

UC San Diego

JACOBS SCHOOL OF ENGINEERING

RESEARCH EXPO 2017

THURSDAY, APRIL 20 – 1:30-6:00PM – UC SAN DIEGO

JACOBS SCHOOL CORPORATE AFFILIATES PROGRAM

Amazon.com	Hughes Network Systems	Ntrepid
AppFolio	IBM Corporation	Oracle
AppFormix (Acelio)	iboss	Qualcomm
ASML CYMER	Informatica	Quartus
Arista Networks	Intel	Raytheon Integrated Defense Systems
ATA Engineering	Intuit	Raytheon Space & Airborne Systems
BD Biosciences	IQ Analog	Rincon Research
BD Medical	Kleinfelder	Salesforce.com
Bentley Systems	Kyocera America	Samsung Research America
Booz Allen Hamilton	Lawrence Livermore National Laboratory	Scientific Research Corporation (SRC)
Bumble Bee Seafoods	Leidos	Seamgen
CISCO	Lockheed Martin Rotary and Mission Systems	Simplexity Product Development
CliniComp	Magma - One Stop Systems	Skyworks Solutions
Corning	Microsoft	Solar Turbines
CPC Strategy	Mitchell International	Sony Interactive Entertainment Playstation
Cubic Transportation Systems	Mitek Systems	SONY Electronics
Data Torrent	Mtell	SPAWAR
Dexcom	NAVAIR	Stevanato Group S.p.A.
Facebook	Nordson	Teradata Corporation
General Atomics	Northrop Grumman Aerospace Systems	Thermo Fisher Scientific
General Atomics Aeronautical Systems	Northrop Grumman Corporate and Enterprise Shared Services	UTC Aerospace Systems
Google	Northrop Grumman Mission Systems	ViaSat
Greenlee Communications		Yahoo
Honda R&D		

Be part of this vital partnership between the
Jacobs School of Engineering and its Corporate Affiliates Program
+1 (858) 534-3148 JacobsCAP@ucsd.edu
JacobsSchool.ucsd.edu/cap

RESEARCH EXPO 2017

Thank you to our generous sponsors

ViaSat[®]



CUBIC[™]



leidos



**Lawrence Livermore
National Laboratory**

ASML CYMER

NORTHROP GRUMMAN

AGENDA

1:30 PM	REGISTRATION
	Price Center, East Lobby - Level 2
2:00 PM–4:30 PM	POSTER SESSION
	Price Center West Ballroom A&B 210+ Graduate Students display their research results
2:30 PM– 4:30 PM	FACULTY TALKS
	Price Center Forum - Level 4
2:30 PM	ACHIEVING DEEP DECARBONIZATION OF THE GLOBAL ECONOMY: ENGINEERING AND POLICY David Victor Deep Decarbonization Initiative School of Global Policy & Strategy
3:00 PM	PERSPECTIVES ON CONTEXTUAL ROBOTICS Laurel Riek Contextual Robotics Institute Computer Science and Engineering Department
3:30 PM	VIRTUAL TOUCH: SMART MATERIALS FOR HUMAN-MACHINE INTERACTION Darren Lipomi Center for Wearable Sensors Sustainable Power and Energy Center NanoEngineering Department
4:00 PM	BRINGING THE MACHINE INTO THE LOOP OF MACHINE LEARNING Farinaz Koushanfar Electrical and Computer Engineering Department Adaptive Computing and Embedded Systems Lab
4:30 PM–6:00 PM	NETWORKING RECEPTION
	Price Center East Ballroom Network with faculty, students and industry partners

TABLE OF CONTENTS

FACULTY LIGHTNING TALKS	PAGES
	6–9

POSTERS BY AGILE RESEARCH CENTER		
	Posters	Pages
Center for Wearable Sensors	1–9	11
Center for Visual Computing	10–21	12–13
CaliBaja Center for Resilient Materials and Systems	22–36	14–15
Center for Extreme Events Research	37–44	16
Sustainable Power and Energy Center	45–51	17

POSTERS BY DEPARTMENT		
	Posters	Pages
Bioengineering	52–71	18–19
Computer Science and Engineering	72–105	20–22
Electrical and Computer Engineering	106–127	23–24
Mechanical and Aerospace Engineering	128–174	25–29
NanoEngineering	175–197	30–32
Structural Engineering	198–216	33–34
Departments, Programs and Research Centers		35
Research Expo Poster Judges		36–38
Notes		40–41
Map – Poster Session		42–43

DEEP DECARBONIZATION INITIATIVE



2:30 PM

ACHIEVING DEEP DECARBONIZATION OF THE GLOBAL ECONOMY: ENGINEERING AND POLICY

Presenter: David Victor
Deep Decarbonization Initiative
School of Global Policy & Strategy

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.

deepdecarbon.ucsd.edu

CONTEXTUAL ROBOTICS INSTITUTE



3:00 PM

PERSPECTIVES ON CONTEXTUAL ROBOTICS

Presenter: Laurel Riek

Professor, Computer Science and Engineering

Director, The Robotics and Healthcare Engineering Lab

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

CENTER FOR WEARABLE SENSORS



3:30 PM

VIRTUAL TOUCH: SMART MATERIALS FOR HUMAN-MACHINE INTERACTION

Presenter: Darren Lipomi
 Professor, NanoEngineering Department
 Director, Laboratory for soft electronics, solar cells, and nano-manufacturing

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

ADAPTIVE COMPUTING AND EMBEDDED SYSTEMS



4:00 PM

BRINGING THE MACHINE INTO THE LOOP OF MACHINE LEARNING

Presenter: Farinaz Koushanfar

Professor, Electrical and Computer Engineering
Department

Director, Adaptive Computing and Embedded Systems

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.

aceslab.org

GRADUATE STUDENT POSTERS

CENTER FOR WEARABLE SENSORS

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 Bandonkar | 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. EYEGASSES 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

20. A UNIFIED MULTI-SCALE DEEP CONVOLUTIONAL NEURAL NETWORK FOR FAST OBJECT DETECTION

Student: Zhaowei Cai | Professor: Nuno M. Vasconcelos

21. LEARNING TO AUGMENT VISUAL DATA

Student: Mandar Dilip Dixit | Professor: Nuno M. Vasconcelos

CALIBAJA CENTER FOR RESILIENT MATERIALS & SYSTEMS

22. ELECTROKINETIC FLOW OVER PATTERNED HYDROPHOBIC SURFACES

Student: Bei Fan | Professor: Prabhakar R. Bandaru

23. RECORD EFFICIENCY OF GRAPHENE/SILICON SOLAR CELL WITH PASSIVATED BACK CONTACT

Student: Serdar Yavuz | Professor: Prabhakar R. Bandaru

24. BLAST WAVE REFLECTION PATTERNS

Student: Nicholas Amen | Professor: Veronica Eliasson

25. DYNAMIC FRACTURE BEHAVIOR OF POLYMERIC MATERIALS

Student: Rodrigo Enrique Chavez Morales | Professor: Veronica Eliasson

26. FABRICATION OF MESOPORES ON GOLD-COATED POLYSTYRENE PARTICLES

Student: Seongcheol Choi | Professor: Olivia A. Graeve

27. IN VITRO EVALUATION OF LUMINESCENT RARE-EARTH DOPED HYDROXYAPATITE SCAFFOLDS

Student: Fabian Martin Martinez Pallares | Professor: Olivia A. Graeve

28. CONTROLLING THE SHAPE AND PARTICLE SIZE OF LAB6 NANOSTRUCTURES: A STEP TOWARDS DEVELOPING NEW COMPOSITE MATERIALS

Student: Carlos Ingram Vargas Consuelos | Professor: Olivia A. Graeve

29. FABRICATION AND CHARACTERIZATION OF COMPLEX SIC/SIC FIBER COMPOSITE PROCESSED BY SPARK PLASMA SINTERING (SPS)

Student: Uriel Esaud Perez Jara | Professor: Olivia A. Graeve

30. EFFECTS OF ETHANOL ON AOT/N-HEPTANE REVERSE MICELLE SYSTEMS

Student: Robyn Elizabeth Ridley | Professor: Olivia A. Graeve

31. DIFFUSION STUDIES OF STRUCTURALLY AMORPHOUS METAL FOILS USING MOLECULAR DYNAMICS SIMULATION

Student: Jordan Alexander Campbell | Professor: Olivia A. Graeve

32. SYNTHESIS AND LUMINESCENT CHARACTERIZATION OF CORE-SHELL NANOPHOSPHORS

Students: Jungmin Ha, Jinkyu Han, Chenhui Zhou, Ekaterina Novitskaya, Gustavo Hirata | Professors: Joanna M. McKittrick, Olivia A. Graeve

33. IMPACT RESISTANT BIOLOGICAL MATERIALS AND BIOINSPIRED DESIGNS

Student: Wei Huang | Professor: Joanna M. McKittrick

34. BIODEGRADABLE SPONGY BONE IMPLANTS: STRENGTH THROUGH BIOINSPIRATION

Student: Michael Brian Frank | Professor: Joanna M. McKittrick

35. COMPARISON OF DEPROTEINIZATION METHODS FOR PORCINE FEMUR CORTICAL BONE

Student: Frances Yen-an Su | Professor: Joanna M. McKittrick

36. STACKED GRAPHENE/NANOSTRUCTURE AS PLASMONIC METAMATERIALS

Student: Jiaying Wang | Professor: Oscar Vazquez Mena

CENTER FOR EXTREME EVENTS RESEARCH

37. COUPLED THERMAL-MECHANICAL-CONTACT ANALYSIS OF HOT CRACKING IN LASER WELDED LAP JOINTS

Students: Qizhi He, Haoyan Wei | Professor: Jiun-Shyan Chen

38. RECENT ADVANCES IN STABILIZED AND NODALLY INTEGRATED MESHFREE MODELING OF EXTREME EVENTS

Students: Frank Nathan Beckwith, Marco Pasetto, Mathew Reynolds, Tsung-Hui Huang | Professor: Jiun-Shyan Chen

39. REDUCED ORDER MODELING OF FRACTURE

Students: Jonghyuk Baek, Qizhi He | Professor: Jiun-Shyan Chen

40. NEW MESHFREE SIMULATION TECHNIQUES FOR MODELING PENETRATION AND BLAST LOADING

Students: Marco Pasetto, Frank Beckwith, Tsung-Hui Huang, Mathew Reynolds | Professor: Jiun-Shyan Chen

41. MESHFREE HYDRO-MECHANICAL MODELING OF FRACKING PROCESSES IN FLUID-SATURATED POROUS MEDIA

Student: Haoyan Wei | Professor: Jiun-Shyan Chen

42. NON-CONTACT TOMOGRAPHY FOR STRUCTURAL MONITORING AND BIOLOGICAL APPLICATIONS

Student: Sumit Gupta | Professor: Kenneth J. Loh

43. ENGINEERING SCALABLE MULTIFUNCTIONAL AND STIMULI-RESPONSIVE NANOCOMPOSITES

Students: Bo Mi Lee, Long Wang, Sumit Gupta | Professor: Kenneth J. Loh

44. NANOMATERIAL-BASED SENSING OF DISTRIBUTED DAMAGE IN ENGINEERED AND BIOLOGICAL SYSTEMS

Student: Long Wang | Professor: Kenneth J. Loh

SUSTAINABLE POWER AND ENERGY CENTER

45. QUANTIFYING SODIUM MIGRATION IN SILICON NITRIDE FOR EXTENDED SOLAR MODULE LIFETIME

Student: Jonathan David Scharf | Professor: David Fenning

46. NANOSCALE HALIDE SEGREGATION AND CHARGE COLLECTION WITHIN MIXED-HALIDE PEROVSKITE SOLAR CELLS

Student: Yanqi Luo | Professor: David Fenning

47. REVISITING THE CONVERSION REACTION VOLTAGE AND THE REVERSIBILITY OF THE CuF_2 ELECTRODE IN LI-ION BATTERIES

Student: Joon Kyo Seo | Professors: Ying S. Meng, Ping Liu, Olivia A. Graeve, Jian Luo, Kesong Yang

48. LIQUEFIED GAS ELECTROLYTES FOR LOW TEMPERATURE ENERGY STORAGE

Students: Yangyuchen Yang, Joon Kyo Seo | Professor: Ying S. Meng

49. OPTIMAL DISTRIBUTED NONLINEAR BATTERY CONTROL

Students: Michael Henry Ostertag, Sinan Akyurek | Professor: Tajana S. Rosing

50. THE SIZE-DEPENDENT EDGE AND ODD-EVEN EFFECT ON SINGLE-LAYERED MoS_2 NANOSHEETS WITH AND WITHOUT SULFUR VACANCIES

Student: Paul Hyunggyu Joo | Professor: Kesong Yang

51. ENHANCING SPONTANEOUS MOLECULAR FERROELECTRICITY IN MAPbI_3 BY STRAIN/DOPING-INDUCED CELL DEFORMATION: A FIRST-PRINCIPLES STUDY

Student: Yuheng Li | Professor: Kesong Yang

BIOENGINEERING

52. IMPROVING REPRODUCTIVE SUCCESS: MANIPULATING SPERMATOZOA MOTILITY WITH RED LIGHT

Student: Kay Wen Chow | Professor: Michael Berns

53. PROBING MECHANOBIOLOGY WITH LASER-INDUCED SHOCKWAVES

Students: Christopher Carmona, Daryl Preece, Linda Shi, Veronica Gomez-Godinez | Professor: Michael Berns

54. CARDIOVASCULAR RESPONSE TO RESUSCITATION WITH ANAEROBICALLY STORED BLOOD

Student: Alexander Thomas Williams | Professor: Pedro J. Cabrales Arevalo

55. ASSIMILATION OF BIOPHYSICAL NEURONAL DYNAMICS IN NEUROMORPHIC VLSI

Students: Jun Wang, Abraham Akinin, Daniel Breen | Professor: Gert Cauwenberghs

56. EEG CHANNEL INTERPOLATION USING ELLIPSOID GEODESIC LENGTH

Student: Hristos Courellis | Professor: Gert Cauwenberghs

57. PIPELINED PARALLEL CONTRASTIVE DIVERGENCE FOR CONTINUOUS GENERATIVE MODEL LEARNING

Students: Bruno Umbria Pedroni, Sadique Sheik | Professor: Gert Cauwenberghs

58. ENZYME-TARGETED NANOPARTICLES FOR DELIVERY TO ISCHEMIC MUSCLE

Student: Jessica Leigh Ungerleider | Professor: Karen L. Christman

59. HUMANIZED MOUSE MODEL FOR ASSESSING THE HUMAN IMMUNE RESPONSE TO XENOGENIC AND ALLOGENEIC DECELLULARIZED BIOMATERIALS

Student: Raymond M Wang | Professor: Karen L. Christman

60. UTILIZING INJECTABLE DECELLULARIZED EXTRACELLULAR MATRIX HYDROGELS FOR THE SLOW RELEASE OF MICRORNAs

Student: Melissa Jenee Hernandez | Professor: Karen L. Christman

61. 3D COLLAGEN ARCHITECTURE INDUCES VASCULAR MIMICRY IN CANCER CELLS THROUGH A CONSERVED MIGRATORY AND TRANSCRIPTIONAL RESPONSE

Student: Daniel Ortiz Velez | Professor: Stephanie I. Fraley

62. DIGITAL HIGH RESOLUTION MELT FOR FIRST PASS SCREENING FOR SEPSIS

Students: Mridu Bhashini Sinha, Hannah Mack, Julietta Jupe
Professors: Stephanie I. Fraley, Todd P. Coleman

63. EXTENDED PHOTONIC TRANSFER IN DNA NANOSTRUCTURES

Student: Alaleh Golkar Narenji | Professor: Michael J. Heller

64. RAPID ELECTROPHORETIC METHOD FOR THE DETECTION OF ENZYME ACTIVITIES IN UNPROCESSED BLOOD

Student: Elaine Alexandra Skowronski | Professor: Michael J. Heller

65. TOWARDS PLUG-AND-PLAY BRAIN-STATE DECODING WITH LARGE-SCALE DATA

Student: Chunshu Wei | Professors: Tzyy-Ping Jung, Gert Cauwenberghs

66. A NOVEL MATHEMATICAL MODEL TO SIMULATE CARDIAC BIOMECHANICS

Student: Jessica Caitlin Leon | Professor: Andrew D. Mc Culloch

67. CARDIAC-DISEASES-BASED GENE REGULATORY NETWORK CONSTRUCTION AND APPLICATION

Student: Shulin Cao | Professor: Andrew D. Mc Culloch

68. SYNOVIAL FLUID HYALURONAN FLUCTUATION IN POST-TRAUMATIC OSTEOARTHRITIS: DEPENDENCE ON THE DYNAMIC BALANCE BETWEEN BIOSYNTHESIS, LOSS, AND FLUID FLUX

Student: Aimee Rose Raleigh | Professor: Robert L. Sah

69. AUTODIGESTION IN HEMORRHAGIC SHOCK: A TWO-STEP PROCESS

Student: Asimina S Courelli | Professor: Geert W. Schmid-Schoenbein

70. MODULAR INTEGRATED ORGAN-ON-A-CHIP SYSTEMS FOR CANCER DRUG TESTING

Student: Han Liang Lim | Professor: Shyni Varghese

71. UBISTROKE: A NEUROBEHAVIORAL EVALUATION SYSTEM USING 3D DEPTH TRACKING AND COMPUTER VISION

Student: Vishwajith Ramesh | Professors: Nadir Weibel, Gert Cauwenberghs

COMPUTER SCIENCE & ENGINEERING

72. TOUCAN: A TRANSLATOR FOR COMMUNICATION TOLERANT MPI APPLICATIONS

Student: Sergio Miguel Martin | Professor: Scott B. Baden

73. AMPLICONARCHITECT: RECONSTRUCTION OF COMPLEX REARRANGEMENTS OF TUMOR GENE AMPLIFICATION

Student: Viraj Balkrishna Deshpande | Professor: Vineet Bafna

74. SHARING AND COMMUNITY CURATION OF MASS SPECTROMETRY DATA WITH GLOBAL NATURAL PRODUCTS SOCIAL MOLECULAR NETWORKING

Student: Mingxun Wang | Professor: Nuno F. Bandeira

75. LEVERAGING CONTEXT TO IMPROVE MACHINE LEARNING CLASSIFICATIONS OF MARINE ZOOPLANKTON

Student: Jeffrey Scott Ellen | Professors: Charles Elkan, Lawrence K. Saul, Zhuowen Tu, Nuno M. Vasconcelos, Mark Ohman

76. IDENTIFYING AT-RISK STUDENTS BEFORE IT IS LATE

Student: Soohyun Nam Liao | Professors: William G. Griswold, Leonard E. Porter

77. LETS GO(LANG) REAL-TIME

Student: Ashish Kashinath | Professor: Rajesh Gupta

78. PIBLE: BATTERY-FREE MOTE FOR PERPETUAL INDOOR APPLICATIONS

Student: Francesco Fraternali | Professor: Rajesh Gupta

79. RESISTIVE BLOOM FILTERS: FROM APPROXIMATE MEMBERSHIP TO APPROXIMATE COMPUTING WITH BOUNDED ERRORS

Student: Vahideh Akhlaghi | Professor: Rajesh Gupta

80. THROUGHPUT OPTIMIZATION FOR HIGH-LEVEL SYNTHESIS USING RESOURCE-AWARE REGULARITY EXTRACTION

Student: Atieh Lotfi | Professor: Rajesh Gupta

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 Ardeshiricham | 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 Patankar, 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-OPTRICAL MECHANICALLY FLEXIBLE (EO-FLEX) NANOPROBES

Students: Spencer Patrick Ward, Conor Riley | Professors: Sadik C. Esener, Donald J. Sirbulu

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 Jiayi 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 Nauli 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 NITRIDE CONSOLIDATED 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

NANOENGINEERING

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 Obirizee | 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: Junxin 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. Sirbulu

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 ELECTRODIELECTRIC 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 Dipppo | 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

STRUCTURAL ENGINEERING

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 Ghaaowd | 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

DEPARTMENTS AND RESEARCH CENTERS

JACOBS SCHOOL ACADEMIC DEPARTMENTS

Bioengineering	be.ucsd.edu
Computer Science and Engineering	cse.ucsd.edu
Electrical and Computer Engineering	ece.ucsd.edu
Mechanical and Aerospace Engineering	maeweb.ucsd.edu
NanoEngineering	ne.ucsd.edu
Structural Engineering	structures.ucsd.edu

AGILE RESEARCH CENTERS

CaliBaja Center for Resilient Materials and Systems	resilientmaterials.ucsd.edu
Center for Engineered Natural Intelligence	CENI.ucsd.edu
Center for Extreme Events Research	CEER.ucsd.edu
Center for Microbiome Innovation	Microbiome.ucsd.edu
Center for Visual Computing	VisComp.ucsd.edu
Center for Wearable Sensors	WearableSensors.ucsd.edu
CHO Systems Biology Center	CHO.ucsd.edu
Sustainable Power and Energy Center	SPEC.ucsd.edu

AFFILIATED RESEARCH INSTITUTES

Center for Energy Research	CER.ucsd.edu
Center for Memory & Recording Research	CMRR.ucsd.edu
Center for Networked Systems	CNS.ucsd.edu
Center for Wireless Communications	CWC.ucsd.edu
Contextual Robotics Institute	ContextualRobotics.ucsd.edu
Cymer Center for Control Systems and Dynamics	CCSD.ucsd.edu
Deep Decarbonization Initiative	DeepDecarbon.ucsd.edu
Information Theory & Applications Center	ITA.ucsd.edu
Institute for the Global Entrepreneur	IGE.ucsd.edu
Institute of Engineering in Medicine	IEM.ucsd.edu
Powell Structural Research Labs	Structures.ucsd.edu
Qualcomm Institute (Calit2 at UC San Diego)	CalIT2.net
San Diego Supercomputer Center	www.sdsc.edu

JUDGES

Rahul Ahlawat	ASML/CYMER
Steven Auerbach	Leidos
Alejandro Barajas	Envision Engineering
Justin Boggs	Oracle
Aarash Bordbar	Sinopia Biosciences
Laura Cervino	UC San Diego
Greg Chauncey	
Jaime Chen	Kaiser Permanente
Sung Hwan Cho	NanoCollect Biomedical
Ted Clowes	
Patrick Convery	Raytheon
Nolan Davis	Leidos
Silvia De Dea	ASML/CYMER
Jessica DeQuach	Ventrix, Inc.
Nik Devereaux	ViaSat
Raheleh Dilmaghani	
Gary Dorrance	SPAWAR Systems Center Retired
Travis Downing	Southern California Design Co.
Wayne Dunstan	ASML/CYMER
Steven Ehlers	General Atomics
Mallory Embree	Ascus Biosciences
Robert Ferencz	Lawrence Livermore National Laboratory
Piraj Fozoonmayeh	ASML/CYMER
Karl Francis	Illumina
Alex Gantman	Qualcomm
Brett Gardner	NAVAIR
Maryam Gholami	UC San Diego
Matthew Graham	ASML/CYMER
Sarah Guthals	GitHub and We Can
Kathy Hayashi	Qualcomm and IEEE
Matthew Hedayat	STG
Lazaro Herrera	County of San Diego
Leo Holland	General Atomics
David Hutches	UC San Diego Jacobs School of Engineering
Robin Ihnfeldt	General Engineering & Research
Ali Irturk	Cognex Corporation

JUDGES

Rahul Kapadia	ASML/CYMER
George Khoury	ViaSat
Dan Kline	NOVO Engineering, Inc.
Sam Knight	LocationSmart
Michael Krupp	Xfibra Inc.
Senmao Lin	CliniComp, Intl'
Alen Malaki	Cisco
Michael Mamaghani	Media Pouch
Paul Margolin	Booz Allen Hamilton
James (Brett) Marymee	Raytheon
David McElfresh	Oracle
Matthew Minnick	NAVAIR
Sreeparna Mukherjee	Cisco Systems
Daniel Nelson	Flowserve Corporation
Ravi Nemani	Mitchell International
Erez Nir	Mitchell International
Elio Oikawa	Solar Turbines
Rob Peabody	Cubic Mission Solutions
Luis Pineda	Retired Qualcomm
Gustavo Prado	Xenco Medical
William Proffer	Leidos
Josh Rivera	NAVAIR
Malcolm Robertson	Keysight Technologies
Chris Root	NAVAIR
Enrico Ros	Qualcomm
Tim Rueth	UC San Diego
Maurice Sabado	Leidos
Iman Sadeghi	Pinscreen
Jeffrey Sandubrae	UC San Diego
Jennifer Schlenzig	Northrop Grumman
Kevin Schmid	Stevanato Group
G B Singh	Solar Turbines
Gail Slemon	
Garrett Smith	Breathe Capital
Tarun Soni	Northrop Grumman

JUDGES

Mary Sorrell	UC San Diego
Adriane Stebbins	Raytheon
Robert Stone	Northrop Grumman
Eric Takeuchi	Daylight Solutions
Devang Thakkar	InnoTivum
Mayank Tiwari	Qualcomm
Chiang Tom	
William Townsend	General Atomics Aeronautical Systems
Gopi Tummala	Qualcomm
Jerry Tustaniwskyj	Cohu Inc. (Delta Design)
Tom Valine	Salesforce
David Voss	Solar Turbines
Jiwu Wang	Allele Biotech/Scintillon Institute
Eliot Weitz	ViaSat
Jim Wilk	Northrop Grumman
True Xiong	Sony PlayStation
Yohei Yamamuro	Simplexity Product Development
John Yamauchi	ChemoTactics
Michael Yao	Northrop Grumman
Lionel Young	Flowserve Coporation

WE'RE CONNECTING THE WORLD. ARE YOU IN?

 Profound Impact

 Brilliant Minds

 Limitless Opportunities

 Fearless Innovation

 Invigorating Campuses

Career opportunities available at intern,
new grad, and professional levels.

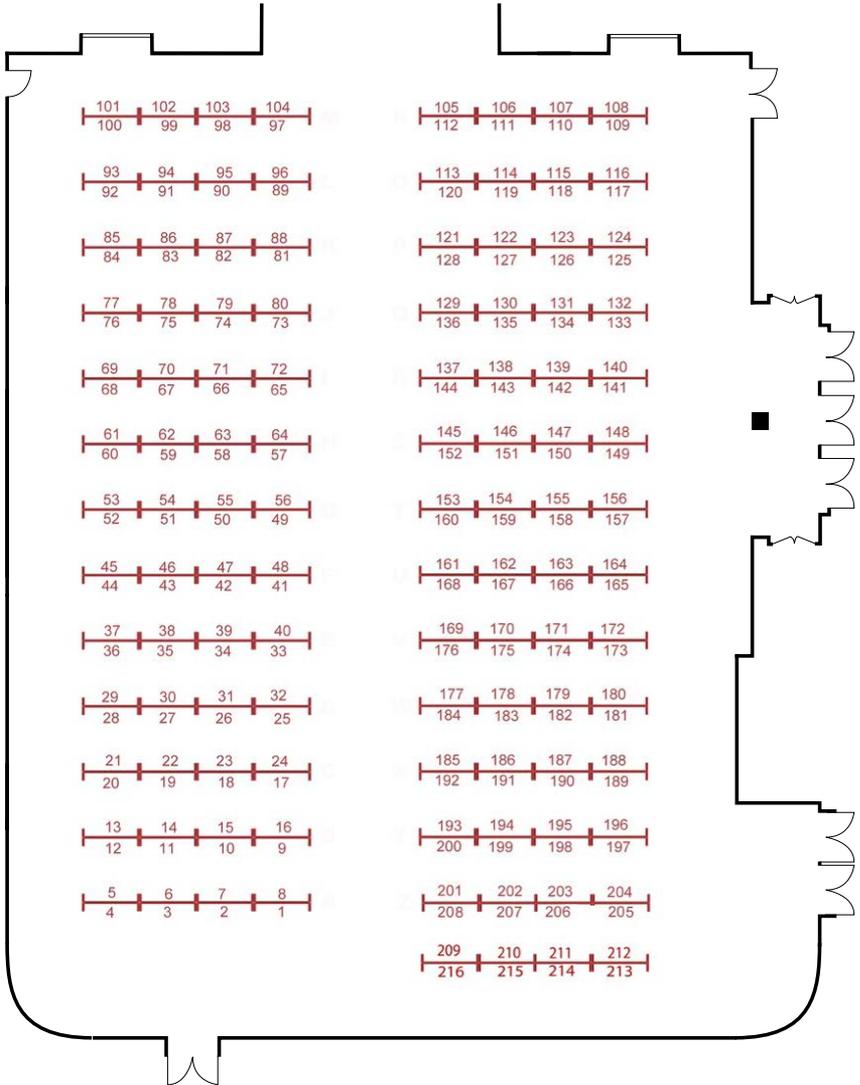
ViaSat[®]

NOTES



POSTER SESSION MAP

WEST BALLROOM



ENTRANCE

POSTER NUMBERS

AGILE RESEARCH CENTERS

Center for Wearable Sensors	1 – 9
Center for Visual Computing	10 – 21
CaliBaja Center for Resilient Materials and Systems	22 – 36
Center for Extreme Events Research	37 – 44
Sustainable Power and Energy Center	45 – 51

ACADEMIC DEPARTMENTS

Bioengineering	52 – 71
Computer Science and Engineering	72 – 105
Electrical and Computer Engineering	106 – 127
Mechanical and Aerospace Engineering	128 – 174
NanoEngineering	175 – 197
Structural Engineering	198 – 216

PRICE CENTER MAP

Poster Session: Level 2 (West Ballroom)

Faculty Lightning Talks: Level 4 (the Forum)

Networking Reception: Level 2 (East Ballroom)

Parking Shuttle: 11 AM – 7 PM

