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<td>ACHIEVING DEEP DECARBONIZATION OF THE GLOBAL ECONOMY: ENGINEERING AND POLICY</td>
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<td>David Victor</td>
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<td>Laurel Riek</td>
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Map — Poster Session 42–43
There is now a widespread technical agreement that stopping global climate change requires essentially zero emissions of carbon dioxide and other warming gases. Much less agreeable has been a political strategy for achieving that goal. This talk will focus on the technology that could likely scale in the real world to achieve zero global emissions. It will also focus on strategies that leading jurisdictions, such as California, could use to accelerate the pace of global decarbonization.

ABOUT: DEEP DECARBONIZATION INITIATIVE

The mission of the UC San Diego Deep Decarbonization Initiative is to help guide a transition in the global economy toward net-zero carbon emissions. The aim is to help real societies link the best science and technology with politically realistic economic strategies for putting new energy systems into place on the scale required to make a difference in global carbon emissions while meeting the energy needs of all of humanity. To accomplish this goal, the Deep Decarbonization Initiative pursues research from the combined perspectives of the social sciences, engineering and the physical and biological sciences. The Initiative organizes research across academic disciplines that engage energy industry officials, elected officials and other policy makers.
Robots are no longer separated from people by cages. They are now entering our daily lives - in the home and on the road, in offices and in hospitals. To operate proximately with people, robots need the ability to dynamically understand and model human activities, understand their context, and select appropriate actions. They also need to work with and learn from people longitudinally, in fluent and contingent ways. My research team explores these topics in depth, and designs algorithms for robots able to achieve these goals. There are many applications of our work, including in neurorehabilitation, critical care, healthy aging, and manufacturing. This talk will highlight several recent projects in these areas.

ABOUT: CONTEXTUAL ROBOTICS INSTITUTE

The Contextual Robotics Institute at UC San Diego aims to advance the research required to develop useful robotic systems for the public good that sense the environment around them; learn from experience and situational awareness; and act autonomously to assist humans in a course of action. The Institute advances contextual robotics through fundamental grand challenge research; applied-research projects; and education programs that provide the talent and innovation necessary to establish San Diego / Cali Baja as a leading robotics hub.

contextualrobotics.ucsd.edu
The sense of touch has great power to elicit thoughtful or emotional responses (pleasant or unpleasant), and to convey information. While human culture is replete with artifacts that interface with the senses of sight, hearing, taste, and smell, objects designed to convey information or trigger emotion by interfacing with the sense of touch represent an open area for investigation. My research group is developing soft materials that can simulate different tactile sensations: rough or smooth, hot or cold, soft or hard, or even slimy. We can then use virtual reality and wearable haptic interfaces to transduce these signals to a user. The key innovative element in our work is the development of electroactive polymers and other soft materials that form conformal mechanical interfaces with human skin. This work leverages our experience in stretchable organic semiconductors, wearable sensors, and nanofabrication, and represents an interface between materials engineering and psychophysics. We envision applications in robotic surgery and surgical training, education, and simulated environments for consumer electronics.

Posters from the Center for Wearable Sensors are listed on page 11.

ABOUT: CENTER FOR WEARABLE SENSORS

The Center for Wearable Sensors brings together top UC San Diego faculty, students and researchers in chemical sensors and biosensors, electrophysiological monitoring, soft electronics and stretchable materials, sensors-electronics integration and fabrication, glucose monitoring, wireless communications, on-body energy harvesting, ultra-low-power instrumentation, data processing, data fusion, and machine learning. This coordinated environment fosters the acceleration of research and system development, and it helps prepare affiliated students to become leaders in the wearable systems workforce.

cws.ucsd.edu
Contemporary analytical algorithms are often focused on functionality and accuracy with system performance as an afterthought. As their use/scale grows and the computing platforms become diverse, spanning from servers and desktops to smartphones and internet of things (IoT) devices, functionality is not just about algorithmic efficiency and accuracy, but also practicality on real-world computing machines. One-size-fits-all solutions will not meet the physical needs of emerging analytical application scenarios. In this talk, I will present our research on novel automated computing frameworks that bring hardware into the loop of designing scalable inference algorithms and learning systems, supported by both theoretical and practical results. Proof-of-concept evaluations on diverse datasets, applications, algorithms, and platforms demonstrate orders of magnitude efficiency compared to the best prior art.
1. A SMART BANDAGE WITH CLOSED-LOOP INTEGRATED DRUG DELIVERY
   Students: Da Ying, Zhenlong Huang | Professors: Drew A. Hall, Sheng Xu

2. THE LANGUAGE OF GLOVE: A WEARABLE WIRELESS GESTURE
   DECODER FOR LOW-POWER, FLEXIBLE AND STRETCHABLE HYBRID
   ELECTRONICS
   Student: Timothy Francis O’connor | Professor: Darren J. Lipomi

3. A WEARABLE CHEMICAL-ELECTROPHYSIOLOGICAL HYBRID BIOSENSING
   SYSTEM FOR REAL-TIME HEALTH AND FITNESS MONITORING
   Students: Somayeh Imani, Amay Bandodkar | Professors: Patrick P. Mercier,
   Joseph Wang

4. CHARACTERIZATION OF NOVEL ORGANIC SHORT WAVELENGTH
   INFRARED PHOTSENSORS
   Student: Weichuan Yao | Professor: Tse Nga Ng

5. MODULAR AND EXTENSIBLE PLATFORM DESIGNS FOR SMART HEALTH
   Student: Christine Shun Yee Chan | Professor: Tajana S. Rosing

6. EYEGLASSES WIRELESS ELECTROCHEMICAL SENSOR PLATFORM
   Student: Juliane R Sempionatto Moreto | Professor: Joseph Wang

7. PRINTED, STRETCHABLE ZINC-SILVER BATTERIES FOR WEARABLE
   ELECTRONICS
   Students: Rajan Kumar, Lin Yin | Professor: Joseph Wang, Ying S. Meng

8. STRETCHABLE BIOFUEL CELLS AS WEARABLE TEXTILE-BASED SELF-
   POWERED SENSORS
   Student: Itthipon Jeerapan | Professor: Joseph Wang

9. TATTOO-BASED WEARABLE IONTOPHORETIC-BIOSENSING DEVICE FOR
   NONINVASIVE ALCOHOL MONITORING
   Students: Jayoung Kim, Itthipon Jeerapan, Somayeh Imani | Professors:
   Joseph Wang, Patrick P. Mercier
CENTER FOR VISUAL COMPUTING

10. ROBUST ENERGY MINIMIZATION FOR BRDF-INVARIANT SHAPE FROM LIGHT FIELDS
   Students: Zhengqin Li, Zexiang Xu | Professors: Manmohan Chandraker, Ravi Ramamoorthi

11. GOOGLE MAP ORIENTED VISUAL NAVIGATION FOR UAVS
   Student: Mo Shan | Professor: Nikolay A. Atanasov

12. DEPTH AND IMAGE RESTORATION FROM LIGHT FIELD IN A SCATTERING MEDIUM
   Student: Zachary Paul Murez
   Professors: David Kriegman, Ravi Ramamoorthi

13. DOWNSAMPLING SCATTERING PARAMETERS FOR RENDERING ANISOTROPIC MEDIA
   Student: Lifan Wu | Professor: Ravi Ramamoorthi

14. MINIMAL BRDF SAMPLING FOR TWO-SHOT NEAR-FIELD REFLECTANCE ACQUISITION
   Student: Zexiang Xu | Professor: Ravi Ramamoorthi

15. 3D FACE RECONSTRUCTION AND FACE ASSISTED VIDEO STABILIZATION
   Student: Jiyang Yu | Professor: Ravi Ramamoorthi

16. MULTIPLE AXIS-ALIGNED FILTERS FOR RENDERING OF COMBINED DISTRIBUTION EFFECTS
   Students: Alexandr Kuznetsov, Lifan Wu, Ling-Qi Yan
   Professor: Ravi Ramamoorthi

17. GRADIENT DOMAIN VERTEX CONNECTION AND MERGING
   Student: Weilun Sun | Professor: Ravi Ramamoorthi

18. PATCH-BASED OPTIMIZATION FOR IMAGE-BASED TEXTURE MAPPING
   Students: Sai Bi, Nima Khademi Kalantari
   Professor: Ravi Ramamoorthi

19. ANALYTIC AREA LIGHTING FOR PRECOMPUTED RADIANCE TRANSFER
   Student: Jingwen Wang | Professor: Ravi Ramamoorthi

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81. **DETERMINING BURNING POTENTIALS FOR WILDFIRES**  
   Student: Sumedha Khatter | Professors: Trey Ideker, Ilkay Altintas

82. **IMPROVED PRIM-DIJKSTRA TRADEOFFS FOR HIGH PERFORMANCE VLSI ROUTING**  
   Students: Sriram Venkatesh, Sriram Venkatesh | Professor: Andrew B. Kahng
83. A GROUND TRUTH 3D VIDEO DATA SET FOR AUGMENTED REALITY ROBOTIC MIS ALGORITHMS
Student: Michael Joseph Barrow | Professor: Ryan Kastner

84. BACKGROUND SUBTRACTION FOR NEUROMORPHIC IMAGE SENSORS
Student: Alireza Khodamoradi | Professor: Ryan Kastner

85. HIGHER ORDER FUNCTIONS FOR INTRODUCTORY HARDWARE DEVELOPMENT
Student: Dustin Alexander Richmond | Professor: Ryan Kastner

86. INTELLIGENT DESIGN SPACE EXPLORATION OF HARDWARE-ACCELERATED SLAM ALGORITHMS
Students: Quentin Kevin Gautier, Alric Althoff | Professor: Ryan Kastner

87. INFORMATION FLOW TRACKING FOR PROVABLY SECURE HARDWARE DESIGN
Student: Armaiti Ardestiricham | Professor: Ryan Kastner

88. LEVERAGING THE OCEAN’S AMBIENT SOUNDSCAPE TO LOCALIZE SUBSEA DRIFTERS
Student: Perry W Naughton | Professor: Ryan Kastner

89. SURPRISE: A PROBABILISTIC METRIC OF HARDWARE DESIGN SPACE COMPLEXITY
Student: Alric Joseph Althoff | Professor: Ryan Kastner

90. CREATING SCIENTISTS WITH ONLINE LEARNING
Students: Vineet Pandey, Chen Yang | Professor: Scott R. Klemmer

91. PROBABILITIES TO BALANCES: AN ALTERNATIVE APPROACH
Student: James Tong Morton | Professor: Rob Knight

92. VISUALLY-AWARE FASHION RECOMMENDATION AND DESIGN WITH GENERATIVE IMAGE MODELS
Student: Wangcheng Kang | Professor: Julian J. McAuley

93. MULTIPLE SEQUENCE ALIGNMENTS FOR ULTRA-LARGE REFERENCE 16S DATASETS: COMBINING A DIVIDE-AND-CONQUER FRAMEWORK WITH RNA STRUCTURAL MODELS
Student: Uyen To Mai | Professor: Siavash Mirarab (Mir Arabbaygi)

94. A COMPUTATIONAL MODELING APPROACH OF USER BEHAVIOR FOR SWARM CONTROL APPLICATIONS
Student: Dhanesh Girish Pradhan | Professor: Tajana S. Rosing
95. A CONTEXT-DRIVEN IOT MIDDLEWARE ARCHITECTURE
   Student: Bekhzod Soliev | Professor: Tajana S. Rosing

96. AUTONOMOUS DETECTION AND MAPPING OF ANOMALOUS AIR QUALITY EVENTS
   Student: Kanza Khan | Professor: Tajana S. Rosing

97. APPROXIMATION FOR ENERGY EFFICIENT COMPUTING
   Student: Mohsen Imani | Professor: Tajana S. Rosing

98. IN-MEMORY PROCESSING FOR DATA INTENSIVE APPLICATIONS
   Student: Saransh Gupta | Professor: Tajana S. Rosing

99. OPTIMAL PACKET AGGREGATION IN WIRELESS NETWORKS
   Students: Mihir Rajan Patanker, Alper SinanAkyurek
   Professor: Tajana S. Rosing

100. PHASE-BASED POWER PREDICTION FOR HETEROGENOUS COMPUTING ECOSYSTEMS
    Student: Yeseong Kim | Professor: Tajana S. Rosing

101. RESISTIVE CAM ACCELERATION FOR TUNABLE APPROXIMATE COMPUTING
    Student: Daniel Nikolai Peroni | Professor: Tajana S. Rosing

102. STOP THAT JOIN! DISCARDING DIMENSION TABLES WHEN LEARNING HIGH CAPACITY CLASSIFIERS
    Student: Vraj Paragbhai Shah | Professor: Arun Kumar

103. GADGETRON: DECLARATIVE DESIGN OF MECHATRONIC AND CYBERPHYSICAL DEVICES
    Student: Devon James Merrill | Professor: Steven J. Swanson

104. MIXED REALITY APPLICATIONS IN SURGICAL ENVIRONMENTS
    Student: Danilo Gasques Rodrigues | Professor: Nadir Weibel

105. RE-IMAGINING EMBODIED MULTIMODAL MEANING MAKING THROUGH COMPUTATIONAL ETHNOGRAPHY
    Student: Steven Robert Rick | Professor: Nadir Weibel
ELECTRICAL & COMPUTER ENGINEERING

106. MIMO 2PJ/MAC 14-B 8X8 LINEAR TRANSFORM MIXED-SIGNAL SPATIAL FILTER IN 65NM CMOS WITH 84 DB INTERFERENCE SUPPRESSION
   Students: Siddharth Joshi, Chul Kim, Sohmyung Ha | Professor: Gert Cauwenberghs

107. IMPROVING MOTOR IMAGERY BRAIN COMPUTER INTERFACES WITH USER RESPONSE TO FEEDBACK
   Student: Mahta Mousavi | Professor: Virginia De Sa

108. ELECTRO-OPTICAL MECHANICALLY FLEXIBLE (EO-FLEX) NANOPROBES
   Students: Spencer Patrick Ward, Conor Riley | Professors: Sadik C. Esener, Donald J. Sirbuly

109. HYBRID MULTIMODE RESONATORS BASED ON GRATING ASSISTED COUNTER-DIRECTIONAL COUPLERS
   Student: Jordan Austin Davis | Professor: Y. Shaya Fainman

110. SELF-ORGANIZED SEGREGATION ON THE GRID
   Student: Hamed Omidvar | Professor: Massimo Franceschetti

111. DEEP LEARNING METHODS FOR ANALYZING NEURAL DATA
   Student: Fnu Pailla-Tejaswy | Professor: Vikash Gilja

112. PROTEASE-BASED MAGNETIC SENSOR FOR RAPID DETECTION OF CANDIDEMIA
   Student: Sonal Jain | Professors: Drew A. Hall, Anthony O’Donoghue

113. OPTIMUM LOGIC SYNTHESIS CONSTRAINTS FOR IC PHYSICAL IMPLEMENTATION
   Student: Tushar Shah | Professor: Andrew B. Kahng

114. A PATHFINDING TOOL FOR 3D VLSI TECHNOLOGY AND DESIGN
   Student: Ahmed Taha Elthakeb Youssef | Professor: Andrew B. Kahng

115. VERTICAL M1 ROUTING-AWARE DETAILED PLACEMENT FOR CONGESTION AND WIRELENGTH REDUCTION IN SUB-10NM NODES
   Students: Lutong Wang, Kwangsoo Han, Hyein Lee | Professor: Andrew B. Kahng

116. SHAPING AND STEERING OF SURFACE LASER BEAM CARRYING ORBITAL ANGULAR MOMENTUM
   Student: Babak Bahari | Professor: Boubacar Kante
117. FAST AND ROBUST SPARSE BAYESIAN LEARNING FOR EEG SOURCE IMAGING
Student: Alejandro Ojeda | Professor: Kenneth Kreutz-Delgado

118. A MULTI-MODAL SYSTEM FOR CLOSED-LOOP OPTOGENETICS IN BEHAVING ANIMALS
Students: Xin Liu, Yichen Lu, Ege Iseri, Sravya Alluri | Professor: Duygu Kuzum

119. FLEXIBLE POROUS GRAPHENE ELECTRODES WITH LOW IMPEDANCE AND HIGH CHARGE INJECTION CAPACITY FOR CORTICAL SENSING AND STIMULATION
Student: Yichen Lu | Professor: Duygu Kuzum

120. TRAINING AND OPERATION OF THE SPIKING NEURON NETWORK BASED ON CBRAM
Student: Yuhan Shi, Leon Nguyen | Professor: Duygu Kuzum

121. A 4.5 NW WAKE-UP RADIO WITH -69DBM SENSITIVITY
Students: Po-Han Wang, Haowei Jiang | Professors: Patrick P. Mercier, Drew A. Hall, Gabriel M. Rebeiz, Young-Han Kim

122. CONTINUOUS SELF-CALIBRATING EYE GAZE TRACKING FOR VIRTUAL REALITY SYSTEMS
Student: Subarna Tripathi | Professors: Truong Nguyen, Serge J. Belongie

123. VIEW SYNTHESIS WITH HIERARCHICAL CLUSTERING BASED OCCLUSION FILLING
Student: Ji Dai | Professor: Truong Nguyen

124. EMERGING VERTICAL NANOWIREFET TECHNOLOGY FOR ENERGY EFFICIENT COMPUTING
Student: Joonseop Sim | Professor: Tajana S. Rosing

125. FIELD ENHANCEMENT IN PLASMONIC NANOSTRUCTURES
Student: Shiva Piltan | Professor: Daniel F. Sievenpiper

126. SELF-CATALYZED CORE-SHELL GAAS/GANAS NANOWIRES GROWN ON PATTERNED SI (111) BY GAS-SOURCE MOLECULAR BEAM EPITAXY
Student: Rui La | Professor: Charles W. Tu

127. LINEAR NETWORK CODING OVER RINGS
Student: Joseph Michael Connelly | Professor: Kenneth A. Zeger
MECHANICAL & AEROSPACE ENGINEERING

128. CHARACTERIZING NON LINEAR EFFECTS IN LOW COST MOTORS
Student: Daniel Jiaji Yang | Professor: Thomas R. Bewley

129. DERIVATIVE-FREE GLOBAL OPTIMIZATION METHOD WITH INEXACT FUNCTION EVALUATIONS
Student: Shahrouz Alimohammadi, Muhan Zhao, Pooriya Beyhaghi
Professor: Thomas R. Bewley

130. DYNAMIC MODEL AND CONTROL OF A MICRO BALL-BALANCING ROBOT WITH HIGH YAW RATE
Student: Eric Nauali Sihite | Professor: Thomas R. Bewley

131. TRAJECTORY PLANNING FOR MAXIMIZING THE PROBABILITY OF FINDING AN OBJECT INSIDE A BOUND DOMAIN
Students: Abhishek Subramanian, Shahrouz Alimohammadi
Professor: Thomas R. Bewley

132. CONTINUOUS 3D PRINTING OF BIOGENIC POLYURETHANES
Student: Pengrui Wang | Professor: Shaochen Chen

133. PMU-BASED MICROGRID POWER CONTROL OVER THE INTERNET WITH REAL-TIME GRID SIMULATION
Student: Amir Valibeygi | Professor: Raymond A. De Callafon

134. NON-INVASIVE QUANTITATIVE METHOD FOR MEASURING REGIONAL CARDIAC FUNCTION.
Student: Ashish Manohar | Professor: Juan Carlos Del Alamo

135. THE CIRCULATION OF THE CEREBROSPINAL FLUID (CSF) IN THE SPINAL CANAL
Student: Ernesto Criado Hidalgo | Professors: Juan Carlos Del Alamo, Juan C. Lasheras

136. EXPANDING CARDIOPULMONARY SHUNT
Student: Edward Aminov | Professor: James R. Friend

137. NEUROTENDO: NINTENDO FOR NEUROINTERVENTIONISTS
Student: Gopesh Chaitanyaku Tilvawala | Professor: James R. Friend

138. CHARACTERIZING SOLAR THERMAL ENERGY STORAGE SYSTEMS
Student: Andrew Zigang Zhao | Professor: Javier E. Garay
139. PREPARATION OF RARE EARTH STABILIZED NANOCRYSTALLINE ZIRCONIA WITH TUNABLE OPTICAL/MECHANICAL PROPERTIES  
Student: Gottlieb Hangula Uahengo | Professor: Javier E. Garay

140. SYNTHESIS AND PROCESSING OF NANOCRYSTALLINE ALUMINUM NITRIDE FOR HIGH POWERED LASER APPLICATIONS  
Student: Matthew Adalberto Duarte | Professor: Javier E. Garay

141. POLYMER-BASED RETROGRADE NANO-TRACERS AS TOOLS FOR NEUROANATOMY  
Student: Nanzhi Zang | Professor: Nathan Gianneschi

142. EXPERIMENTAL DEMONSTRATION OF A SUB-SCALE HYDROKINETIC TURBINE  
Student: Spencer Riley Ellis | Professor: John B. Kosmatka

143. MODAL MODELING VIA FIBER OPTIC STRAIN SENSING FOR APPLICATIONS IN STRUCTURAL HEALTH MONITORING  
Student: Benjamin Levi Martins | Professor: John B. Kosmatka

144. BLOBS AND DRIFT WAVE DYNAMICS  
Student: Yanzeng Zhang | Professor: Sergei Krasheninnikov

145. ADAPTIVE OUTPUT FEEDBACK FOR FLOW-INDUCED VIBRATIONS OF A MEMBRANE AT HIGH MACH NUMBERS  
Student: Huan Yu | Professor: Miroslav Krstic

146. CONTROL AND ESTIMATION OF THE LIQUID-SOLID INTERFACE IN A PHASE CHANGE MATERIAL  
Student: Shumon Koga | Professor: Miroslav Krstic

147. STABILIZATION OF AN UNDERACTUATED TRANSPORT-WAVE PDE SYSTEM  
Student: Stephen Chen | Professor: Miroslav Krstic

148. TRAJECTORY OPTIMIZATION OF 7-DOF BAXTER ROBOT’S ARM  
Student: Mostafa Bagheri | Professors: Miroslav Krstic, Peiman Naseradinmousavi

149. HIGHLY SPECIFIC SNP DETECTION USING GRAPHENE ELECTRONICS AND DNA STRAND DISPLACEMENT  
Student: Michael Taeyoung Hwang | Professor: Ratneshwar Lal
150. AVOIDING BRAIN INJURY: A STRUCTURAL ROLE OF THE FRONTAL OVERHANG ON THE SKULL BONE OF WOODPECKERS
Student: Jae-young Jung | Professors: Joanna M. McKittrick, Marc A. Meyers

151. MICROSTRUCTURAL ORIGINS OF THE DYNAMIC BEHAVIOR OF WOOD
Student: Albert Keisuke Matsushita | Professor: Joanna M. McKittrick

152. REINFORCEMENTS IN AVIAN WING BONES: EXPERIMENTS, ANALYSIS, AND MODELING
Students: Sean Nolan Garner, Keisuke Matsushita | Professor: Joanna M. McKittrick

153. A FUNCTIONAL NATURAL ADHESIVE: THE FEATHER VANE AND INSPIRED DESIGNS
Student: Tarah Naoe Sullivan | Professor: Marc A. Meyers

154. DISCOVERING THE PROTECTION MECHANISM FOR THE ‘LIVING FOSSIL’ COELACANTH
Student: Haocheng Quan | Professor: Marc A. Meyers

155. NON-EQUILIBRIUM SIMULATIONS OF SHOCK-INDUCED HORIZONTAL DEFECTS AND AMORPHIZATION IN 4H SILICON CARBIDE
Student: Rachel Marie Flanagan | Professor: Marc A. Meyers

156. ON THE PRESSURE INDUCED AMORPHIZATION AND NANOCRYSTALLIZATION OF SEMICONDUCTING MATERIALS AND ITS POTENTIAL APPLICATIONS
Student: Shiteng Zhao | Professor: Marc A. Meyers

157. TRI-DIMENSIONAL PRINTING AS AN ADVANCED TECHNIQUE IN MANUFACTURING BIOINSPIRED MATERIALS
Student: Audrey Josephina Velasco-Hogan | Professor: Marc A. Meyers

158. VISCOELASTIC RESPONSE OF PIG SKIN UNDER TENSION - A MACROSCOPIC APPROACH USING IMAGE PROCESSING TECHNIQUES
Student: Andrei Pissarenko | Professor: Marc A. Meyers

159. EFFECT OF ELECTRIC CURRENT ON DENSIFICATION MECHANISM OF ZIRCONIUM NITRIDECONSOLIDATED BY SPARK PLASMA SINTERING
Student: Geuntak Lee | Professors: Eugene Olevsky, Joanna M. McKittrick

160. DESIGN PRINCIPLES OF PLEIOTROPIC G-PROTEIN SIGNALING THROUGH GEMS
Student: Michael C Getz | Professor: Padmini Rangamani
161. RADIAL FORCES IN MEMBRANE NECKING
Students: Ritvik Vasan, Haleh Alimohmadi | Professor: Padmini Rangamani

162. TWEAKING THE IMMUNE SYSTEM: TARGETED FUSOGENIC NANOPARTICLES FOR IMMUNOGENE THERAPY AGAINST BACTERIAL INFECTION
Student: Byungji Kim | Professor: Michael Sailor

163. FLAMES... OUT OF THIS WORLD
Student: Luca Carmignani | Professor: Kalyanasundaram Seshadri

164. A SURFACE ENHANCED RAMAN SPECTROSCOPY INVESTIGATION OF HEAT ASSISTED MAGNETIC RECORDING
Student: Benjamin Ying-Xiu Suen | Professor: Frank E. Talke

165. DEVELOPMENT OF AN INTRAOCULAR PRESSURE MEASUREMENT SYSTEM
Students: Alex Minh Giang Phan, Phuong Truong, Alexander Kief Professor: Frank E. Talke

166. ESOPHAGEAL DEFLECTION DEVICE FOR USE DURING TREATMENT OF ATRIAL FIBRILLATION
Student: Karcher William Morris | Professor: Frank E. Talke

167. INVESTIGATION OF CONTAMINATION AT THE HEAD-DISK INTERFACE IN TODAY’S HARD DISK DRIVES
Student: Young Woo Seo | Professor: Frank E. Talke

168. 3D PRINTED SOFT ACTUATORS FOR A LEGGED ROBOT CAPABLE OF NAVIGATING UNSTRUCTURED TERRAIN
Student: Dylan T. Drotman | Professor: Michael T. Tolley

169. A SOFT ROBOTIC GRIPPER CAPABLE OF IN-HAND MANIPULATION AUGMENTED WITH SOFT SENSOR SKIN FOR TACTILE SENSING
Student: Benjamin Shih | Professor: Michael T. Tolley, Henrik I. Christensen

170. SOFT ROBOTIC GLOVE FOR HAPTIC FEEDBACK IN VIRTUAL ENVIRONMENTS
Students: Saurabh Subhash Jadhav, Vikas Kannanda, Bocheng Kang Professor: Michael T. Tolley

171. A STUDY OF A NEW RECOMBINATION PROCESS OF D2 PLASMA MEDIATED BY ND3 MOLECULES
Student: Shota Abe | Professor: George R. Tynan
172. CHARACTERIZATION OF MICROSTRUCTURE AND MATERIAL PROPERTIES OF DIRECT LASER DEPOSITED NI-ALLOY 625
Students: Paresh Mukhedkar, Kevin Kaufmann, Tyler Harrington
Professor: Kenneth S. Vecchio

173. IRON-ALUMINUM METALLIC-INTERMETALLIC LAMINATE (MIL) COMPOSITES
Students: Haoren Wang, Xiao Liu | Professor: Kenneth S. Vecchio

174. PHASE STABILITY DEPENDENCE OF DEFORMATION MICROSTRUCTURE AND MECHANICAL PROPERTIES IN TI-NB GUM METAL
Student: Sumin Shin | Professor: Kenneth S. Vecchio
175. CONTINUOUS OPTICAL PRINTING OF CELL-LADEN CONSTRUCTS WITHIN MICROFLUIDIC ARCHITECTURES
Student: Justin David Liu | Professor: Shaochen Chen

176. A NOVEL DIELECTROPHORESIS PLATFORM FOR THE ISOLATION OF EXTRACELLULAR VESICLES
Student: Lennart Langouche | Professors: Sadik C. Esener, Michael J. Heller

177. RAPID SAMPLE TO ANSWER DIAGNOSTICS FOR TRAUMATIC BRAIN INJURY
Student: Benjamin Gabriel Sarno | Professor: Michael J. Heller

178. RAPID ON-CHIP ISOLATION AND DETECTION OF PANCREATIC CANCER EXOSOME BIOMARKERS
Student: Augustine Chidi Obirieze | Professors: Michael J. Heller, Sadik C. Esener

179. REAL TIME ULTRASOUND-BASED MEASUREMENTS OF CLOTTING TIME AND IMPLANTABLE SENSOR FOR THERAPEUTIC DRUG MONITORING OF HEPARIN
Student: Junxinx Wang | Professor: Jesse V. Jokerst

180. THE CHARACTERIZATION OF NOVEL, AFFORDABLE AND COMPACT LED-BASED PHOTOACOUSTIC IMAGING SYSTEM TO FACILITATE MOLECULAR IMAGING
Student: Ali Hariri | Professor: Jesse V. Jokerst

181. THE FUTURE OF IMAGING
Student: Jeanne Elizabeth Lemaster | Professor: Jesse V. Jokerst

182. STRUCTURE AND MECHANICAL BEHAVIOR OF HUMAN HAIR
Student: Yang Yu | Professor: Marc A. Meyers

183. DESIGN AND APPLICATION OF PIEZOELECTRIC COMPOSITE MATERIALS AND DEVICES
Student: James Lance Middlebrook | Professor: Donald J. Sirbuly

184. CHARACTERIZATION OF BSA ADSORPTION ON HETEROGENEOUSLY PEGYLATED AG NPS
Student: Madhura Som | Professor: Andrea R. Tao
185. PLASMON ENHANCED NONLINEAR OPTICAL NANO DEVICE AND MATERIALS
Student: Yuan Zeng | Professor: Andrea R. Tao

186. SUBMERSIBLE SOFT ROBOTICS DRIVEN BY FLUID ELECTRODE-DIELECTRIC ELASTOMER ACTUATORS
Student: Caleb Michael Christianson | Professor: Michael T. Tolley

187. DEVELOPMENT OF FE-NI-CO-AL-BASED SUPERELASTIC ALLOYS
Student: Cheng Zhang | Professor: Kenneth S. Vecchio

188. DETERMINATION OF GEOMETRICALLY NECESSARY DISLOCATIONS IN LARGE SHEAR STRAIN LOCALIZATION IN METALS
Student: Chaoyi Zhu | Professor: Kenneth S. Vecchio

189. FABRICATION OF HIGH ENTROPY CERAMICS: NITRIDES AND CARBONITRIDES
Student: Olivia Faye Dippo | Professor: Kenneth S. Vecchio

190. MODULATING CRYSTALLINITY OF A TI-ZR-BASED BULK METALLIC GLASS MATRIX COMPOSITE
Student: Kevin Richard Kaufmann | Professor: Kenneth S. Vecchio

191. MODELING AND FABRICATION OF A NEW CLASS OF HIGH-ENTROPY REFRACTORY INTERSTITIAL CARBIDES
Student: Tyler James Harrington | Professor: Kenneth S. Vecchio

192. MOLYBDENUM DISULFIDE-BASED TUBULAR MICROENGINES: TOWARD BIOMEDICAL APPLICATIONS
Students: Emil Karshalev, Isaac Campso, Roxanne Castillo
Professor: Joseph Wang

193. NEW ADVANCES IN ACOUSTICALLY PROPELLED NANOMOTORS
Student: Fernando Soto | Professor: Joseph Wang

194. FIRST-PRINCIPLES PREDICTION OF TWO-DIMENSIONAL ELECTRON GAS DRIVEN BY POLARIZATION DISCONTINUITY IN NONPOLAR/NONPOLAR AHFO3/SRTIO3 (A=CA, SR, AND BA) HETEROSTRUCTURES
Student: Jianli Cheng | Professor: Kesong Yang

195. POLARIZATION EFFECTS ON THE INTERFACIAL CONDUCTIVITY IN THE LAO/STO HETEROSTRUCTURE: FIRST-PRINCIPLES STUDY
Student: Maziar Alexander Behtash | Professor: Kesong Yang
196. ERYTHROCYTE-PLATELET HYBRID MEMBRANE COATING FOR ENHANCED NANOPARTICLE FUNCTIONALIZATION  
Student: Diana Dorothy Nader Dehaini | Professor: Liangfang Zhang

197. RED BLOOD CELL MEMBRANE-COATED NANOGEL FOR COMBINATORIAL ANTIVIRULENCE AND RESPONSIVE ANTIMICROBIAL DELIVERY AGAINST MRSA INFECTION  
Student: Yue Zhang | Professor: Liangfang Zhang
198. ISOGEOMETRIC ANALYSIS FOR THE PREDICTION OF DAMAGE GROWTH IN COMPOSITE LAMINATES
Student: Marco Simone Pigazzini | Professor: Yuri Bazilevs

199. FLAPPING UNMANNED AERIAL SYSTEMS: NONLINEAR AEROELASTIC ANALYSIS
Student: Enrico Santarpia | Professors: Luciano Demasi, Jiun-Shyan Chen

200. HIGH ENERGY, WIDE AREA BLUNT IMPACTS IN CARBON FIBER REINFORCED AEROSPACE STRUCTURES
Student: Chaiane Wiggers De Souza | Professor: Hyonny Kim

201. FAST LEVEL SET TOPOLOGY OPTIMIZATION USING A HIERARCHICAL DATA STRUCTURE
Student: Carolina Miranda Jauregui | Professor: Hyunsun A. Kim

202. VIBRATION DAMPING OF COMPOSITES WITH CARBON NANOTUBES
Student: Andrew Ming Fann | Professor: John B. Kosmatka

203. MEAN-STRAIN QUADRATIC 10-NODE TETRAHEDRON WITH QUASI-OPTIMAL ENERGY STABILIZATION FOR NONLINEAR DEFORMATION
Student: Phi Quoc Nguyen | Professor: Petr Krysl

204. HIGH-SPEED NON-CONTACT PASSIVE-ONLY ULTRASONIC INSPECTION OF RAILS FROM DECONVOLUTIONS OF WHEEL-GENERATED NOISE
Students: Albert Yi-Ling Liang, Xuan Zhu, Simone Sternini, Margherita Capriotti | Professor: Francesco Lanza Di Scalea

205. NON-DESTRUCTIVE EVALUATION METHOD FOR DETECTING MAJOR DAMAGE IN INTERNAL COMPOSITES STRUCTURAL COMPONENTS
Students: Margherita Capriotti, Eric Kim | Professors: Francesco Lanza Di Scalea, Hyonny Kim

206. PUSHING THE LIMITS OF ULTRASONIC IMAGING OF SOLIDS BY WAVE MODE BEAMFORMING AND GPU PROCESSING
Students: Simone Sternini, Albert Liang | Professor: Francesco Lanza Di Scalea

207. ESTIMATE OF THE POTENTIAL OF USE OF A MUNICIPAL SOLID WASTE LANDFILL AS A SOURCE OF THERMAL ENERGY
Student: Leticia Maria Nocko | Professor: John S. McCartney
208. EARTHQUAKE PERFORMANCE OF MECHANICALLY STABILIZED EARTH BRIDGE ABUTMENTS
Student: Yewei Zheng | Professors: John S. McCartney, Pui-Shum Shing

209. THERMAL IMPROVEMENT OF OFFSHORE FOUNDATION RESPONSE IN SOFT CLAYS
Student: Ismaail Ghaoaoed | Professor: John S. McCartney

210. CYCLIC PERFORMANCE CHARACTERIZATION OF LARGE DIAMETER REINFORCING STEEL BARS AND MECHANICAL COUPLERS
Student: David Elias Duck Rodriguez | Professor: Jose I. Restrepo

211. COLLAPSE VULNERABILITY OF REINFORCED MASONRY STRUCTURES UNDER SEISMIC LOADING
Student: Andreas Koutras | Professor: Pui-Shum Shing

212. NONLINEAR MODELING OF REINFORCED MASONRY STRUCTURES
Student: Jianyu Cheng | Professor: Pui-Shum Shing

213. RECONSTRUCTION OF THE THREE-DIMENSIONAL SHAPE OF SLENDER ROD LIKE STRUCTURE-AN APPLICATION OF COSSERAT BEAM THEORY
Student: Mayank Chadha | Professor: Michael D. Todd

214. REUSE OF ABANDONED OIL AND GAS WELLS FOR GEOTHERMAL ENERGY PRODUCTION
Student: Robert Alexander Caulk | Professor: Ingrid Tomac

215. CLASSIFICATION OF FAILURE MODE AND PLASTIC HINGE FORMATION OF STEEL WIDE-FLANGE BEAM-COLUMNS
Student: Gulen Ozkula | Professor: Chia-Ming Uang

216. EXPERIMENTAL VERIFICATION OF A PROCEDURE FOR SMF CONTINUITY PLATE WELD DESIGN
Student: Adel Mashayekh | Professor: Chia-Ming Uang
## JACOBS SCHOOL ACADEMIC DEPARTMENTS

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## AGILE RESEARCH CENTERS

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<th>Research Center</th>
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<td>IEM.ucsd.edu</td>
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<td>Powell Structural Research Labs</td>
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<tr>
<td>San Diego Supercomputer Center</td>
<td><a href="http://www.sdsc.edu">www.sdsc.edu</a></td>
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<tr>
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## ACADEMIC DEPARTMENTS

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<tr>
<td>Structural Engineering</td>
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Poster Session: Level 2 (West Ballroom)
Faculty Lightning Talks: Level 4 (the Forum)
Networking Reception: Level 2 (East Ballroom)
Parking Shuttle: 11AM – 7PM