv6 protocol. I will cover topics such as what the IPv6 is, and why it is required. I will also articulate several advantages provided by IPv6 that IPv4 doesn’t provide its users. Overall the discussion will be centralized on the security aspects in regards of IPv6.

Netizar Social Networking Website

Michael Bruckel and Graham Heaton

Faculty Mentor: Michael Doherty

Netizar is a social networking web project developed by a small team for a client with commercial interests. The website at its core displays profile information to a network of friends and allows for a user to post content to either their own profile or to a friend’s profile. Netizar contains elements from several social networking websites, such as the core functionality and style of Facebook, the AJAX dynamics and feed design of Twitter, and the professional orientation of LinkedIn. What sets Netizar apart from other social networking sites is the built-in grouping functionality. Users can use predefined or user-created groups to “tag” profile information and posted content to groups. These groups are formed by users putting friends into a group or groups. The user's friends can then only see user content or profile information posted to their group. This allows users to have a tighter control of their social networking privacy.

The technical aspects of our project have been developed using PHP for server side scripting and Javascript for client side scripting. In addition, a database is required to store user information and store the permission settings that allow for group formation to be possible. By using these existing technologies, we are able to create a robust foundation for a social networking website.
San Joaquin County Health Services Website

Brendan Chan, Sharon Chavez, Tony Hoeurn, and Garret Miramontes

Faculty Mentor: Michael Doherty

This project was developed for the San Joaquin County Public Health Services to provide a means to use the web to analyze, map, and graph aggregated community health data and to make that data available to the general public. A database holds various health data about the county and a web interface supports queries over that data. The query results can be presented in a variety of formats, including charts, graphs and maps. The system was developed using a variety of open source tools and protocols, including MySQL, HTML, CSS, PHP, and Javascript.

Aerodynamically Accurate Aircraft Simulation

Douglas Frisbie

Faculty Mentor: Michael Doherty

We have developed an airplane simulator based on accurate simulation of the aerodynamics resulting from a realistic aircraft model. The aircraft is modeled by eight segments: fuselage, four wing segments, two tail segments and a rudder. The simulation computes the forces resulting from the airflow over each of these segments and uses those forces to determine the aircraft motion. The simulation is developed in C# and utilizes Microsoft’s XNA game development library for graphics and user interface. This allows the simulation to be deployed to both Windows computers and the XBOX 360.

The Right Spot for Your Furry Friend: Arrowpoint Kennel Intake Management System

Elysha R. Mayer

Faculty Mentor: Michael Doherty

The goal of this project is to design a pet-care facility management software for Arrowpoint Kennels. Arrowpoint is an animal boarding facility in Woodland, CA. In addition to overnight stays, the Kennel offers pet owners additional care options including pet baths and walks. Currently information about each client’s pet is recorded and kept in folders, with reservations for Kennel services noted on a weekly paper calendar. The owners currently use no computers in the management of their business. The Kennel would like to upgrade to an electronic records system. There are existing kennel software programs, which the owners have reviewed. Those available are expensive and have features that are not wanted, such as business advertising functions.

For the past two years, I worked at the Kennel during some weekends, school vacation times and summers. Therefore, I am familiar with the type of information that the Kennel owners require and record for each client, and their approach to tracking animal assignments to runs and cages. In addition, I talked with the owners about the level of software and hardware complexity they could manage and afford.

The computer application I designed is a database software system using html, php, javascript for the interface and mysql to interact with the database. Available functions include: entering new client records; searching client records; calculating receipts; listing daily work tasks; employee clock in and out; generating lists of daily medications by animal; and listing dog runs with assigned dog.
Zardoz – Gesture-Based Mouse Control
Travis Moy and Daniel Fedor-Thurman
Faculty Mentor: Michael Doherty

Zardoz is an alternative computer input method, allowing users to give mouse input through a webcam and hand gestures. It is customizable and designed to work in a variety of different lighting conditions. It is multiplatform running on both Windows and Linux operating systems.

The Evolution of Code Through Development of Multiple Websites
Parker Ruhstaller
Faculty Mentor: Michael Doherty

The use of design principles such as YAGNI (You ain’t gonna need it), DRY (Don’t repeat yourself), and KISS (Keep it simple, stupid!) are absolutely essential for re-using code on multiple projects. In website development, much code needs to be re-used, since elements such as (Registration, Login, Forgot Password, Commenting, etc.) are prevalent social networking features that initially take a lot of time to make, but can be re-used over and over. Not only do these principles improve the structure of the code, they make altering it much easier. What was originally proposed as a search engine for recipes, quickly turned into multiple website projects due to the re-use of code based upon the aforementioned principles.

Stockton Commons Web Portal
Jessica Semler and Kathryn Crader
Faculty Mentor: Michael Doherty

Stockton Commons is a web portal providing access to the many archival assets held by the University of the Pacific related to Stockton and the surrounding delta. The portal combines a meta-database containing all existing assets with an innovative query protocol. This protocol links the assets housed in the database into the map-based interface, enabling users to navigate the site temporally and spatially as well as by theme. Toolbars will also allow users to navigate by historical periods to highlight archival research associated with a particular range of dates (the Gold Rush period, for example). A thematic toolbar will allow users to select site features associated with particular themes, such as Historical Figures, Artists and Authors, Natural Landscapes, Social Spaces, Native Peoples and Immigrant Groups, and Routes through the Delta.

We plan to officially launch the site in Spring 2012. At that time, management of the project will shift to student and faculty teams housed in the Humanities Center. We will collaborate with local community groups and heritage/historical societies from the Delta region to facilitate their participation in the project, both by providing archives for inclusion and by sponsoring student/faculty research teams at their sites. Outreach efforts will begin to generate new projects for inclusion on the website, including workshops aimed at helping faculty design course assignments and independent student research projects. We also intend to work with the San Joaquin County Board of Education to develop K-12 lesson plans based on the site in accordance with California curriculum guidelines.
An Online Platform for Collaborative Network Monitoring

Huaguang Song

Faculty Mentor: Jinzhu Gao

This project addresses the problem of collaborative analysis in a distributed setting via a network security application. Network security analysis often requires accurate and timely results, which is very challenging to achieve in large dynamic networks with a single user. To address this issue by establish a set of collaboration guidelines for team coordination with distributed visualization tools. These collaboration guidelines cover the designs of coordination roles, workflow and collaborative environments. They are designed or selected based on related work from social science, teamwork theory, coordination theory, and visualization design. Then, apply them to generate a prototype system that facilitates collaborative visual analysis. According to the expert feedback acquired for assessing this approach, the propose directions for improving the efficiency of collaborative analysis. In this project, I developed a collaboration platform for network data analysis and visualization with the goal to support robust and efficient network detection and monitoring for complex attack scenarios.

APANTLI Data Collection System

Michael Yasutake

Faculty Mentor: Michael Doherty

We have developed a data collection and reporting system to support the APANTLI organization. APANTLI is a non-profit Stockton organization that assists at-risk students to increase their potential for success in academics and life. Collection and analysis of data describing their clients’ lives and circumstances is essential to the provision of appropriate services. Analysis and reporting of data is also essential to demonstrate progress and results in order to secure grants to fund the organization’s operations. Our solution automates APANTLI’s data collection and analysis process, which reduces the manual labor required, reduces the number of accidental data errors and increases the ability to extract useful and relevant information. The system leverages open source web and database technologies to provide the maximum benefit at the minimum cost.
Semi-Intelligent Wind Turbine
Robert Arriaga and Ahmen Al-shammasi
Faculty Mentor: Rahim Khoie

The project consists of a wind powered generator designed to charge a large DC battery capable of supplying up to 65 Watts of power to any number of electronic devices. The wind turbine is composed of a used treadmill motor, three 24 inch aluminum blades, and a standard free rotating mount attached to a 6 ft pipe and flat wooden base. The device is equipped with wind direction and speed sensors, as well as a power monitoring and management system. A small microprocessor handles the all of the data acquisition and wirelessly transmits the wind characteristics and power generation in real time over WiFi, as well as logs the data locally onto a microSD card. The purpose of the turbine is to keep the battery safely charged so that an array of sensors may be powered in remote locations. The implemented sensors could monitor a geographical location to determine the feasibility of installing a large scale wind or solar power plant, or perhaps monitor seismic activity. Our wind turbine would be able to power these additional sensors for long periods of time without need for human intervention or the need for individual sensor batteries. This would reduce the energy requirements, potential environmental hazards, and monetary costs associated with large batteries typical of sensor arrays. The wind turbine also has a backup battery system designed to allow for continuous monitoring of wind characteristics should low winds prevail for an extended period of time.

Photovoltaic Forecasting using a Sensor Network of Wireless Optical Cameras
Todd Heino and Rigel Taylan
Faculty Mentor: Rahim Khoie

As solar energy becomes a more popular means of power generation, the need for solar energy prediction tools also grows. Having the ability to predict future power generation capacity is an important step in developing a smarter power grid. An early warning system for times of low power could help to keep away blackouts by allowing electricity consumers to lower their power usage ahead of time. This project demonstrates the feasibility of a solar prediction system. The project is a working prototype which tracks clouds in order to predict future shadows over a photovoltaic panel. These shadows are what cause drops in power generation ability. The system uses two optical, wireless cameras to take pictures of the sky. Each camera is connected to a rechargeable battery and 10W solar panel to power the camera. The cameras transmit over wireless standard 802.11g to a router. These images are then received by a central computer which uses our own custom image detection software in order to predict the locations of clouds in the future. This software uses both C++ for the image detection and C# for the graphics user interface as well as OpenCV an open source computer vision library. It is our hope that the development of our small scale system will help to foster interest in such prediction systems and further help to incentivize green power production in the future.
Characterizing the Wind of the San Joaquin Valley

Kyle Pace and Lor Yang

Faculty Mentor: Rahim Khoie

The purpose of this project is to characterize the wind for the San Joaquin Valley. Wind power is the conversion of wind energy into usable forms such as electricity through the use of wind turbines. Wind power is a clean, renewable, and sustainable source of energy that consumes no fuel for continual operation, unlike fossil fuel. In order to take advantage of the wind and the potential that it provides, the potential of the wind in the area must be known.

The objectives in this project included (i) designing and constructing a self sustainable prototype to measure wind speed and direction, (ii) adapting wireless capabilities to transmit data from the prototype to a fixed location, (iii) presenting the data in a friendly graphical user interface, and (iv) interpreting the final results.

The project was implemented using a three cup and vane anemometer system that has two internal reed switches that send electrical pulses when a magnet passes over each switch. The speed was calculated using the rate at which the pulses occurred during one complete revolution of the cups in reference to one of the reed switches. The direction was based on the phase delay between the two switch occurrences. The electrical pulses were processed through an Arduino Pro microcontroller board to calculate the speed and direction. The data was then transmitted via Bluetooth to a computer to display the data in a graphical user interface. The system was powered by an external battery and charged by a solar panel.

Developing a Sensor Network for Applications in Structural Health Monitoring

Samuel Winlock and Alan Joe

Faculty Mentor: Rahim Khoie

The bridge has always been one of man’s greatest advancements in transportation and many people now rely heavily on them in their everyday travels. The collapse of a bridge can be a catastrophic event that can cost millions of dollars to repair. Structural health monitoring is a technique used to prevent collapses by observing the bridge’s natural response to external forces and detecting any changes that might indicate damage. The purpose of the project is to develop a network of sensors designed to gather data necessary for structural health monitoring of a bridge. Two nodes on the bridge collect vibration data and wirelessly transmit the data to a computer for post transmission processing and display. Each node consists of a microprocessor which samples data from accelerometers in order to capture the vibration data. The nodes are powered by batteries that are recharged by solar cells. This type of sensor network allows early damage detection so repairs can be made before the bridge fails. The pro-active technique of structural health monitoring saves the time and money of rebuilding the entire bridge if damage were to go unnoticed.
Fluid Flow Aeration Tank
Robert Berry, Steven Cai, Carl Weinstein
Faculty Mentor: Kyle Watson

Fluid mechanics is a fundamental engineering course that engineers of several disciplines are required to take. As mechanical engineers, one can undoubtedly expect the need to work with fluids at some point in their careers. With that, the construction of a unique fountain will lead to a better understanding of some concepts such as fluid flow, specific fluid properties, and buoyancy. Incorporated will be concepts and knowledge from various engineering topics such as mechatronics, mechanics, electric circuits, and computer-aided manufacturing. The complete display is comprised of two tanks. A tall, vertical tank contains a viscous fluid where air bubbles are injected into it through a series of solenoids controlled by a microcontroller. These bubbles coordinate to form letters, numbers, and shapes. A flat, horizontal tank has water continuously flowing through it with air bubbles streaming through it. Magnetic shapes are inside the tank for users to manipulate to observe its particular streamline properties with the reaction from the air bubbles in the fluid.

Powered Human Exoskeleton
Brad Road
Faculty Mentor: Kyle Watson

The goal of this project was to create a powered human exoskeleton. The intent was that a user of this product would be able to strap on a backpack, and control a mechanical arm, which would allow them to lift loads which would otherwise be difficult to lift. The mechanical arm was intended to shadow the wearer’s movement, so as to make the use of the exoskeleton as simple and ergonomic as possible. To accomplish this, a system of pneumatic cylinders was devised to power a mechanical skeleton, which was then mounted on a backpack frame. The pneumatics are controlled by a simple electrical system which is controlled by the user. This project was a success, and the system allows the wearer to lift the objective load easily and without fatigue. As well as the system meeting the power requirements, it is also fairly easy to control.
## Presenter Index

<table>
<thead>
<tr>
<th>Session</th>
<th>Student Presenter</th>
<th>Project Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering Senior Projects April 30</td>
<td>Kyle Accornero</td>
<td>New Gravity Thickener Tank, Water Reclamation Plant, Livermore, California</td>
<td>67</td>
</tr>
<tr>
<td>Poster Session Poster #7 6:00-8:00</td>
<td>Kimiko Agari</td>
<td>Expression of spider silk proteins MaSp1, PySp2, and TuSp1 in <em>Pichia pastoris</em></td>
<td>31</td>
</tr>
<tr>
<td>Oral Session III Room 215 6:50-7:10</td>
<td>Cetoya Alexander</td>
<td>The Emperor is my distant cousin: Religion &amp; Japanese history</td>
<td>19</td>
</tr>
<tr>
<td>Computer Science Senior Projects April 30</td>
<td>Thamer Alhajri</td>
<td>Security Aspects of IPv6</td>
<td>71</td>
</tr>
<tr>
<td>Oral Session I Room 211 5:00-5:20</td>
<td>David Allen</td>
<td>Comprehensive Immigration Reform: A examination of systemic failures in US immigration policy</td>
<td>19</td>
</tr>
<tr>
<td>Poster Session Poster #36 6:00-8:00</td>
<td>Victoria Almague</td>
<td>TigerLeaks</td>
<td>32</td>
</tr>
<tr>
<td>Electrical/Computer Engineering Senior Projects April 30</td>
<td>Ahmen Al-shammasi</td>
<td>Semi-Intelligent Wind Turbine</td>
<td>75</td>
</tr>
<tr>
<td>Poster Session Poster #20 6:00-8:00</td>
<td>Rojin Amiri</td>
<td>Regulation of Myosin phosphatase by PHI 1</td>
<td>31</td>
</tr>
<tr>
<td>Poster Session Poster #36 6:00-8:00</td>
<td>Alexander Anderson</td>
<td>TigerLeaks</td>
<td>32</td>
</tr>
<tr>
<td>Oral Session I Room 211 5:40-6:00</td>
<td>Petra Anderson</td>
<td>Historical Context and the Elucidation of a New Musical Whole in Heroes’ Salute: A Musical Tribute to Veterans</td>
<td>20</td>
</tr>
<tr>
<td>Bioengineering Senior Projects April 30</td>
<td>Evan Angeli</td>
<td>Automatic Tourniquet Project</td>
<td>65</td>
</tr>
<tr>
<td>Electrical/Computer Engineering Senior Projects April 30</td>
<td>Robert Arriaga</td>
<td>Semi-Intelligent Wind Turbine</td>
<td>75</td>
</tr>
<tr>
<td>Oral Session II Room 214 5:00-5:20</td>
<td>Jenna Babione</td>
<td>The Values Communicated to Society on MTV’s Jersey Shore and its Effects on People’s Behaviors and Beliefs: Not Your Average Reality Television</td>
<td>20</td>
</tr>
<tr>
<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Oral Session III</td>
<td>Andrew Basham</td>
<td>Crosiers &amp; Communists: The Catholic Church and the Overthrow of Communism</td>
<td>21</td>
</tr>
<tr>
<td>Civil Engineering Senior Projects</td>
<td>Shannon Barcal</td>
<td>Lodi Grape Bowl Main Entrance &amp; Accessibility Improvements</td>
<td>67</td>
</tr>
<tr>
<td>Mechanical Engineering Senior Projects</td>
<td>Robert Berry</td>
<td>Fluid Flow Aeration Tank</td>
<td>77</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Sejal Bhayani,</td>
<td>CPI-17 Likes To Move It Move It!</td>
<td>32</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Aryan Bimar,</td>
<td>In Government We Trust: Or Do We?</td>
<td>33</td>
</tr>
<tr>
<td>Art &amp; Design Show</td>
<td>Camille Brockett</td>
<td>Golden Rule</td>
<td>54</td>
</tr>
<tr>
<td>Computer Science Senior Projects</td>
<td>Michael Bruckel</td>
<td>Netizar Social Networking Website</td>
<td>71</td>
</tr>
<tr>
<td>Oral Session II</td>
<td>Christine Burke</td>
<td>The Effects of Mass Media on Audience Perception of People with Disabilities</td>
<td>21</td>
</tr>
<tr>
<td>Mechanical Engineering Senior Projects</td>
<td>Steven Cai</td>
<td>Fluid Flow Aeration Tank</td>
<td>77</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Krishly Cantarero</td>
<td>Morphological specializations for low-frequency hearing in túngara frogs</td>
<td>33</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Edgar Cardoza</td>
<td>The Effects of Media Exposure on Cognition and Attitudes Towards War</td>
<td>34</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Edgar Cardoza</td>
<td>“SmartPhone” Pedometer Validation</td>
<td>34</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Andrew Carrillo</td>
<td>Stress Reactions to War Narratives</td>
<td>35</td>
</tr>
<tr>
<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Gracie Castillo</td>
<td>Function of the vocal folds in the treefrog <em>Leptopelis flavomaculatus</em></td>
<td>35</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Connie Castro</td>
<td>Follow the Leader: A Analysis of Gender Behavior</td>
<td>36</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Brendan Chan</td>
<td>San Joaquin County Health Services Website</td>
<td>72</td>
</tr>
<tr>
<td>Oral Session II</td>
<td>Chris Chang</td>
<td>Perception of Internet Health Information and Health Professionals</td>
<td>22</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Sharon Chavez</td>
<td>San Joaquin County Health Services Website</td>
<td>72</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Julia Chen</td>
<td>Variation in stem and calyx trichomes in perennial <em>Monardella</em> (Lamiaceae)</td>
<td>36</td>
</tr>
<tr>
<td>Bioengineering</td>
<td>Pei Hsin Cheng</td>
<td>Automatic Tourniquet Project</td>
<td>65</td>
</tr>
<tr>
<td>Bioengineering</td>
<td>Annie Cheung</td>
<td>Automatic Tourniquet Project</td>
<td>65</td>
</tr>
<tr>
<td>Poster Session</td>
<td>James Chun</td>
<td>Cracking the Shell</td>
<td>37</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Nashay Cole</td>
<td>To Protest or Not To Protest – Assessing the Effects of Framing on People’s Attitudes Towards Protesting</td>
<td>37</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Zak Conger</td>
<td>Can Exposure to Media Change your Opinion about the War?</td>
<td>50</td>
</tr>
<tr>
<td>Oral Session II</td>
<td>Monica Cortez-Guardado</td>
<td>The Gendered Lives of the Eighteenth Century in Art: Two Portraits by Henry Benbridge</td>
<td>22</td>
</tr>
<tr>
<td>Oral Session II</td>
<td>Theresa Cortez-Guardado</td>
<td>Nancy Spero’s Maenad: Reimagining Feminism, Does it Work?</td>
<td>23</td>
</tr>
<tr>
<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Cynthia Co Ting Keh</td>
<td>Investigation of Metal-Binding Activity of Spider Coating Peptide (SCP-1)</td>
<td>38</td>
</tr>
<tr>
<td>Poster #14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Marvin Cotton</td>
<td>The Effect of Music on Athletic Performance</td>
<td>38</td>
</tr>
<tr>
<td>Poster #28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science Senior</td>
<td>Kathryn Crader</td>
<td>Stockton Commons Web Portal</td>
<td>73</td>
</tr>
<tr>
<td>Projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Luke Crawford</td>
<td>Generating Digital Geologic Maps in GIS from Preexisting Legacy Format Data</td>
<td>39</td>
</tr>
<tr>
<td>Poster #30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Session II</td>
<td>Lorna Crenshaw</td>
<td>Strengthening the Chinese Dragon: Building Economic Power Through International</td>
<td>23</td>
</tr>
<tr>
<td>Room 214</td>
<td></td>
<td>Investment</td>
<td></td>
</tr>
<tr>
<td>5:20-5:40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Session III</td>
<td>Elizabeth Croisetiere</td>
<td>Comfort Women: Sexual slavery by the Japanese Imperial Army during World War II</td>
<td>24</td>
</tr>
<tr>
<td>Room 215</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-6:20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Weilan Cui</td>
<td>Frequency range of hearing in African frogs</td>
<td>51</td>
</tr>
<tr>
<td>Poster #6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art &amp; Design Show</td>
<td>Nate Eisler</td>
<td>Design for Japan</td>
<td>57</td>
</tr>
<tr>
<td>6:00-9:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>Andria Ellis</td>
<td>Natomas Pump Station No. 2 - Value-Engineered Alternative</td>
<td>69</td>
</tr>
<tr>
<td>Senior Projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Lauren Epperson</td>
<td>Polyploidy in T.laxa and Geographic Distribution</td>
<td>39</td>
</tr>
<tr>
<td>Poster #10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Palwasha Etimadi</td>
<td>The Effects of Media Exposure on Cognition and Attitudes Towards War</td>
<td>34</td>
</tr>
<tr>
<td>Poster #38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Session I</td>
<td>Noah Fang</td>
<td>Organic Synthesis and Theoretical Basicity Calculations of Oligopeptides</td>
<td>24</td>
</tr>
<tr>
<td>Room 211</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:30-6:50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art &amp; Design Show</td>
<td>Jessica Fong</td>
<td>Eradication of a Mechanical Virus</td>
<td>62</td>
</tr>
<tr>
<td>6:00-9:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Computer Science Senior Projects April 30</td>
<td>Douglas Frisbie</td>
<td>Aerodynamically Accurate Aircraft Simulation</td>
<td>72</td>
</tr>
<tr>
<td>Poster Session Poster #25 6:00-8:00</td>
<td>Emily Frost</td>
<td>The Effects of Negative Political Advertising: How Negative Is Too Far</td>
<td>39</td>
</tr>
<tr>
<td>Oral Session I Room 211 6:00-6:20</td>
<td>Jane Frost</td>
<td>Gender-Bending: Claude Cahun and Masculine Identity</td>
<td>25</td>
</tr>
<tr>
<td>Poster Session Poster #46 6:00-8:00</td>
<td>Ana Garcia</td>
<td>Is Reality Television Becoming Your Reality?</td>
<td>40</td>
</tr>
<tr>
<td>Art &amp; Design Show 6:00-9:00</td>
<td>Shiloh Gastello</td>
<td>Bowls: Impressions of a Community</td>
<td>60</td>
</tr>
<tr>
<td>Bioengineering Senior Projects April 30</td>
<td>Kyle Glick</td>
<td>Ergonomic Control System for a Powered Human Exoskeleton</td>
<td>65</td>
</tr>
<tr>
<td>Poster Session Poster #42 6:00-8:00</td>
<td>Erika Gloria</td>
<td>Forced Compliance, Cognitive Dissonance, and Attitudes</td>
<td>40</td>
</tr>
<tr>
<td>Civil Engineering Senior Projects April 30</td>
<td>William Grant</td>
<td>Yolo Bypass Aquatic Restoration and Planning Implementation Project</td>
<td>68</td>
</tr>
<tr>
<td>Poster Session Poster #46 6:00-8:00</td>
<td>Leclutus Griffith</td>
<td>Is Reality Television Becoming Your Reality?</td>
<td>40</td>
</tr>
<tr>
<td>Poster Session Poster #15 6:00-8:00</td>
<td>Joelle Guanzon</td>
<td>Exploring the Function of Egg Case Protein-3, A Novel Protein Found In Spider Egg Case Silk Fibers</td>
<td>41</td>
</tr>
<tr>
<td>Poster Session Poster #2 6:00-8:00</td>
<td>Gurbi Gudial</td>
<td>Variation in stem and calyx trichomes in perennial Monardella (Lamiaceae)</td>
<td>36</td>
</tr>
<tr>
<td>Civil Engineering Senior Projects April 30</td>
<td>Rene Guillen,</td>
<td>Yolo Bypass Aquatic Restoration and Planning Implementation Project</td>
<td>68</td>
</tr>
<tr>
<td>Poster Session Poster #47 6:00-8:00</td>
<td>Joey Gullikson</td>
<td>Beyond our Gates: Mobilizing community partnerships to improve physical activity opportunities for at-risk youth</td>
<td>52</td>
</tr>
<tr>
<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Oral Session III</td>
<td>Gloria Gunn</td>
<td>The Process of Othering: Relations Between Stocktonians and Pacificans</td>
<td>25</td>
</tr>
<tr>
<td>Room 215</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:00-5:20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Steve Han</td>
<td>S0ng synchronization in female-female duets of Klosss gibbons (<em>Hylobates klossii</em>)</td>
<td>41</td>
</tr>
<tr>
<td>Poster #11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>Graham Heaton</td>
<td>Netizar Social Networking Website</td>
<td>71</td>
</tr>
<tr>
<td>Senior Projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Jamie Hee</td>
<td>To Protest or Not To Protest – Assessing the Effects of Framing on People’s Attitudes Towards Protesting</td>
<td>37</td>
</tr>
<tr>
<td>Poster #41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical/Computer Engineering</td>
<td>Todd Heino</td>
<td>Photovoltaic Forecasting using a Sensor Network of Wireless Optical Cameras</td>
<td>75</td>
</tr>
<tr>
<td>Senior Projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Alixandria Henley</td>
<td>TigerLeaks</td>
<td>32</td>
</tr>
<tr>
<td>Poster #36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>David Hernandez</td>
<td>To Protest or Not To Protest – Assessing the Effects of Framing on People’s Attitudes Towards Protesting</td>
<td>37</td>
</tr>
<tr>
<td>Poster #41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Sarah Hidalgo</td>
<td>Forced Compliance, Cognitive Dissonance, and Attitudes</td>
<td>40</td>
</tr>
<tr>
<td>Poster #42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Chi Ho</td>
<td>Frequency range of hearing in African frogs</td>
<td>51</td>
</tr>
<tr>
<td>Poster #6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster Session</td>
<td>Christine Ho</td>
<td>Direct Usage of Taq Polymerase in Live <em>E. coli</em> for PCR</td>
<td>48</td>
</tr>
<tr>
<td>Poster #19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>Tony Hoeurn</td>
<td>San Joaquin County Health Services Website</td>
<td>72</td>
</tr>
<tr>
<td>Senior Projects</td>
<td></td>
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<td>Kris Kiriu</td>
<td>TigerLeaks</td>
<td>32</td>
</tr>
<tr>
<td>Poster Session</td>
<td>Justin Kozoski</td>
<td><em>Synthesis of Thiazole Orange derivatives as DNA G-quadruplex binding ligands</em></td>
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<td>Poster Session</td>
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<td>Expression of spider silk proteins MaSp1, PySp2, and TuSp1 in <em>Pichia pastoris</em></td>
<td>31</td>
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<td>Art &amp; Design Show</td>
<td>Anne LaFreniere</td>
<td>Simple Resolutions</td>
<td>55</td>
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<td>The Histidine-rich C-terminus of the peptide SCP-1 confers metal binding ability</td>
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<td>Synthesis of nucleobase-calix[4]arene conjugates and evaluation of their self-assembly ability using NMR</td>
<td>43</td>
</tr>
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<td>Poster Session</td>
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<td>Cracking the Shell</td>
<td>37</td>
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<td>Exploring the Function of Egg Case Protein-3, A Novel Protein Found In Spider Egg Case Silk Fibers</td>
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<td>Project Title</td>
<td>Page</td>
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<td>Bioengineering Senior Projects April 30</td>
<td>Roy Lee</td>
<td>Infant Incubator Monitoring Device: Temperature and Humidity Sensors</td>
<td>66</td>
</tr>
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<td>Civil Engineering Senior Projects April 30</td>
<td>Matthew Lemmon</td>
<td>Lodi Grape Bowl Main Entrance &amp; Accessibility Improvements</td>
<td>67</td>
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<td>Oral Session I Room 210 5:20-5:40</td>
<td>Kristal Leonard</td>
<td>Migrant Women Workers in China</td>
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<td>Benedict Leong</td>
<td>Alternative Currencies, Bane or Boon?</td>
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<td>Nick Leon-Guerrero</td>
<td>Expression of the ECP-2 C-Terminus in Latrodectus Hesperus</td>
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<td>The Histidine-rich C-terminus of the peptide SCP-1 confers metal binding ability</td>
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<td>Andrew Londgraf</td>
<td>Ergonomic Control System for a Powered Human Exoskeleton</td>
<td>65</td>
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<td>Daniel Lu</td>
<td>Vitamin D3 Inhibits RAD51 in Human Breast Cancer</td>
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<td>Gender, Assertive Communication and Use of Subtext</td>
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<td>Lauren Ma</td>
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<td>The Smart Cane</td>
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<td>Session</td>
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<td>Project Title</td>
<td>Page</td>
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<td>Computer Science Senior Projects</td>
<td>Elysha R. Mayer</td>
<td>The Right Spot for Your Furry Friend: Arrowpoint Kennel Intake Management System</td>
<td>72</td>
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<td>April 30</td>
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<td>Gabriella McDaniel</td>
<td>Aftermath of sulfur mining: The fate of toxins in a watershed in Oakland, Ca</td>
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<td>Noe Meza</td>
<td>Yolo Bypass Aquatic Restoration and Planning Implementation Project</td>
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<td>April 30</td>
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<td>Sarah Miceli</td>
<td>Made in________, by Your Child</td>
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<td>Stress Reactions to War Narratives</td>
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<td>Garret Miramontes</td>
<td>San Joaquin County Health Services Website</td>
<td>72</td>
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<td>April 30</td>
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<td>Mongoose</td>
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<td>Travis Moy</td>
<td>Zardoz – Gesture-Based Mouse Control</td>
<td>73</td>
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<td>April 30</td>
<td></td>
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<td>Fanny Mui</td>
<td>Infant Incubator Monitoring Device: Temperature and Humidity Sensors</td>
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<td>Tejas Mulye</td>
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<td>In Government We Trust: Or Do We?</td>
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<td>Project Title</td>
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<td>Angela Myers</td>
<td>Women’s Body Dissatisfaction Due to Exposure to Magazines</td>
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<td>Maria Nattestad</td>
<td>Analysis of the 5’Untranslated Region (5’UTR) of the Alcohol Oxidase 1 Gene as a Regulator of Translation in <em>Pichia pastoris</em></td>
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<td>Jeff Neuenburg</td>
<td>New Pedestrian Bridge, University of the Pacific, Stockton, CA</td>
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<td>Variation in stem and calyx trichomes in perennial <em>Monardella</em> (Lamiaceae)</td>
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<td>Nick Ng</td>
<td>Investigation of Metal-Binding Activity of Spider Coating Peptide (SCP-1)</td>
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<td>Investigation of the Structural Role and Function of Egg Case Protein-2 (ECP-2) in <em>Latrodectus hesperus</em></td>
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<td>Cracking the Shell</td>
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<td>Renovations of the Amos Alonzo Stagg Memorial Stadium and Surrounding Facilities, University of the Pacific, Stockton, California</td>
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<td>Art &amp; Design Show</td>
<td>Teddy B Nishimura</td>
<td>Tying Torn Shoes</td>
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<td>Paul Nocito</td>
<td>Can Exposure to Media Change your Opinion about the War?</td>
<td>50</td>
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<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
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<td>-------------------------------------</td>
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<td>Kelsi Oshiro</td>
<td>New Gravity Thickener Tank, Water Reclamation Plant, Livermore, California</td>
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<td>Kyle Pace</td>
<td>Characterizing the Wind of the San Joaquin Valley</td>
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<td>Poster Session Poster #2 6:00-8:00</td>
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<td>Mary Paduano</td>
<td>Frequency range of hearing in African frogs</td>
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<td>Raymond Pandez</td>
<td>The Histidine-rich C-terminus of the peptide SCP-1 confers metal binding ability</td>
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<td>Sneha Parmar</td>
<td>Infant Incubator Monitoring Device: Temperature and Humidity Sensors</td>
<td>66</td>
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<td>Poster Session Poster #21 6:00-8:00</td>
<td>Jalpa Patel</td>
<td>CPI-17 Likes To Move It Move It!</td>
<td>32</td>
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<td>Frances Pham</td>
<td>Direct Usage of <em>Taq</em> Polymerase in Live <em>E. coli</em> for PCR</td>
<td>48</td>
</tr>
<tr>
<td>Poster Session Poster #40 6:00-8:00</td>
<td>Christina Pheng</td>
<td>Follow the Leader: A Analysis of Gender Behavior</td>
<td>36</td>
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<tr>
<td>Poster Session Poster #26 6:00-8:00</td>
<td>Bart Platow</td>
<td>Personality Traits as Predictors of Video Game Use</td>
<td>48</td>
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<tr>
<td>Session</td>
<td>Student Presenter</td>
<td>Project Title</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------</td>
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<td>-------------------------------------------------------------------------------</td>
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<td>Oral Session III</td>
<td>Danielle Procope</td>
<td>The African American Slave Narrative and their Contribution to English Literature</td>
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<td>Powered Human Exoskeleton</td>
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## Notes

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<th>Project Title</th>
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<td>Stockton Commons Web Portal</td>
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<td>As Long as You Look Fabulous</td>
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<td>Huaguang Song</td>
<td>An Online Platform for Collaborative Network Monitoring</td>
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<td>Improving Secretion Efficiency of Pichiaa pastoris by Mutagenesis of the Mat-Alpha Secretion Leader</td>
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<td>New Gravity Thickener Tank, Water Reclamation Plant, Livermore, California</td>
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<td>Sammy Cakes</td>
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<td>Photovoltaic Forecasting using a Sensor Network of Wireless Optical Cameras</td>
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<td>Natomas Pump Station No. 2 - Value-Engineered Alternative</td>
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<td>Project Title</td>
<td>Page</td>
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<td>Carl Weinstein</td>
<td>Fluid Flow Aeration Tank</td>
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<td>Erik West</td>
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<td>Lodi Grape Bowl Main Entrance &amp; Accessibility Improvements</td>
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<td>Nyika Williams</td>
<td>The Effect of Music on Athletic Performance</td>
<td>38</td>
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<td>Samuel Winlock</td>
<td>Developing a Sensor Network for Applications in Structural Health Monitoring</td>
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<td>The Perceived Credibility of Online and Print Sources</td>
<td>30</td>
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<td>Characterizing the Wind of the San Joaquin Valley</td>
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<td>APANTLI Data Collection System</td>
<td>74</td>
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<td><strong>Sherry Ziegler</strong></td>
<td>In Government We Trust: Or Do We?</td>
<td>33</td>
</tr>
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<td>Art &amp; Design Show</td>
<td><strong>Amanda Zimmerman</strong></td>
<td>Second Shift Transference</td>
<td>64</td>
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<tr>
<td>Civil Engineering Senior Projects</td>
<td><strong>Michael Zubrzycki</strong></td>
<td>Yolo Bypass Aquatic Restoration and Planning Implementation Project</td>
<td>68</td>
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<td><strong>Ray Zulueta</strong></td>
<td>Personality Traits as Predictors of Video Game Use</td>
<td>48</td>
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