FACULTY

COMMUNICATIONS, SIGNAL PROCESSING, AND NETWORKING

Salman Asif
Bir Bhanu
Roman Chomko
Basak Guler
*Yingbo Hua
Hamed Mohsenian-Rad
Samet Oymak
Amit Roy-Chowdhury
Ertem Tuncel

*Lead Faculty

INTELLIGENT SYSTEMS

Nael Abu-Ghazaleh
Salman Asif
*Matt Barth
Bir Bhanu
Jay Farrell
Basak Guler
Konstantinos Karydis
Hyoseung Kim
Hamed Mohsenian-Rad
Samet Oymak
Shaolei Ren
Amit Roy-Chowdhury
Nanpeng Yu

*Lead Faculty

COMPUTER ENGINEERING

Nael Abu-Ghazaleh
Hyoseung Kim
Shaolei Ren
*Sheldon Tan
Hung-Wei Tseng
Albert Wang
Daniel Wong

*Lead Faculty

NANOTECHNOLOGY, ADVANCED MATERIALS, AND DEVICES

*Alexander Balandin
Xi Chen
Ran Cheng
Shane Cybart
Elaine Haberer
Sasha Korotkov
Roger Lake
Jianlin Liu
Ming Liu
Mihri Ozkan

*Lead Faculty

CONTROL AND ROBOTICS

Matt Barth
Bir Bhanu
Roman Chomko
Jay Farrell
Konstantinos Karydis
Anastasios Mourikis
*Wei Ren
Amit Roy-Chowdhury

*Lead Faculty

POWER SYSTEMS AND SMART GRID

Matt Barth
*Hamed Mohsenian-Rad
Shaolei Ren
Nanpeng Yu

*Lead Faculty

Nael Abu-Ghazaleh (University of Cincinnati): Computer systems (computer architecture support for security, networking, and distributed systems). Parallel computing.
Salman Asif (Georgia Institute of Technology): Compression sensing. Computational and medical imaging. Machine learning.
Alexander Balandin (University of Notre Dame): Graphene properties and applications. Nanoelectronics. Thermal transport nanoscale phonon engineering; Photovoltaics. Thermoelectronics.
Matthew Barth (UC Santa Barbara): Transportation systems and automation technology, and their relationship with energy and air quality issues.
Bir Bhanu (University of Southern California): Video networks and bioinformatics. Computer vision. Machine Learning and pattern recognition. Image and Video databases. Robotics. Artificial Intelligence.
Xi Chen (University of Texas at Austin): Nanoscale materials, devices, and circuits. Avanced materials and devices for spin caloritronics, thermoelectrics, thermal management, and lithium ion batteries.
Ran Cheng (University of Texas at Austin): Fundamental physics and innovative applications in antiferromagnetic thin films and nanostructures.
Roman Chomko (University of Miami): Atmospheric correction of ocean color imagery: use of Junge power-law size distribution. Communications and Signal Processing. Control and Robotics.
Shane Cybart (UC San Diego): Nanoscale materials, devices, and circuits. Basic science and research applicaitons of Josephson devices.
Jay Farrell (University of Notre Dame): Aided inertial navigation for highway applications. Adaptive approximation-based control systems. Online planning and system performance optimization.
Basak Guler (Pennsylvania State University): Developing scalable, privacy-preserving, and context-aware communication and information processing frameworks for large-scale distributed networks.
Elaine Haberer (UC Santa Barbara): Bio-template materials for electronic, optoelectronic, and energy applications. Design and fabrication of micro- and nano- cavities on low threshold and sensing applications. Photoelectrochemical and etching processes.
Yingbo Hua (Syracuse University): Signal processing, wireless communications, and sensor networks.
Konstantinos Karydis (University of Delaware): Modeling and control of nonlinear uncertain and stochastic systems, uncertainty quantification and probabilistic model validation. Motion planning, navigation, and control of underactuated legged and aerial robots under uncertainty.
Hyoseung Kim (Carnegie Mellon University): Multi-Core OS and virtualization for Embedded and Cyber-Physical systems.
Alexander Korotkov (Moscow State University): Quantum computing with superconducting qubits. Quantum measurements. Nanoelectronics.
Roger Lake (Purdue University): Nanoelectronics, molecular electronics, photovoltaics, and sensing. Electron transport through nanostructured materials and interfaces. Electronic functionality from atomistic structure.
Jianlin Liu (UC Los Angeles): Zinc-Oxide based semiconductors and Van der Waals 2D materials system. Nanophotonic Light Sources (Zinc-Oxide LEDs and lasers, Nanolasers). Nonvolatile memories.
Ming Liu (UC Berkeley): Near-field scanning optical microscopy. 2D material Optoelectronics. Modified PDMS-stamp transfer for 2D fabrication. Plasmonics.
Hamed Mohsenian-Rad (University of British Columbia): Power systems: transmission, distribution, and resource management. Smart Grid: sensors, controls, and communications. Electricity market. Optimization Theory and Applications. Game Theory and Applications.
Anastasios Mourikis (University of Minnesota): Autonomous vehicle localization. Multi-robot systems. Estimation in mobile sensor networks; vision-aided intertial navigation. Simultaneous localization and mapping.
Samet Oymak (California Institute of Technology): Principled algorithms with a solid theoretical foundation with good trade-offs between speed, accuracy, scalability, and data-efficiency.
Mihri Ozkan (UC San Diego): Molecular electronics and non-Si based electronics. Bio-nanotechnology for cancer treatment and imaging. Hybrid electronic and optoelectronic devices.
Shaolei Ren (UC Los Angeles): Security for IT and IT for Security by enhancing the security of computer systems and leveraging computer systems to make cyber-physical systems more secure.
Wei Ren (Brigham Young University): Cooperative control algorithm design. Networked cyber-physical systems. Autonomous vehicles. Distributed sensor networks. Object-oriented multiple ground robot and UAV experiments.
Amit Roy-Chowdhury (University of Maryland): Computer Vision and Image Processing. Statistical Signal Processing and Pattern Recognition. Face and soft biometrics. Vision sensor networks. Machine learning. Multimedia. Biomedical image processing.
Sheldon Tan (University of Iowa): Modeling and analysis for Accelerated Aging Effects for Copper Interconnect ICs. VSLI reliability, resilience, fault-tolerant computing and dynamic reliability management. Dynamic thermal management for multi-core 3D microprocessors.
Hung-Wei Tseng (UC San Diego): Computer Engineering. Computer Architecture. Storage Systems. Research projects include intelligent data storage, building efficient heterogeneous computers, and machine learning assisted data storage.
Ertem Tuncel (UC Santa Barbara): Information theory, distributed source coding in sensor networks. Source-channel coding. Retrieval from high-dimensional databases and limits of retrieval performance.
Albert Wang (SUNY at Buffalo): RF/analog/mixed-signal integrated curcuits (IC), design for reliability and ESD protection. System-on-a-ship(SoC). IC CAD and modeling. Nano devices and circuits.
Daniel Wong (University of Southern California): Computer architecture, spans data centers, micro architecture, parallel architecture and embedded systems.
Nanpeng Yu (Iowa State University): Smart grid technology. Big data applications in power distribution systems. Restructured electricity market. Renewable energy integration.