DEGREES OFFERED

B.S.
- Electrical Engineering
- Computer Engineering
- Materials Science and Engineering

M.S.
- Electrical Engineering
- Computer Engineering
- Materials Science and Engineering
- M.S. Online

B.S. + M.S.
- Electrical Engineering
- Computer Engineering

PH.D.
- Electrical Engineering
- Materials Science and Engineering

UNDERGRADUATE FOCUS AREAS

ELECTRICAL ENGINEERING
- Communications, Signal Processing, and Networking
- Control and Robotics
- Embedded Systems and VLSI
- Intelligent Systems
- Nanotechnology, Advanced Materials, and Devices
- Power Systems and Smart Grid

COMPUTER ENGINEERING
- Compilers and Operating Systems
- Computer Architecture and CPU Design
- High-Performance Computing
- Real-Time and Embedded Systems
- VLSI and Electronic Design Automation
M.S. THEMES

- ADVANCED MATERIALS AND DEVICES
- COMMUNICATIONS AND SIGNAL PROCESSING
- EMBEDDED REAL-TIME SYSTEMS
- INTERNET OF THINGS
- NANOSCIENCE AND NANOTECHNOLOGY
- ROBOTICS AND COMPUTER VISION
- SMART GRIDS AND POWER SYSTEMS
<table>
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<tr>
<th>AREAS OF RESEARCH</th>
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<tr>
<td><strong>COMMUNICATIONS, SIGNAL PROCESSING, AND NETWORKING</strong></td>
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<tr>
<td>• Investigation and development of communication and signal processing theories</td>
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<td>• Algorithms and systems for wireless and network communications</td>
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<td>• Video and multimedia technologies</td>
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<td><strong>CONTROL AND ROBOTICS</strong></td>
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<tr>
<td>• Theories and methods of modeling, identification and design of highly complex control systems</td>
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<td>• Planning and analysis of motion, navigation and control of autonomous vehicles and robotic systems</td>
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<td><strong>COMPUTER ENGINEERING</strong></td>
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<tr>
<td>• Design and implementation of hardware and software systems</td>
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<td>• Computer architecture, VLSI design, real-time and embedded systems</td>
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<td>• Networked systems from small scales (e.g. Internet of Things) to large scales (e.g. data centers)</td>
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<td><strong>INTELLIGENT SYSTEMS</strong></td>
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<td>• Theoretical foundations and applications of computer vision, machine learning, and pattern recognition</td>
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<td>• Cyber-physical and autonomous systems</td>
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<td>• Intelligent transportation systems, multimedia technologies, and image/video bioinformatics</td>
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<td><strong>POWER SYSTEMS AND SMART GRID</strong></td>
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<td>• Development and demonstration of smart grid applications</td>
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<td>• Power system analysis and optimization</td>
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<td>• Electricity market design</td>
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<td>• Renewable energy integration</td>
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<td>• Power system security</td>
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<td><strong>NANOTECHNOLOGY, ADVANCED MATERIALS, AND DEVICES</strong></td>
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<td>• Theoretical, computational, and experimental investigation of nanostructures</td>
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<td>• Development of new bio- and opto-electronic materials, devices and circuits</td>
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<td>• MEMS and photonics</td>
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NEW FACULTY

BASAK GULER
Assistant Professor

- Postdoc, University of Southern California
- Ph.D., Pennsylvania State University
- Research: developing scalable, privacy-preserving, and context-aware communication and information processing frameworks for large-scale distributed networks.

HAMED MOHSENIAN-RAD
Professor
Bourns Family Faculty Fellow

- Research: developing optimization-based and data-driven techniques for power systems and smart grid applications with focus on sensing, controls, and operations.

PROMOTIONS

Professor Hamed Mohsenian-Rad
Smart grids

Assoc. Professor Shane Cybart
Superconductivity

Assoc. Professor Ming Liu
Super-resolution imaging

NEW EQUIPMENT

ORION NANO-FAB

- Helium Ion Microscope (HIM)
- Capable of biological detection at the single-molecule level
MAJOR FACILITIES AND RESEARCH CENTERS

AUTONOMOUS ROBOTS AND CONTROL SYSTEMS (ARCS) LAB
Fundamental robotics research enabling robust, adaptive, and resilient planning and control of teams of legged and aerial robots in dynamic and uncertain environments.

CENTER FOR ROBOTICS AND INTELLIGENT SYSTEMS (CRIS)
Conducts cutting-edge research on the foundations and applications of intelligent and autonomous systems, including robotics, computer vision, machine learning, real-time systems, and biomedical systems, among others.

CENTER FOR ENVIRONMENTAL RESEARCH AND TECHNOLOGY (CE-CERT)
CE-CERT is a world-leading research center focused on improving air quality, transportation, and energy for a sustainable future.

NANO-FABRICATION FACILITY
Class 100/1000 cleanroom facility, fully equipped for advanced nanofabrication and characterization.

PHONON OPTIMIZED ENGINEERED MATERIALS (POEM) CENTER
Materials characterization research focused on phonon and thermal properties of advanced materials.

CENTER FOR UBIQUITOUS COMMUNICATION BY LIGHT (UC-LIGHT)
UC-light is a UC system-wide research program focused on developing LED-based optical wireless communications technologies and systems.

WINSTON CHUNG GLOBAL ENERGY CENTER (WCGEC)
Renewable energy center focused on developing emerging energy solutions related to storage, generation and distribution.