

## Industry Partnerships

## JOIN THE CONTEXTUAL ROBOTICS INSTITUTE

Joining the Contextual Robotics Institute provides access to UC San Diego faculty, researchers, and graduate students who are transforming autonomy, healthcare robotics and advanced manufacturing.

The Institute also provides industry partners with a coordinated research environment through which technical and research challenges are tackled in a collaborative, cross-disciplinary environment.

We build talent and technology for tomorrow's real-world robotics systems.

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## FACILITIES



### AUTONOMY RESEARCH AND TESTING ECOSYSTEM

Institute researchers are collaborating across campus in order to turn UC San Diego into a living laboratory for autonomy, including self-driving vehicles. One of the first projects will be autonomous mail delivery, which is one of the ways the Institute is focused on the 'last mile' problem – when autonomous vehicles get off the freeway and need to navigate crowded neighborhood streets. UC San Diego is a leader in many of the areas critical for real-world autonomous vehicles including 5G and the future of wireless technologies, vehicle-to-vehicle communication, radar, user-centered design, cybersecurity, driver monitoring and interdisciplinary smart-cities research.

More information: [cri-info@ucsd.edu](mailto:cri-info@ucsd.edu)

### AERODROME

The Institute's Aerodrome enables controlled, outdoor research with Unmanned Aerial Vehicles (UAVs) at UC San Diego. Constructed in 2017 with funding from our partners at Qualcomm and Northrop Grumman, the Aerodrome is San Diego's premier outdoor drone flight cage, supporting research and collaboration in autonomous flight, perception, machine learning and multi-vehicle collaboration. The facility is an enclosed, mesh cage, roughly 45' x 55' feet in area and 35' tall. The space is available for use by UC San Diego faculty, staff and student researchers, as well as industry partners.

More information: Tim McConnell at [tmconnell@eng.ucsd.edu](mailto:tmconnell@eng.ucsd.edu)



### ROBOT GUIDES, ROBOT ZOO AND SMART HOME

On the first floor of Atkinson Hall you'll find a robot zoo, scenes from a next-generation Smart Home, and a pair of robots that work part time as building receptionists and tour guides. These facilities and the robots and humans you'll find working in them offer a sample of the varied robotics research being done at the Institute. The robot guides TritonBot and BoxBot, for example, are often out collecting data from interactions with visitors to Atkinson Hall. This project is aimed at learning to develop robotic systems that are better equipped to interact autonomously with humans. This is just one of the ways Institute researchers are focused on developing useful robotic systems capable of interacting in real time with humans in the real world.

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## AFFILIATED FACULTY

### LEADERSHIP

#### Henrik Christensen

Director, Contextual Robotics Institute; Cognitive Robotics Lab

#### Todd Hylton

Executive Director, Contextual Robotics Institute

### ANTHROPOLOGY

#### Thomas Levy

Center for Cyber-Archaeology & Sustainability

### BIOENGINEERING

#### Gert Cauwenberghs

Integrated Systems Neuroengineering Lab

#### Todd Coleman

Neural Interaction Lab

#### Gabriel Silva

Mathematical Neuroscience and Neural Engineering Lab

### COGNITIVE SCIENCE

#### Andrea Chiba

Neurally feasible robotic tools for use as embodied models

#### Virginia de Sa

Machine Learning multi-view/multi-modal learning

#### David Kirsh

Interactive Cognition Lab

#### Ayse P. Saygin

Cognitive Neuroscience and Neuropsychology Lab

#### Douglas Nitz

Systems Neuroscience Lab

#### Zhuowen Tu

Machine Learning, Perception, and Cognition Lab

#### Angela Yu

Computational & Cognitive Neuroscience Lab

### COMMUNICATION

#### Morana Alač

Human-robot interaction in everyday settings

### COMPUTER SCIENCE AND ENGINEERING

#### Manmohan Chandraker

3D scene understanding for self-driving cars

#### Kamalika Chaudhuri

Center for Trustworthy Machine Learning

#### Garrison Cottrell

Mechanisms underlying human perception

#### Sicun Gao

Automated reasoning, design automation

#### Rajesh Gupta

Microelectronic Embedded Systems Lab

#### Ryan Kastner

Remote sensing platforms

#### Ravi Ramamoorthi

Center for Visual Computing

#### Laurel Riek

Robotics & Healthcare Engineering Lab

#### Tajana Rosing

System Energy Efficiency Lab

#### Hao Su

Deep learning for understanding 3D environments

### ELECTRICAL AND COMPUTER ENGINEERING

#### Nikolay A. Atanasov

Existential Robotics Lab

#### Shaya Fainman

Ultrafast and Nanoscale Optics Group

#### Joseph Ford

Photonics Systems Integration Lab

#### Tara Javidi

Advanced Networking Science Lab

### Ken Kreutz-Delgado

QI/Calit2 Pattern Recognition Lab

#### Patrick Mercier

Energy-Efficient Microsystems Lab

#### Gabriel Rebeiz

Phased arrays for autonomous transportation

#### Curt Schurgers

Remote sensing, imaging, system prototyping

#### Mohan Trivedi

Lab for Intelligent & Safe Automobiles

#### Nuno Vasconcelos

Statistical Visual Computing Lab

#### Michael Yip

Advanced Robotics and Controls Lab

### GLOBAL POLICY & STRATEGY

#### Ruixue Jia

Economics, history and politics of robotics

### INSTITUTE FOR NEURAL COMPUTATION

#### Scott Makeig

Swartz Center for Computational Neuroscience

### MATHEMATICS

#### Melvin Leok

Computational Geometric Mechanics Group

### MECHANICAL AND AEROSPACE ENGINEERING

#### Thomas Bewley

UCSD Flow Control & Coordinated Robotics Labs

#### Bob Bitmead

Control systems underpinning robotics

### Jorge Cortes

Multi-Agent Robotics Lab

#### James Friend

Medically Advanced Devices Lab

#### Miroslav Krstic

Nonlinear and Adaptive Control Lab

#### Nick Gravish

Bio-inspired robot design, fabrication, and control

#### Sonia Martinez

Multi-Agent Robotics Lab

#### Tania Morimoto

Robotics, haptics, and human-in-the-loop interfaces

#### Sutanu Sarkar

Computational Fluid Dynamics Lab

#### Frank Talke

Robotics in manufacturing of hard disks, medical devices

#### Michael Tolley

Bioinspired Robotics and Design Lab

### DEPARTMENT OF MUSIC

#### Shlomo Dubnov

Center for Research in Entertainment in Learning

### NANOENGINEERING

#### Shaochen Chen

Nanobiomaterials, bioprinting, & tissue engineering

#### Joseph Wang

Micro- and nano-robotics

#### Sheng Xu

Flexible and stretchable electronics

### STRUCTURAL ENGINEERING

#### Falko Kuester

Drone Lab