



Associate professor Jeff Krichmar's Cognitive Anteater Robotics Lab (CARL) uses robots to learn how the brain adapts to different environments. Photo by Daniel Anderson, University Communications.

# COGNITIVE SCIENCES

The Department of Cognitive Sciences addresses one of the greatest current scientific challenges — to understand the human mind and its functions. Multi-disciplinary, innovative approaches and modern advances in tools and methods are poised to discover how the mind and brain support fundamental human abilities including: attention, memory, consciousness, multi-sensory integration, language processing, social cognition, and individual, economic and social decisions.

Findings impact our scientific understanding of diseases and disorders including Alzheimer's, schizophrenia and autism, to name a few.

Ranked 13th in the nation in cognitive psychology, the department brings together scholars from a variety of disciplines including mathematics, neuroscience, philosophy, psychology and others who seek to gain a better scientific understanding of the human mind. The department is home to 29 faculty, many of whom have received international recognition for their distinguished research achievements. Among this group are four members of the prestigious National Academy of Sciences, nine fellows and two William James fellows of the American Psychological Society, eight fellows of the American Psychological Association and five fellows of the Society for Experimental Psychology.

More than 1,000 students are currently enrolled in cognitive sciences programs and/or research at UC Irvine. Research is clustered in several areas:

#### Attention, Memory and Information Processing

Understanding how the brain selects inputs and sustains effort, stores and retrieves information in memory, and processes information for reasoning and decision. This area has implications for attention deficit disorders, autism, memory deficits, and deficits in social interaction.

#### Hearing and Language

Discovery of the brain process that understand complex sounds, speech, and language and music. This research has implications for developmental delays of language, aging, and stroke.

#### Vision, Perception and Action

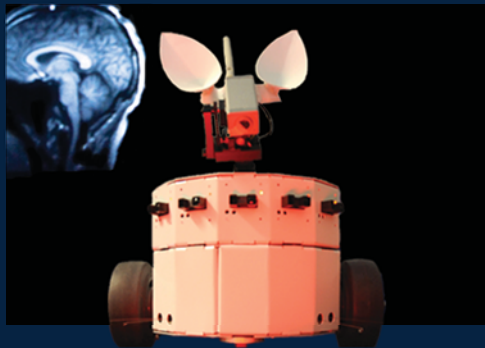
Discovery of the brain processes that create integrated sensory perceptions, process visual inputs, and organize motor responses. Applications include low vision, developmental and disease reductions in motor function.

#### Computational Neuroscience

Creating computational models of how humans process information, and of the brain mechanisms underlying those processes.



## INVESTIGATE



## INNOVATE



## IMPACT

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### INNOVATIVE, STATE OF THE ART TECHNOLOGY

Modern research in mind, brain, and behavior requires new tools to measure brain regions and brain states in humans as they carry out mental tasks. These include electrical (EEG) and magnetic (MEG) measures of brain activity and functional magnetic resonance images (fMRI) of brain state.

- **fMRI Brain Imaging Facilities**  
Systems for measurement of functional magnetic resonance images (fMRI) that measure brain activity in humans, with auditory display capabilities
- **EEG/MEG Brain Imaging Facilities**  
Electrical and magnetic measurement of brain activity, including simultaneous measurement of EEG with fMRI
- **Auditory, Visual and Behavioral Testing Facilities**  
Anechoic chambers, sophisticated visual displays, and systems to measure human movements
- **Computational Modeling**  
Computer and robotic systems to model human brain and behavior

### INVESTING IN PEOPLE

To recruit and retain top scholars, facilitate excellence and growth in our academic programs and interdisciplinary centers and strengthen community service and outreach, we need your investment.

- **People**  
Named Chairs in Cognitive Science (2 @ \$2M)  
Graduate Endowed Fellowships (4 @ \$250K)  
Graduate Term Fellowships (4 @ \$10K)  
Undergraduate Scholarships (4 @ \$125K)
- **fMRI/EEG/MEG Brain Imaging Facilities**  
Equipment Expenditures: \$3M
- **Annual Budget from Endowment Earnings**  
Directors research stipend: \$50K  
Graduate Fellowships: \$50K  
Research stipends for special research projects: \$50K  
Facilities staffing, equipment contracts, etc.: \$200K
- **Audition, Vision, Perception and Action Facilities**  
Equipment Expenditures: \$500K

Your gift to cognitive sciences has the power to transform individuals and communities and truly make a difference. Contact us or visit us online at [www.socsci.uci.edu](http://www.socsci.uci.edu) to learn how past donations have helped fund our future leaders.

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