Vision
We strive to be a valued community of scholars in which students are engaged in diverse learning experiences with faculty who are devoted to student success and technical achievement.

Mission
Through contemporary curricula, engaging pedagogy, scholarship and applied research, we produce career-ready graduates prepared for a lifetime of professional achievement and intellectual growth.

College of Engineering and Computer Science
Faculty / Staff
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Jointly offered by the CSC and EEE Departments
Our College of Engineering and Computer Science is the region’s pipeline for work-ready engineering, computer science, and construction management leaders.

The force behind our delivery of such leaders is generated by our faculty, who are among the most talented, dedicated and caring people in academia. Through their outstanding teaching and creative applied research solutions, they are here to serve our students and community. With this booklet, I invite you to connect with our College of Engineering and Computer Science.
Lorenzo M. Smith, Ph.D.
Dean, College of Engineering and Computer Science
Email lsmith@ecs.csus.edu
Office RVR 2014F
Phone (916) 278-6127

Kevan Shafizadeh, Ph.D.
Associate Dean
Email shafizadeh@csus.edu
Office RVR 2014C
Phone (916) 278-6862

E. Antoinette Vojtech
Director of Development
Email antoinette.vojtech@csus.edu
Office Sac Hall 118
Phone (916) 278-4912

Denise Anderson
Dean’s Administrative Assistant
Email denise@ecs.csus.edu
Office RVR 2014E
Phone (916) 278-6127

Fausta Romo
College Resource Analyst
Email fausta@ecs.csus.edu
Office RVR 2014D
Phone (916) 278-6367

Suzanne Abshire
College Resource Analyst & Associate Dean's Assistant
Email abshires@ecs.csus.edu
Office RVR 2014
Phone (916) 278-6830
CIVIL ENGINEERING

Ashley Mihok
Administrative Support Coordinator II
Email: mihoka@ecs.csus.edu
Office: RVR 4024C
Phone: (916) 278-6982

COMPUTER SCIENCE

Veronica Pruitt
Administrative Support Coordinator II
Email: vpruitt@ecs.csus.edu
Office: RVR 3018H
Phone: (916) 278-5843

COMPUTER SCIENCE & ELECTRICAL & ELECTRONIC ENGINEERING

Administrative Support Assistant II
Vacant

CONSTRUCTION MANAGEMENT

Anyssa Lumbert
Administrative Support Coordinator I
Email: lumbert@ecs.csus.edu
Office: RVR 4026
Phone: (916) 278-6616

ELECTRICAL & ELECTRONIC ENGINEERING

Andrew Haff
Administrative Support Coordinator II
Email: haffa@ecs.csus.edu
Office: RVR 3018E
Phone: (916) 278-6320

MECHANICAL ENGINEERING

Ryan Gorsiski
Administrative Support Coordinator II
Email: gorsiski@ecs.csus.edu
Office: RVR 4024F
Phone: (916) 278-6624
SUPPORT SERVICES

COMPUTING & COMMUNICATION SERVICES

Lynne Koropp
Director
Email  lynne@csus.edu
Office  RVR 2028
Phone  (916) 278-3547

Patrick Brannan
IT Consultant
Email  brannanp@ecs.csus.edu
Office  RVR 2022
Phone  (916) 278-7279

Ray Frazier
OS Analyst
Email  fraizerr@ecs.csus.edu
Office  RVR 2026
Phone  (916) 278-5413

John Jones
Web Developer/Ext. Media
Email  john.jones@csus.edu
Office  RVR 2030
Phone  (916) 278-1519

Michael Keenan
OS Analyst
Email  keenanm@ecs.csus.edu
Office  RVR 2032
Phone  (916) 278-6186

Derek Cuffe
OS Analyst
Email  cuffe@csus.edu
Office  RVR 2024
Phone  (916) 278-2856
**SUPPORT SERVICES**

**COMPUTING & COMMUNICATION SERVICES CONT.**

**System Support Center**  
*Help Desk, Info & Problem Reporting*  
Email: systemsupport@ecs.csus.edu  
Office: RVR 2016  
Phone: (916) 278-2858  
Email: helpdesk@ecs.csus.edu  
Lab: RVR 2011  
Phone: (916) 278-6690

**CONSULTING & PSYCHOLOGICAL SERVICES**

**Richard Zamora, Ph.D.**  
*Counselor*  
Email: richard.zamora@ecs.csus.edu  
Office: SCL 1213  
Phone: (916) 278-7294

**INTERNSHIP & CAREER SERVICES**

**Neysa Bush**  
*Director*  
Email: nbush@ecs.csus.edu  
Office: SCL 1204A  
Phone: (916) 278-7091

**Aimee Ring**  
*Administrative Support Assistant II*  
Email: ringa@ecs.csus.edu  
Office: SCL 1204  
Phone: (916) 278-6756
**TECHNICAL SERVICES**

**James Ster**  
Lead Equipment Tech III, Specialist  
Email  sterjf@ecs.csus.edu  
Office  SCL 1245A  
Phone  (916) 278-5624

**MECHANICAL ENGINEERING**

**Mike Newton**  
Equipment Tech III  
Email  newtonm@ecs.csus.edu  
Office  SCL 1327  
Phone  (916) 278-6253

**ELECTRICAL & ELECTRONIC ENGINEERING**

**R. K. Ravuri**  
Equipment Tech III  
Email  ravurirk@ecs.csus.edu  
Office  RVR 3016A  
Phone  (916) 278-7955

**SUPPORT SERVICES**

**MESA ENGINEERING PROGRAM**

**Jaime White**  
Director  
Email  whitej@ecs.csus.edu  
Office  SCL 1213  
Phone  (916) 278-5468

**Rachel Garcia**  
Student Services Professional III  
Email  regarcia@ecs.csus.edu  
Office  SCL 1213  
Phone  (916) 278-7879

**Reyna Angeles**  
Administrative Support Assistant II  
Email  angelesr@ecs.csus.edu  
Office  SCL 1213  
Phone  (916) 278-7969

**TECHNICAL SUPPORT**

**MESA ENGINEERING PROGRAM**

**Jaime White**  
Director  
Email  whitej@ecs.csus.edu  
Office  SCL 1213  
Phone  (916) 278-5468

**Rachel Garcia**  
Student Services Professional III  
Email  regarcia@ecs.csus.edu  
Office  SCL 1213  
Phone  (916) 278-7879

**Reyna Angeles**  
Administrative Support Assistant II  
Email  angelesr@ecs.csus.edu  
Office  SCL 1213  
Phone  (916) 278-7969
Civil engineers design and maintain public works such as roads, bridges, water and sewage systems as well as public facilities like ports, railways, and airports. Civil engineers are instrumental in planning, analyzing, and designing the facilities that touch many aspects of our everyday lives—from the water we drink to the roads we use to get to work or school to the buildings where we live and work.

Ben Fell, Department Chair
Teaching Interests
Earthquake Engineering; Computational Mechanics; and Dam Engineering.

Areas of Scholarship
Soil and Structural Dynamics; Soil-structure Interaction; Ground Motion Development; Computational Mechanics; and Dam Engineering.

Scholarship Statement
Developing and implementing analytical techniques that improve the ability to predict the response of civil infrastructure to earthquake loads means a more realistic assessment of performance and resilience can be made and lead to more targeted and calculated enhancements to civil-engineering systems.

Selected Publication
Ed Dammel  
Ph.D. Environmental Engineering  
University of California, Davis ‘97  
Associate Professor

Teaching Interests  
Environmental Engineering and Computational Methods.

Areas of Scholarship  
Bioremediation and Stormwater Quality.

Benjamin Fell, P.E.  
Ph.D. Civil and Environmental Engineering  
University of California, Davis ‘08  
Associate Professor  
Chair, Department of Civil Engineering

Teaching Interests  
Structural analysis; Steel design; Structural dynamics; earthquake engineering.

Areas of Scholarship  
Large-scale experimental techniques; Earthquake engineering, and Resilient light-framed structures.

Scholarship Statement  
Earthquake loads typically govern the lateral load cases for structural design in large regions of the Western U.S. My research focuses on improving our understanding of structural behavior during earthquakes so that we can reduce the risk to society.

Selected Publication  
Julie Fogarty
Ph.D. Civil Engineering
University of Michigan ‘15
Assistant Professor

Teaching Interests
Structural analysis; Steel design; and Solid mechanics.

Areas of Scholarship
Design of Steel Structures; Earthquake Engineering; and Educational Tools.

Scholarship Statement
Understanding steel column behavior under extreme events is necessary for the safe and efficient design of steel structures. To improve this understanding, my research focuses on steel columns that have experienced local flange damage as well as those subjected to seismic loading.

Selected Publication

Karen Lee Hansen
Ph.D. Civil Engineering
Stanford University ‘93
M.S. Construction Management
Stanford University ‘85
Professor

Teaching Interests
CE Professional Practice; Sustainable Design and Construction; Project Management and Innovative Project Delivery.

Areas of Scholarship
Civil Engineering Professional Practice; Sustainability and Infrastructure Resilience; Design Build and Integrated Project Delivery.

Scholarship Statement
I am highly motivated to communicate the value of C. E. and C. M. to those outside the profession as a way of elevating the public discussion regarding our decaying infrastructure and of attracting potential students.

Selected Publication
Teaching Interests
Environmental Engineering: Water Quality, and Treatment Processes; Water Resources Engineering.

Areas of Scholarship
Stormwater Quality and Treatment Best Management Practices (BMPs).

Scholarship Statement
Stormwater pollutants contribute to the impairment of many water bodies. We need efficient and affordable treatment processes that can fit into existing dispersed infrastructure and operate under a variety of hydrologic conditions.

Selected Publication
Teaching Interests
Geo-Environmental Engineering; Engineering Statistics and Data Analysis; Transport Modeling.

Areas of Scholarship
Environmental Data Analysis; Decision Making; Highly Variable Data; Spatial Analysis; Numerical Methods and Solutions; Contaminated Site Characterization.

Scholarship Statement
My research group provides technical advice on water policy issues; assists in watershed planning; and performs modeling, data analysis, and cost assessments to help both the public and private sectors make informed decisions. My training group provides training for operators and managers of water and wastewater treatment plants.

Selected Publication

Ramzi J. Mahmood, P.E.
Ph.D. Civil Engineering
Utah State University ‘88
Professor
Director of Office of Water Programs

Eric E. Matsumoto, P.E.
Ph.D. Structural Engineering
University of Texas, Austin ‘00
Professor

Teaching Interests
Structural Concrete; Precast, Prestressed Concrete; Earthquake Engineering.

Areas of Scholarship
Accelerated Bridge Construction using Precast Bridge Elements and Systems; Seismic Connections for Precast Systems; Anchorage to Concrete.

Scholarship Statement
Accelerated Bridge Construction technologies are critical to rehabilitate, repair, or replace ~250,000 deficient bridges, many in seismic regions. My research develops seismic precast elements and systems as a prime solution to this problem.

Selected Publication
Saad M. Merayyan  
Ph.D. Civil and Environmental Engineering  
Wayne State University ‘01  
Professor

Teaching Interests  
Water Resources Infrastructure; Watershed Modeling and Management; Water Resources Planning.

Areas of Scholarship  
Modeling of Water Resources Infrastructure; Watershed Modeling; Climate Change Impacts and Adaptation.

Scholarship Statement  
My research is applied in nature and focuses on the design, analysis and modeling of water resources infrastructure. I am studying the impacts of climate change on hydrology, water supply and management, and developing adaptation strategies.

Selected Publication  

Amir M. Motlagh  
Ph.D. Civil and Environmental Engineering  
University of Utah ‘16  
Assistant Professor

Teaching Interests  
Environmental Engineering; Wastewater Treatment; Water Reuse; Environmental Microbiology.

Areas of Scholarship  
Interface of environmental process engineering and environmental microbiology; Understand the microbial communities involved in environmental processes, Optimization of nutrient removal processes in wastewater treatment.

Scholarship Statement  
Wastewater is the black gold in a new era of sustainability. My research focuses on biological wastewater treatment and resource recovery. It is so interesting to study what amazing jobs bacteria can accomplish in a very sustainable way!

Selected Publication  
Teaching Interests
Fluid Mechanics; Hydrology; and Transport and Mixing in the Environment.

Areas of Scholarship
Wetland restoration and Wetland Accretion; Air-water and Land-atmosphere Gas Fluxes; and Water Flow Measurement Technology.

Scholarship Statement
Rising sea levels threaten low lying areas and infrastructure; wetlands can help mitigate these threats by accreting sediment and organic matter, and damping waves. My research identifies how wetland restoration projects can maximize these benefits.

Selected Publication
Teaching Interests
Transportation Engineering and Planning; Applied Engineering Statistics; Computer Applications in Civil Engineering.

Areas of Scholarship
Transportation Management and Facility Operations; Traffic Safety; Travel Behavior and Demand; Non-Motorized and Sustainable Transportation Planning.

Scholarship Statement
My research involves applying quantitative and statistical methods to analyze and evaluate various issues in transportation engineering and planning. I help to better understand how and why we travel from point A to point B.

Selected Publication
Computer Science is a systematic study of computing and its applications, ranging from its theoretical and algorithmic foundations to the cutting-edge technologies in many areas including computer architecture and engineering, computer graphics and games, computer networks and data communication, database systems, information assurance and security, intelligent systems, mobile and ubiquitous computing, system software, and software engineering.
COMPUTER SCIENCE

Behnam S. Arad
Ph.D. Electrical Engineering
Louisiana State University ‘97
Professor

Teaching Interests
Hardware Design and Validation using EDA tools; Computer architecture; Parallel computing.

Areas of Scholarship
Design of Power-efficient Hardware; Validation of Complex Embedded Systems; Hardware Security.

Scholarship Statement
My research focuses on the design of secure and power-efficient hardware. Energy efficiency and security are important design considerations for mobile devices. My findings contribute to the design of more energy-efficient and secure mobile devices.

Selected Publication

COMPUTER SCIENCE

Anna Baynes
Ph.D. Computer Science
University of Michigan ‘12
Assistant Professor

Teaching Interests
Information Visualization, Algorithms, Software Engineering, Information Analytics

Areas of Scholarship
Information Visualization, Visual Analytics

Scholarship Statement
My research focuses on new techniques to improve analytics and visualization techniques for large data sets.

Selected Publication
COMPUTER SCIENCE

Weide Chang
Ph.D. Computer Science
New Mexico Institute of Mining and Technology ’96
Associate Professor

Teaching Interests
Operating Systems; Compiler Construction; Computer Architecture.

Areas of Scholarship
Hidden Markov Modeling; Social Network Analysis.

Scholarship Statement
Developing accurate and predictive computer models through simulation on data collected from complex and dynamic systems. Monitoring and weighing on group and individual significances in socially-connected activities.

Selected Publication

COMPUTER SCIENCE

Haiquan (Victor) Chen
Ph.D. Computer Science
Auburn University ’11
Assistant Professor

Teaching Interests
(No)SQL Databases; Data Analytics and Mining; Dynamic Webs, Data Science Education.

Areas of Scholarship
Machine Learning; Security on Location-based Social Networks; Cyber-Physical Systems.

Scholarship Statement
My goal is to develop scalable machine learning/secure algorithms for big data in urban spaces, including data sensing, management, analytics, and visualization, to tackle the issues that cities face.

Selected Publication
“Scaling up Markov Logic Probabilistic Inference for Social Graphs”, IEEE Transactions on Knowledge and Data Engineering (TKDE), ’16
“Leveraging Spatio-Temporal Redundancy for RFID Data Cleansing”, ACM International Conference on Mgmt. of Data (SIGMOD), ’10
Yuan Cheng  
Ph.D. Computer Science  
University of Texas, San Antonio ‘14  
Assistant Professor

**Teaching Interests**  
Algorithms; Security; Cloud Computing.

**Areas of Scholarship**  
Security; Privacy; Social Computing; Cloud Computing.

**Scholarship Statement**  
My research focusses on developing techniques and strategies that help users enjoy sharing while keeping their data away from inappropriate access. I’m currently interested in applying these techniques in social computing, cloud computing, and Internet of Things, which all share one common characteristic: relationships.

**Selected Publication**  

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Jun Dai  
Ph.D. Information Sciences and Technology  
The Pennsylvania State University ‘14  
Assistant Professor

**Teaching Interests**  
Network Security; Computer Networking; Computer Forensics

**Areas of Scholarship**  
Network and Distributed System Security; Big Data in Enterprise Cyber Security Space; Cloud Security; Mobile Security.

**Scholarship Statement**  
Standing on the defense side of the cyber warfare, my research addresses emerging security concerns in large-scale networks or mobile systems. My work delivers macroscopic perspectives, and helps people identify new problems or get better solutions.

**Selected Publication**  
Teaching Interests
Digital Logic; Computer Architecture.

Areas of Scholarship
Single and Multiprocessor Systems Architecture; Computer Security through Hardware.

Scholarship Statement
As more data are created, processed, and transmitted, both demand for more powerful computers and the possibility of unauthorized access to data increase. Hardware—better than software—can play a role in keeping digital systems secure.

Selected Publications

Teaching Interests
Graphics Programming; Video Game Architecture; Artificial Intelligence; Computing Theory and Languages.

Areas of Scholarship
Artificial Intelligence; 3D Graphics/GPU Shader Programming; Neural and Evolutionary Computation.

Scholarship Statement
My artificial intelligence research has focused on neural networks, genetic algorithms, and game tree search. I am also interested in GPU shader programming and its application to 3D graphics, game engine architecture, and virtual reality.

Selected Publications
Teaching Interests
Database Design, Database System
Implementation, Data structures;
Algorithm Analysis.

Areas of Scholarship
Database Systems and Applications; Event
and Rule Processing in Centralized and
Distributed Environments; Data Security
and Privacy.

Scholarship Statement
My research focuses on various aspects
related to data management such as
database system structuring and applica-
tion design, and data security. It facilitates
data-centric application design in an
efficient, secure way.

Selected Publication
M. Nithyanandam, Y. Jin, “An Active Rule-Based
System for XACML 3.0”, in the proceedings
of the 32nd International Conference
on Computers and Their Applications,
March, 2017, Honolulu, Hawaii, USA.

Ted Krovetz
Ph.D. Computer Science
University of California, Davis ’00
Professor

Teaching Interests
Computer programming; Discrete mathematics;
Design and Analysis of Algorithms; Compilers;
Cryptography.

Areas of Scholarship
High-speed Provable Symmetric Cryptography,
Authenticated Encryption, Universal Hashing,
Specification and Implementation of
Cryptographic Algorithms.

Scholarship Statement
My work focuses on making it harder to make
mistakes when using cryptography and at the
same time, making cryptography computationally less expensive. These two goals make good
cryptography more attractive to use.

Selected Publications
Krovetz & Rogaway, The OCB authenticated-en-
Krovetz & Rogaway, The software performance
of authenticated-encryption modes, in Fast
Teaching Interests
Data Warehousing and Data Mining; Machine Learning; Algorithms; Computing Theory.

Areas of Scholarship
Knowledge Discovery in Databases (KDD); Big-data Applications; Machine Learning Algorithms Design and Applications; Education Capacity Building through User-paced Learning Tools.

Scholarship Statement
My research is about automated, actionable knowledge creation and predictive models for use by humans and computers. A set of Internet delivered KDD courseware/tools has been developed to help students learn necessary computing skills more efficiently.

Selected Publication

Teaching Interests
Computer Games and Graphics; Mobile Computing; GPU Computing.

Areas of Scholarship
GPU Computing; Mobile Computing; Artificial Intelligence.

Scholarship Statement
I research GPU computing in various domains including mobile and embedded systems (multitasking among real-time tasks), automotive computing (recognizing speed-limit signs), and medical imaging (performing image registration). Also, research in artificial intelligence (building robotic controllers) and machine learning (implementing sampling methods).

Selected Publication
Jinsong Ouyang  
Ph.D. Computer Science and Engineering  
University of New South Wales  ‘97  
Professor

Teaching Interests  
Distributed Systems; Data Structures and Algorithm Analysis; Operating Systems.

Areas of Scholarship  

Scholarship Statement  
My research has been in the areas of distributed systems and computer networks, especially focusing on manageability, dependability, and adaptability of distributed systems.

Selected Publication  

Ahmed M. Salem  
Ph.D. Computer Science  
Florida Institute of Technology  ‘01  
Professor

Teaching Interests  

Areas of Scholarship  
Requirements Specification and Design Modeling; Verification and Validation Methodology and Techniques; Information Assurance.

Scholarship Statement  
Research is an essential component in advancing our university and community. With research, new ideas, theories, and techniques are discovered which will enable us to explore greater heights and to achieve further goals in teaching and learning.

Selected Publication  
Ghassan Shobaki  
Ph.D. Computer Science  
University of California, Davis ‘06  
Assistant Professor

Teaching Interests  
Compilers; Algorithms and Theory of Computation; Operating Systems.

Areas of Scholarship  
Compiler Optimizations; Combinatorial Optimization Algorithms; Computer Architecture and System Performance.

Scholarship Statement  
A compiler translates a program written in a high-level language into machine language and applies a number of optimizations to the generated code; therefore, compilers play an important role in improving the performance of application programs.

Selected Publication  

Xiaoyan Sun  
Ph.D. Information Sciences and Technology  
Pennsylvania State University ‘16  
Assistant Professor

Teaching Interests  

Areas of Scholarship  
Enterprise-level Network/Distributed System Security; Cloud Security; Cyber Situational Awareness; Vehicular Ad hoc Network (VANET); Intelligent Transportation System (ITS).

Scholarship Statement  
Cyber security intelligence is a major motivation of my research; it requires support from both advanced security techniques and cyber situation knowledge integration. I develop practical approaches or systems to address real-world cyber security problems.

Selected Publication  
Chung-E Wang
Ph.D. Computer Science
University of Iowa ‘83
Professor

Teaching Interests
Design and Analysis of Algorithms; Systems Programming; Computer Networking; Introductory Programming.

Areas of Scholarship
Algorithms; Parallel Computation; Computer Networking; Compression; Encryption; Computational Biology.

Scholarship Statement
Most of my research efforts are related to algorithms. One goal is to bring out the importance of algorithms in the field of computer science. My most recent interest is in computational biology.

Selected Publication

Cui Zhang
Ph.D. Computer Science
Nanjing University, China ‘86
Professor
Chair, Department of Computer Science

Teaching Interests
Programming Language Theories and Paradigms; Formal Methods for Secure Software Engineering; Software Architecture.

Areas of Scholarship
Formal Methods for Secure Software Engineering; Software Architecture; Programming Language Theories and Paradigms.

Scholarship Statement
Most of my recent research is related to secure software engineering, important to information assurance and security.

Selected Publications
Construction Management is the organization and direction of building projects. Construction Managers oversee the building of roads, bridges, buildings, and industrial facilities upon which we all depend.
Teaching Interests

Areas of Scholarship
Solar Decathlon Project: Design, Build and Test Full-scale Home to be Net Zero, Affordable, Sustainable, Aesthetic, and Water Conservation; Service Learning Projects: Hands-on Learning Projects for the Community.

Scholarship Statement
With a responsibility to prepare students for the work force, my scholarly work is focused on applied research and service learning projects to provide hands-on practical experience.

Selected Publication
Teaching Interests
Heavy—Civil and General—Engineering
Construction Cost-estimating and Management; Construction Surveying and Layout; Engineering Properties of Soils; Engineering Properties of Construction Materials.

Areas of Scholarship
Net-Zero Residential Construction - U.S. Department of Energy Solar Decathlon; Case-based Learning at the Undergraduate Level.

Scholarship Statement
My work has brought students together from several disciplines across campus to build a home that produces more energy than it consumes. Our work will advance the current methods of residential construction to a more energy-efficient standard.

Karen Lee Hansen
Ph.D. Civil Engineering
Stanford University ‘93
M.S. Construction Management
Stanford University ‘85
Professor

Teaching Interests
C. E. Professional Practice; Sustainable Design and Construction; Project Management; Innovative Project Delivery.

Areas of Scholarship
Civil Engineering Professional Practice; Sustainability and Infrastructure Resilience; Design Build and Integrated Project Delivery.

Scholarship Statement
I am highly motivated to communicate the value of C. E. and C. M. to those outside the profession as a way of elevating the public discussion regarding our decaying infrastructure and of attracting potential students.

Selected Publication
Electrical and Electronic Engineers design electrical systems that generate and distribute power for lighting and transportation, as well as electronic systems such as computers, sensors and controls for robots, cell phones, and other communication devices. Electrical and Electronic Engineers build the technology—very large to very small—on which modern civilization depends.

ELECTRICAL & ELECTRONIC ENGINEERING
Teaching Interests
Control systems; Robotics and machine vision; Intelligent Systems.

Areas of Scholarship
Motion planning; Multi-agent Systems.

Scholarship Statement
My primary research area includes safe motion planning and multi-agent systems. Applications include robotics and intelligent transportation. The goal is to create intelligent systems for transportation with high levels of reliability and safety.

Selected Publications

Teaching Interests
Systems Design; Hardware and Software Systems; Circuits; Programmable Logic; Microprocessors and Micro-controllers; Incorporating Technology into Teaching Techniques.

Areas of Scholarship
Proven and Promising Course Redesign; Professional Engineering; Licensing and Review Courses; Center for Teaching and Learning Mentor to Help Faculty Incorporate Techniques and Technology into Teaching.

Scholarship Statement
I am looking for systems engineering solutions to today’s problems and ways to help the community and industry provide better solutions to the challenging situations faced in today’s world.

Selected Publication
Chancellor’s Office proposal and grant for Proven Course Redesign for Engineering Electric Circuits using MIT’s edX MOOC 6002.x course materials, 2013 to 2014.
Mohammed Eltayeb  
*Ph.D. Electrical Engineering*  
University of Akron ‘14  
Assistant Professor

- **Teaching Interests**  
  Communication Systems; Wireless Systems; Digital Signal Processing; Computer Networks.

- **Areas of Scholarship**  
  Analysis of Millimeter Wave Systems for 5G; Hybrid Precoding and Channel Estimation; Millimeter Wave Connected Vehicles.

- **Scholarship Statement**  
  The abundance of bandwidth in the millimeter wave (mmWave) spectrum enables gigabit-per-second data rates for cellular and local area networks. My work revolves in the analysis and design of mmWave systems and their applications in cellular and vehicular networks.

- **Selected Publication**  

Perry L. Heedley  
*Ph.D. Electrical Engineering*  
Auburn University ‘90  
Professor

- **Teaching Interests**  
  Analog & Mixed-signal Integrated Circuit Design; Graduate and Undergraduate Electronics Education; Pedagogy for On-line and Hybrid Education.

- **Areas of Scholarship**  
  High-speed Data Converters; Low-jitter Clock Generation and Distribution; Switched-capacitor Circuits for Analog Signal-processing; Low-voltage Analog Design in Nanometer CMOS Processes.

- **Scholarship Statement**  
  Most of my research focuses on improving high performance analog and mixed-signal integrated circuits for use in computers, communications, and medical equipment. My work has been used to make faster computer networks and better medical instruments.

- **Selected Publication**  
Preetham B. Kumar  
Ph.D. Electrical Engineering  
Indian Institute of Technology (IIT)  
Madras, India ’93  
Professor

Teaching Interests  
Electric Circuits; Electro-magnetics;  
Communication Systems; Wireless Systems;  
Digital Signal Processing (DSP); Microwave Engineering.

Areas of Scholarship  
Design of RF and Microwave Systems for Wireless Applications; Broadband Antenna Array Design; Microwave Hyperthermia Systems for Adjuvant Cancer Treatment.

Scholarship Statement  
The design of high frequency circuits and antennas for wireless systems, and the application of microwave and Radio frequency (RF) energy for cancer therapy by hyperthermia or heat treatment.

Selected Publications  

Milica Markovic  
Ph.D. Electrical Engineering  
University of Colorado, Boulder ’97  
Professor

Teaching Interests  
Electromagnetics; Microwave Engineering; Antennas.

Areas of Scholarship  
Modeling of High-efficiency Communication Circuits; Quasi-optical Circuits and Metamaterials.

Scholarship Statement  
Microwave circuits and antennas enable communication devices to move around unobstructed by cables. My scholarship revolves around understanding how to make devices more efficient so that the batteries in devices last longer.

Selected Publication  
**Teaching Interests**

Analog and Mixed-signal Integrated Circuit (IC) Design; Electronic Circuits; Basic Circuit Analysis.

**Areas of Scholarship**

Analog and Mixed-signal Integrated Circuit (IC) Design

**Scholarship Statement**

New design techniques for integrated circuit design that are of interest to the professional community.

**Selected Publications**


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**Teaching Interests**


**Areas of Scholarship**


**Scholarship Statement**

My main research agenda is to apply rigorous mathematical techniques like global optimization algorithms to automate the design of Analog Subsystems. These analog subsystems find applications in fields ranging from MEMS inertial sensors to hearing-aid devices and other embedded systems.

**Selected Publications**

Jing Pang  
Ph.D. Electrical Engineering  
Ohio University ‘03  
Professor

Teaching Interests  
Digital Design and Analysis; Microcomputers; Static Timing Analysis.

Areas of Scholarship  
Digital Design; Microcomputers; Digital System Analysis.

Scholarship Statement  
Most of my research revolves around trying to understand how digital design can be optimized for performance and cost. My discoveries help make digital design more affordable.

Selected Publications  
J. Pang, “Variance Window Based Car License Plate Localization”, *Journal of Computer and Communications*, 2014  

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Warren D. Smith  
Ph.D. Electrical Engineering  
University of Oklahoma ‘71  
Post doctorate Physiology  
University of New Mexico  
Medical School ‘73  
M.S. Electrical Engineering  
University of New Mexico ‘68  
Professor

Teaching Interests  
Biomedical Engineering; Digital Signal Processing; Communication Systems.

Areas of Scholarship  
Wearable Monitors; Biomedical Device Development; Biomedical Signal Processing.

Scholarship Statement  
I want to help people get and stay healthy and lower medical costs through interdisciplinary, collaborative development of biomedical devices.

Selected Publication  
Russell Tatro  
*M.S. Electric and Electronic Engineering*  
California State University, Sacramento ’00  
Full-time Lecturer

Teaching Interests  
Electronic Instrumentation; Power Electronics; Control and Embedded Systems; Electro-Optical Communication.

Areas of Scholarship  
Consumer Impacts of Renewable Energy Adoption; Renewable Energy Generation; Local (Consumer Based) Energy Storage; the Visibility of Science, Technology, Engineering and Mathematics (STEM) in K-12 Education.

Scholarship Statement  
The world is facing a global climate challenge as a result of centuries of the expanding use of fossil fuels. Engineering is needed to discover and implement practical energy alternatives that seek to minimize the climate impacts.

Selected Publication  

Tracy Toups  
*Ph.D. Electrical Engineering*  
Louisiana State University ’15  
Assistant Professor

Teaching Interests  

Areas of Scholarship  
Power quality of power systems and microgrids in the presence of non-sinusoidal and/or unbalanced voltages and currents; Advanced metering infrastructure’s adoption of power quality identification and metering; Power quality issues with power electronics and protection devices.

Scholarship Statement  
Power quality is an issue with the traditional power system’s adoption of new technology. Investigating century-old power theories and standards will help us understand and create a more efficient and durable power system.

Selected Publication  
Suresh Vadhva  
Ph.D. Electrical and Computer Engineering  
University of New Mexico ’82  
Professor

Teaching Interests  
Computer System Design; Computer Architecture and Organization; Digital Systems.

Areas of Scholarship  
Smart Grid; Computer System Design and Architecture.

Scholarship Statement  
My research focuses on Smart Grid, Computer Architecture and System Design.

Selected Publication  

Mohammad Vaziri, P.E.  
Ph.D. Electrical Engineering  
Washington State University ’00  
Assistant Professor

Teaching Interests  

Areas of Scholarship  
Research related to interconnection of Distributed Generation (DG) to Distribution Networks; Voltage Profile and System Protection issues; Design and Operation of Distribution Grids including Secondary Network Systems.

Scholarship Statement  
Electrical energy is an essential commodity in the safety, proper functioning, and advancement of our society. Discoveries from research in my areas of interest will make its production and delivery safer and more reliable.

Selected Publication  
Atousa Yazdani
Ph.D. Electrical Engineering
Missouri University of Science and Technology ’09
Assistant Professor

Teaching Interests
Electromechanics; Power Electronics; Power System.

Areas of Scholarship
Power Electronics and their Application in Power System; Power System Dynamic Analysis; Power Quality.

Scholarship Statement
I am interested in researching new methods for control and maintenance of the power grid, challenged by intermittent generation. Also, I am willing to work on implementation and optimization of possible solutions to enhance system reliability and quality of energy delivery.

Selected Publication

Mahyar Zarghami
Ph.D. Electrical Engineering
Missouri University of Science and Technology ’08
Associate Professor

Teaching Interests
Power system analysis; FACTS and HVDC; Power system dynamics and stability; Renewable energy systems.

Areas of Scholarship
Power system dynamics and stability, Applications of FACTS and HVDC in the operation and control of power systems; Integration of renewables in power systems; Modeling and simulation of transmission and distribution systems; Applications of synchronized measurements in wide-area control and protection of power systems.

Scholarship Statement
I am interested in improving the operation, control, and reliability of electric power systems through implementation of new technologies.

Selected Publication
"A Wide-Area Loss-Index based method for voltage instability protection", selected as one of the best conference papers in IEEE PES General Meeting, 2014.
Mechanical engineers design complex systems of machinery and equipment used in transportation, manufacturing and energy production such as aircraft, earthbound vehicles, power generation plants, manufacturing equipment, food production, robotics, biomedical devices, computer systems and components. Mechanical engineers create the devices used in our everyday lives and design the technology that will define the future.
**Estelle M. Eke**  
*Ph.D. Aeronautics and Astronautics*  
Rice University ‘85  
Professor

**Teaching Interests**  
Controls; Dynamics; Programming with Matlab and Simulink.

**Areas of Scholarship**  
Controls; Dynamics; Modeling of Mechatronics Systems.

**Scholarship Statement**  
Use of computer simulations and hands-on approaches to design control systems that satisfy some desired outcome are essential skills for engineers. For example, robots apply principles of controls in performing tasks that are hazardous to humans.

**Selected Publication**  

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**Jose J. Granda**  
*Ph.D. Mechanical Engineering*  
University of California, Davis ‘82  
Professor

**Teaching Interests**  
Modeling and Simulation of Mechatronics and Control Systems; Dynamic Finite Elements Analysis of Rigid and Flexible Multi-body Systems; Vehicle Dynamics and Design (Ground and Space Vehicles).

**Areas of Scholarship**  
Computer Simulation Methods to assist Engineers and Scientists; Dynamic Systems Design and Research; 3D Computer Models using Solid Modeling and Finite Elements; Bond Graph Modeling Technique as applied to Mechatronics and Control Systems.

**Scholarship Statement**  
Computer models and simulations provide engineers and scientists with tools to understand complex systems before anything is built.

**Selected Publication**  
Teaching Interests
Materials Science and Engineering;
Electronic Materials.

Areas of Scholarship
Wafer Bonding of Semiconductor Materials.

Scholarship Statement
Wafer bonding allows production of smaller, faster integrated circuit devices for use in many consumer applications.

Selected Publication

Teaching Interests
Material Science; Engineering Mechanics;
Composite Materials.

Named outstanding teacher by the College of Engineering and Computer Science in 2012 for his role advising Tau Beta Pi, the engineering honor society; Named their National Outstanding Advisor in 2009. [www.csus.edu/sacstatenews/facultyexcellence/homen.html](http://www.csus.edu/sacstatenews/facultyexcellence/homen.html)

Areas of Scholarship
Biomedical Engineering; Mechanical Engineering; Composite Materials.

Selected Publication
My scholarship curricula and research are focused on sustainability issues in society.
**Akihiko Kumagai**  
*Ph.D. Mechanical Engineering*  
University of Wisconsin, Milwaukee ‘93  
Professor  
Chair, Department of Mechanical Engineering

**Farzan Kazemifar**  
*Ph.D. Mechanical Engineering*  
University of Illinois, Urbana ‘14  
Assistant Professor

### Teaching Interests
- Manufacturing Processes; Product Development; Industrial Controls and Automation.

### Areas of Scholarship
- Manufacturing; Robotics; Automation; Mechatronics; Medical devices.

### Scholarship Statement
My scholarly work focuses on designing and developing mechanical systems for applications such as manufacturing, medical devices, miniature mechanisms, and space exploration.

### Selected Publication

### Teaching Interests
- Thermodynamics; Fluid Dynamics; Heat Transfer; Gas Dynamics.

### Areas of Scholarship
- Experimental fluid dynamics and thermal sciences; Environmental fluid mechanics; flow in porous media.

### Scholarship Statement
My research is in the area of fluids and thermal sciences with applications focused on energy and the environment for to promote energy sustainability.

### Selected Publication
Tim Marbach
Ph.D. Mechanical Engineering
University of Oklahoma ’05
Professor

Teaching Interests
Thermodynamics and Thermal-Fluid Systems; Sustainable Energy Systems (Bioenergy, Solar Thermal, Geothermal, Energy Storage, etc.).

Areas of Scholarship
Food and Brewery Process Technology and Packaging; Sustainable Energy and Energy Efficiency; Heat and Fluid Flow.

Scholarship Statement
Current externally-funded research projects include appliance energy efficiency testing for the California Energy Commission and computational analysis of sprinter aerodynamics.

Selected Publication

Marcus Romani
M.S. Mechanical Engineering
California State University, Sacramento ’05
Full-time Lecturer

Teaching Interests
HVAC Analysis and Design; Heat Transfer; Solar Thermal Systems.

Areas of Scholarship
Teaching Interests
Mechanical and Machine Design; Dynamics; Mechatronics; Tolerance Analysis; Computer Aided Design.

Areas of Scholarship
Manufacturing Technology.

Scholarship Statement
My research is in the area of generating new methods for converting CAD geometry into five-axis CNC tool paths. My research should make it easier to connect a desired surface geometry to the actual kinematics of the machine tool that will create the surface. I am also interested in finding new ways to interpret/teach tolerance analysis for product design.

Selected Publication

Kenneth Sprott
Ph.D. Mechanical Engineering
University of California, Davis ’00
Associate Professor

Teaching Interests
Computer-Aided Design; Computer-Aided Manufacturing; Engineering Graphics; Machine Design; Design Theory and Methodology; Product Design.

Areas of Scholarship
CAD/CAM Product Design; Computer-aided Design Automation, Shape and Geometric Modeling; Simulations; Computer graphics applications.

Scholarship Statement
Computer integrated design and manufacturing enhances the creativity of quality products, decreasing the costs of the product life-cycle and impact on the environment.

Selected Publication

Yong S. Suh
Ph.D. Mechanical Engineering
Rensselaer Polytechnic Institute ’95
Professor

Kenneth Sprott
Ph.D. Mechanical Engineering
University of California, Davis ’00
Associate Professor

Teaching Interests
Mechanical and Machine Design; Dynamics; Mechatronics; Tolerance Analysis; Computer Aided Design.

Areas of Scholarship
Manufacturing Technology.

Scholarship Statement
My research is in the area of generating new methods for converting CAD geometry into five-axis CNC tool paths. My research should make it easier to connect a desired surface geometry to the actual kinematics of the machine tool that will create the surface. I am also interested in finding new ways to interpret/teach tolerance analysis for product design.

Selected Publication
Troy D. Topping  
*Ph.D. Materials Science and Engineering*  
University of California, Davis ‘12  
Assistant Professor

**Teaching Interests**  

**Areas of Scholarship**  

**Scholarship Statement**  
My research is focused on developing ultra-high performance materials to be implemented for extreme applications such as vehicle armor, aerospace, and oil and gas exploration. These materials can save lives and conserve energy in the long term.

**Selected Publication**  

Ilhan Tuzcu  
*Ph.D. Mechanical Engineering*  
Virginia Polytechnic Institute and State University ‘01  
Professor

**Teaching Interests**  

**Areas of Scholarship**  
Dynamics and control of flexible aircraft and spacecraft, Thermoelasticity and its control, Stability and control theory.

**Scholarship Statement**  
My research in the area of dynamics and control of flexible aircraft can help design more flexible, and hence, lighter aircraft, consuming less fuel. This results in more cost-efficient and environment-friendly flight.

**Selected Publication**  
Teaching Interests
Product Design and Manufacturing; Manufacturing Processes; Dynamics; Materials Science; Materials Selection in Design.

Areas of Scholarship
Experimental Characterization of Engineering Materials; Mechanical Behavior, Strain Rate and Fatigue; Composite Materials; Design for Manufacturability.

Scholarship Statement
My research focus is on characterization of composite materials for use in structural and high temperature applications, and design for manufacturability in the context of material selection in design.

Selected Publication

Teaching Interests
Thermodynamics; Power Plant Engineering; Renewable Energy Systems; Fluid Mechanics; System Design (Capstone).

Areas of Scholarship
Fuel Cells; Renewable Energy Systems (Ocean, Geothermal, Wind, etc.); Engineering Pedagogy.

Scholarship Statement
My research focus is on more sustainable electricity generation including renewable energy resources and advanced/improved fossil fuel power plants through experimental and numerical approaches.

Selected Publication
Dongmei Zhou
Ph.D. Mechanical Engineering
University of Texas, Austin ’05
Associate Professor

Teaching Interests

Areas of Scholarship
Computational fluid dynamics, Turbulent flow, Drag reduction control, Turbomachinery, Renewable energy (wind, ocean, solar, and fuel cell), Heat transfer, Electronic cooling, HVAC.

Scholarship Statement
My research promotes renewable energy for clean electricity generation; drag-controlled vehicles, that burn less gasoline; and effective cooling of electronics so computers can run faster.

Selected Publication
Our hope is that this book will help students guide their educational careers, that it will promote interdisciplinary discussions among the faculty, and that it will help foster productive connections among research, workforce, and industry.

This book has come about through the efforts of the College of Engineering and Computer Science's faculty—for the content; of Dean Lorenzo M. Smith—for the inspiration and his aspiration for a strong engineering community; of Denise Anderson—for the project management; of Deborah Frost—for the graphic design; of James Ster—for the photographs.