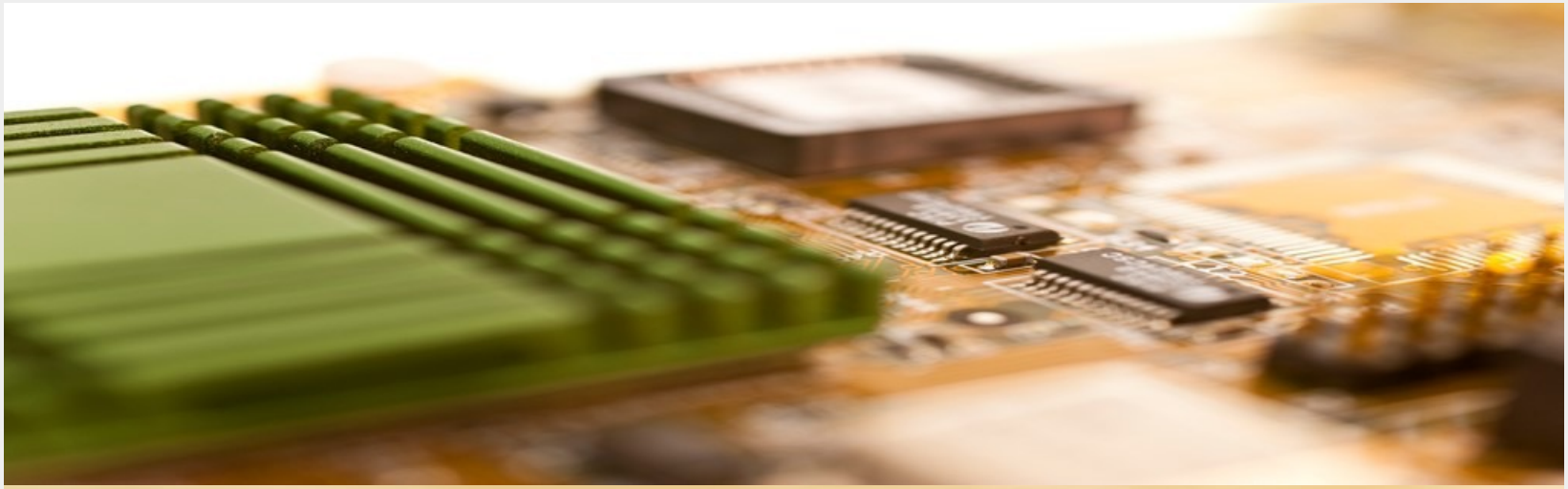
The University of Texas at San Antonio

UTSA Engineering and Integrated Design



Learn more about the UTSA College of Engineering and Integrated Design at http://ceid.utsa.edu

Academic Programs

Architecture & Planning

Biomedical & Chemical Engineering

Civil & Environmental Engineering and Construction Management

Electrical & Computer Engineering

Mechanical Engineering

Learn more about the UTSA College of Engineering at http://engineering.utsa.edu

Select Areas of Established Research Excellence

Cyber/Information Security

Autonomous Systems

Energy

Regenerative Medicine

Materials Science

STEM Education

Learn more about the UTSA College of Engineering at http://engineering.utsa.edu

School of Architecture and Planning

RESEARCH EXPERTISE

- Architecture
- Historic Preservation
- Interior Design
- Urban and Regional Planning

DEGREE PROGRAMS

- B.S. Degree in Architecture
- B.S. Degree in Interior Design
- M.S. Degree in Facility Management (Online)
- M.S. Degree in Urban and Regional Planning
- Graduate Certificate in Facility Management (online)
- Graduate Certificate in Urban and Regional Planning
- Master of Architecture - The Professional Program
- M.S. Degree in Architecture - The Research Program
- Graduate Certificate in Historic Preservation
- Graduate Certificate in High-Performance Design and Sustainability

RESEARCH CENTERS AND LABORATORIES

- Center for Cultural Sustainability
- Center for Urban and Regional Planning
- Urban Future Lab

FACULTY (FALL 2020)

- 20 Tenured and Tenure-Track Faculty
- 23 Lecturers, Assistant Professor in Practice
- 25% T/TT Female Faculty

STUDENTS (FALL 2020)

- 558 Undergraduate Students
- 149 Masters and Post-bac Students

Learn more about the Chemical Engineering Program at https://ceid.utsa.edu/architecture-planning/.

Ryan James

Associate Professor, Urban and Regional Planning Program
Program Coordinator, Graduate Advisor, in Urban and Regional Planning

RESEARCH AREAS

- Local Community Development
- Regional Economic Development
- Lagging Regions and Path Dependence
- Spatial Inequality
- Regional Planning and Policy
- GIS and Spatial Econometrics
- Economic Development Policy in the Southeast

RECENT PUBLICATIONS

Campbell, H.S., James, R.D. 2020. A Look at Differences in Income and Cost of Living. *Papers in Applied Geography*, 6 (1), 4-18.

James, R.D., James, A.C. 2019. Transfer Payments in Appalachia: Understanding Changes in Per Capita Transfer Payments in an Integrating Region. *Southeastern Geographer*, 59 (3), 209-243.

James, R. D., Campbell, H.S. 2016. Exploring the Role of Unearned and Non-Wage Income on Regional Income Convergence. *Journal of Regional Analysis and Policy*, 46 (2), 110-131.

RECENT FUNDED GRANTS

James, R.D. (Co-PI), James A.C. (Co-PI). DeKalb County Economic Development Corporation Applied Research and Graduate Internship Partnership, DeKalb County Economic Development Corporation, $10, 381, Funded 2018-2019.

James, R.D., GIS Design and Implementation for the Village of Carol Stream, Village of Carol Stream, $38, 581. Funded, 2018-2019.

James, R.D., GIS Design and Implementation for the Village of Carol Stream, Village of Carol Stream, $38, 852. Funded, 2017-2018.

OTHER HIGHLIGHTS

Member, DeKalb (IL) Airport Advisory Board, 2017-2019

Member, San Antonio Economic Development Foundation, 2020-Current

Contact: ryan.james@utsa.edu

Dr. Antonio Martinez-Molina

Assistant Professor

RESEARCH AREAS

- Energy efficiency
- Sustainable design
- Adaptative building reuse
- Renewable energy
- Indoor Environmental Quality (IEQ)
- Occupant health and well-being

RECENT PUBLICATIONS

"Enhancing Historic Building Performance with the Use of Fuzzy Inference System to Control the Electric Cooling System." *Sustainability*, 2020, 12, 5848.

"Understanding Students' Perception of Sustainability in Architecture Education: A Comparison Among Universities in Three Different Continents". *Journal of Cleaner Production*, 2020, 248, 119237.

"Assessing visitors' thermal comfort in historic museum buildings: Results from a Post-Occupancy Evaluation on a case study." *Building and Environment*, 2018, 132, 291-302.

OTHER HIGHLIGHTS

- LEED Green Associate
- WELL Accredited Professional
- Certified Passive House Designer (CPHD)
- Passive House Instructor

RECENT FUNDED GRANTS

A Methodical Investigation of HVAC Integration and Impact on U.S. Historic Stone Buildings
Role: PI
Sponsor: U.S. Department of Interior, National Center for Preservation Technology and Training
Amount: $20,000
Project Period: Launch of 12-month project is dependent on COVID-19 developments

Design brief for Indoor Climate Management at Mission Concepción
Role: PI
Sponsor: Archdiocese of San Antonio (through Ford, Powell & Carson)
Amount: $40,000
Project Period: 4/18/19 – 3/31/21

Overland Partners Post-Occupancy Evaluation
Role: Co-PI
Sponsor: Overland Partners Inc.
Amount: $23,000
Project Period: 3/1/19 – Ongoing

Contact: antonio.martinez-molina@utsa.edu
Learn more about Dr. Martinez-Molina here.

Taeg Nishimoto

Professor, Dept. of Architecture

RESEARCH AREAS

- Material Research into Designed Objects
- Descriptive Programming for Architectural Design

RECENT PUBLICATIONS

FURROW
https://www.gooood.cn/furrow-by-taeg-nishimoto.htm
Llegado
https://www.gessato.com/llegado-taeg-nishimoto/
Fjall
https://www.archiscene.net/furniture/fjall-taeg-nishimoto/
Blurred
https://www.designboom.com/design/taeg-nishimoto-creased-blurred-lamps-12-13-2017/
Work of a Material Polymath
https://www.materialdriven.com/blog/2017/10/31/taeg-nishimotothe-work-of-a-material-polymath

OTHER HIGHLIGHTS

- Permanent Collection at FRAC Centre, France
- German Design Award recipient (2018)
- Interior Design Magazine Best of Year Award recipient (2017)
- MoMA/PS1 Architecture Prize recipient (1999)
- "40 Under 40" (1995)
- New York AIA Design Award recipient (1991)
- Two US Design Patent holder

RECENT FUNDED GRANTS

- National Endowment for the Arts – Our Town grant for "Public Space / Public Transit / Public Art" Collaboration with The City of San Antonio's Office of Cultural Affairs and VIA Metropolitan Transit, 2012 ($50,000)
- San Antonio Area Foundation Grant for "Beyond the Alamo: A Unique San Antonio Tourist Guidebook" awarded by Dan and Gloria Oppenheimer Fund and Valley View Trust of San Antonio Area Foundation, 2008 ($12,800)

Contact: Taeg.Nishimoto@utsa.edu

https://cargocollective.com/taegnishimoto

Dr. Neda Norouzi

Assistant Professor

RESEARCH AREAS

- Healthcare Design
- Evidence Based Design
- Universal Design
- Intergenerational Interaction
- Gerontology and the Build Environment
- Impact of the physical Environment on Children and Youth

RECENT PUBLICATIONS

Norouzi N., Jarrott S. & Chaudhry H. (2019) Designing Intergenerational Space through a Human-Development Lens. Journal of Architectural and Planning research 36(1):35-51.

Angel J. & Norouzi N., (2020) Young Hip Austin is Getting Old- Report on Conceptual Design of an Intergenerational Day Center for City of Austin. https://repositories.lib.utexas.edu/handle/2152/65188

Norouzi N., & Garza C. (2020) Small Spaces: Meaningful Transformations. Presented at the Environmental Design Research Association (EDRA 51) Tempe, AZ.

Norouzi N., & Trinh, P. (2020) Transcendence– Safe and Sound for All. Presented at the Environmental Design Research Association (EDRA 51) Tempe, AZ.

OTHER HIGHLIGHTS

- Certified Healthcare designer
- Generations United, National Advisory Council on Shared Sites, Appointed Member
- Journal of Aging and Environment, Appointed Reviewer of Journal Articles

RECENT FUNDED GRANTS

United Methodist Community House Grant. "Design of an Intergenerational Community" $25,000. (Neda Norouzi, Principle Investigator)

UTSA Office of Sustainability. "Sustainable, Positive Energy Housing Design for Aging-in-Place" $30,000. (Antonio Martinez-Molina PI; Neda Norouzi, PI; Miltos Alamaniotis, Co-I)

Contact: neda.norouzi@utsa.edu

Learn more about Neda Norouzi here

Dr. Antonio Petrov

Associate Professor, Department of Architecture, Urban Future Lab

RESEARCH AREAS

- Social and civic innovation
- Urban design
- Urban, regional, and geographic planning
- Community, economic, and regional development
- Urban ecologies
- Creative public-interest engineering
- Alternative infrastructure and transportation planning and design
- Urban and community data development

OTHER HIGHLIGHTS

- "1000 Parks and a Line in the Sky", a proposed $250-million hybrid infrastructure and alternative transportation "skyride" system linking the airport, downtown and all cultural destinations in a cluster of 1000 micro and macro parks.
- My collaboration with artist Vincent Valdez to exhibit at the US Pavilion of the 2018 Venice Biennale
- Named #3 "Mover and Shaker" in the city by the *San Antonio Current*
- Urban Future Lab named "Most Innovative Civic Space Design Firm in Texas" and "Best Public Infrastructure Project in the Southwest United States" by the European *BUILD Magazine*
- Southside Pilot project and UTSA's Community-Driven Research, Sustainable Partnerships, and Advocacy Task Force-Keynote at "Thriving Together" symposium.
- South Tex-Mex Triangle project putting San Antonio into geographic perspective of the region in partnership with various universities and entities
- Transportation and Planning Partner, San Antonio Intl. Airport Strategic Development Team

RECENT PUBLICATIONS

Forthcoming monograph: "Dualities: Dismantling Territories, Paradigms, and Ideologies." New York City+ Barcelona: ACTAR Publishers. 2021). Status: Signed contract, publication in 2021.
Petrov, Antonio, ed. The Mediterranean: Worlds, Regions, Cities, and Architectures. Vol. 5, New Geographies. Cambridge, MA: Harvard University Press, (2013).

RECENT FUNDED GRANTS

World Heritage Buffer Zone project, in collaboration with Dr. Sedef Doganer, Professor William Dupont Funds awarded: ($115,000)
Special Research Grant, Vice President for Research, UTSA ($3,000)
Special Research Grant for publication, Vice President for Research, UTSA ($3,000)
Caudill Research Grant, Rice University, Houston, ($23,000)
Skidmore, Owings& Merrill (SOM) ($5,000)
Graham Foundation for Advanced Studies in Fine Arts, Publication Grant ($15,000) for "New Geographies"

Contact: antonio.petrov@utsa.edu
Learn more about Antonio Petrov at www.urbanfuturelab.org

Dr. Shelley E. Roff

Associate Professor, Dept. of Architecture

RESEARCH AREAS

- Pre-modern European women in architecture and construction
- Architecture and urbanism of medieval / early modern Spain
- Architecture of Barcelona, Spain
- Spanish Colonial architecture and tools/methods of construction

OTHER HIGHLIGHTS

Richard S. Howe Outstanding Undergraduate Teaching Award (2017)

College of Architecture, Construction and Planning Teaching Award (2014)

President's Distinguished Achievement Award in Core Curriculum Teaching (2009)

NEH Summer Institute, *Models of Ancient Rome*, UCLA (2006)

RECENT PUBLICATIONS

"Did Women Design or Build before the Industrial Age?" In *The Routledge Companion to Women in Architecture* (Routledge, 2021)

"A Fourteenth-Century View on Urbanism: Francesch Eiximenis and Urban Planning in the Crown of Aragon." In *Medieval Urban Planning: The Monastery and Beyond* (Cambridge Scholars Publications, 2017)

"'Appropriate to Her Sex?' Women's Participation on the Construction Site in Late Medieval and Early Modern Europe." In *Women and Wealth in Medieval Europe* (Palgrave McMillan, 2010)

RECENT FUNDED GRANTS

NEH Faculty Award for Hispanic-Serving Institutions
Role: PI
Sponsor: National Endowment for the Humanities
Amount: $60,000
Project Period: 1/1/2019 – 12/31/2019

Bogliasco Residential Fellowship
Role: PI
Sponsor: Bogliasco Study Center for the Arts and Humanities
Amount: non-disclosed
Project Period: 10/15/2019 – 11/15/2019

GREAT Grant
Role: PI
Sponsor: Office of Research Support, UTSA
Amount: $20,000
Project Period: 9/1/2017 – 8/31/2018

Contact: Shelley.off@utsa.edu
Learn more about Shelley E. Roff here.

Dr. Jae Yong Suk

Assistant Professor, Department of Architecture

RESEARCH AREAS

- Daylighting/Architectural Lighting
- Visual Comfort (Discomfort Glare)
- High Performance Building Façade System
- Building Energy Performance
- Sustainable Design Strategies

RECENT PUBLICATIONS

- 2019: *New nighttime roadway lighting documentation applied to public safety at night: A case study in San Antonio, Texas*, Sustainable Cities and Society
- 2019: *Luminance and Vertical Eye Illuminance Thresholds for Occupants' Visual Comfort in Daylit Office Environments*, Building and Environment
- 2017: *Reflectivity and specularity of building envelopes: how materiality in architecture affects human visual comfort*, Architectural Science Review
- 2017: *Investigation of Existing Discomfort Glare Indices using Human Subject Study Data*, Building and Environment

RECENT FUNDED GRANTS

- Post Occupancy Evaluation of Overland Partners Projects, Overland Partners, Co-PI, $23,000
- Investigation of Electric Lighting Energy Savings by Daylight Harvesting in Dynamic Sky Condition, 2018 UTSA INTRA grant, PI, $5,000
- Under 1 Roof Home Energy Assessment, The City of San Antonio, Co-PI, $15,000
- Investigation of Street Lighting's Physical Characteristics and Their Impacts on Public Safety at Night, 2017 UTSA Grants for Research Advancement and Transformation (GREAT) program, PI, $20,000
- Development of New Lighting Design Course at UTSA, 2017 Lesley Wheel Introductory Lighting Program Grant, PI, $20,000
- Development of Shading Control Algorithm for Enhanced Occupant's Thermal and Visual Comfort in Buildings, 2016 UTSA INTRA grant, PI, $5,000

OTHER HIGHLIGHTS

- Best Paper Award, 2019 Architectural Research Centers Consortium International conference in Toronto, Canada
- 2017 Outstanding Research/Scholarship Award, UTSA College of Architecture, Construction and Planning
- Best Paper Award, 2017 Passive Low Energy Architecture International conference in Los Angeles

Contact: Jae.suk@utsa.edu

Learn more about Jae Yong Suk here

Stephen Temple

Associate Professor, Dept of Architecture

RESEARCH AREAS

Beginning Design Pedagogy
Perception and Design Decision Making
Architectural Design Theory
Education Psychology in Design Learning
Photography; Furniture Design

RECENT PUBLICATIONS

Developing Creative Thinking in Beginning Design. (2019) (First Edition 278 pages) London: Routledge. 2019.

Making Thinking: Beginning Architectural Design Education. (2011) (First Edition) Dubuque, IA: Kendall Hunt Publishing.

"Geometry In Architecture As A Ground Of Human Experience." (2020) *Journal of Design Principles and Practices. Common Ground Publishers.*

"A Logic of Learning to Draw". (2018) *Representations 2015-16: Journal of the Design Communication Association,* Atlanta, GA: Kennesaw State Univ, 22-26.

"Initiating Creative Thinking in Design Students in Quick Hands-on Design Exercises". (2017) *International Journal of Design Principles and Practices.*

"Developing Abstraction through Experience". (2016) *International Journal of Architectonic, Spatial, & Environmental Design10*(3).27–42.

"Learning to Draw Through Digital Modeling". (2016) *Design and Technology Education: An International Journal, 21*(1), 32-39.

RECENT FUNDED GRANTS

Grant Submission: *Craft and Consciousness in Woodworking.* 2019 Craft Research Fund Grant Submission to The Center for Craft, Creativity and Design. University of North Carolina. $15,000 (not funded)

OTHER HIGHLIGHTS

Register Architect – Maryland

Outstanding Researcher Award-2019 -College of Architecture, Planning and Construction

Outstanding Service Award – 2014 -College of Architecture, Planning and Construction

Member of Coordination Board of the National Conference on the Beginning Design Student (since 2006)

Contact: Stephen.Temple@utsa.edu

Dr. Saadet Toker Beeson

Associate Professor

RESEARCH AREAS

- Seismic Behavior of Structures
- Earthquake-resistant Structural Design
- Flood Resistance of Buildings
- Resilience of Historic Structures

RECENT PUBLICATIONS

Korkmaz, A., Toker Beeson, S., El-Gafy, M., (2020). A Comparative Analysis for Land Utilization: Steel and R/C Interlaced Structures. Journal of Architectural Environment & Structural Engineering Research, Vol 3, No. 2 (2020)

Korkmaz, A., & Toker Beeson, S. (2018). Defining Behavioral Pattern for Historical Buildings in Izmir, Turkey. Structural Analysis of Historic Constructions 2018, Peru.

Korkmaz, K., & Toker Beeson, S. (2017). "Seismic Performance Evaluation of Georgian Churches in Anatolia."
International Journal of Earthquake Engineering and Hazard Mitigation (IREHM), 4(3).

OTHER HIGHLIGHTS

- Member, Women Faculty Task Group
- Member, Diversity and Inclusiveness Advisory Committee
- Diversity Advocate, Search Committee (CSM, URP, Architecture)
- Member, Core Curriculum Assessment Committee
- Senator, UTSA Faculty Senate
- Member, Academic Freedom, Evaluation and Merit Committee

RECENT FUNDED GRANTS

Building a Sacred Places Heritage Network for Disaster Resilience in the Texas Gulf Coast Region
Role: Team Member
Sponsor: U.S. Department of the Interior (through the Texas Historical Commission)
Amount: $247,700
Project Period: 6/3/20 – 3/31/22

Assessment of Flood Hazards in Coastal Areas Using Satellite Images
Role: PI
Sponsor: UTSA Office of the VP for Research
Amount: $5,000
Project Period: 9/1/19 – 8/31/20

Investigating STEM Principle Implementation in Building Technology Education at Texas Universities and the Link to Student Success
Role: PI
Sponsor: UTSA Office of the VP for Research
Amount: $5,000
Project Period: 1/1/14 – 8/31/15

Contact: Saadet.Beeson@utsa.edu

Learn more about Dr. Toker-Beeson here.

Department of Biomedical Engineering

RESEARCH EXPERTISE

- Implant Biomaterials & Tissue Regeneration for musculoskeletal and cardiovascular applications
- Cellular Bioengineering
- Biomedical Optics and Nanobiotechnology
- Biosensors

DEGREE PROGRAMS

- B.S. in Biomedical Engineering
- M.S. in Biomedical Technology Commercialization
- M.S. in Biomedical Engineering
- Graduate Certificate in Medical Device Commercialization and Entrepreneurship
- Ph.D. in Biomedical Engineering*

**Joint program with UT Health Science Center at San Antonio*

FACULTY (FALL 2020)

- 14 Tenured and Tenure-Track Faculty
- 3 Lecturers
- 22% T/TT Female Faculty

STUDENTS (FALL 2020)

- 434 Undergraduate Students
- 35 Post-Bac & Master's Students
- 27 Doctoral Students

RESEARCH LABORATORIES

- Advanced Biophotonics and Nanotechnoogy Lab
- Advanced Implant and Materials Systems Lab
- Cellular and Tissue Engineering Lab
- Functional Hybrid Biomaterials Lab
- Nano Biomaterials and Tissue Engineering Lab
- Nanosensor and Nanomedicine Research Lab
- Vascular Biomechanics and Biofluids Lab

RESEARCH EQUIPMENT

- ThermoFisher X-ray Photoelectron Spectroscopy (XPS)
- Bruker Tensor Fourier Transform Infrared Spectroscopy (FTIR)
- Skyscan X-ray Microtomography(micro-CT)
- MTS Nanoindenter
- JEOL SEM
- Perkin Elmer Thermogravimetry (TGA)
- High Performance Liquid Chromatography (HPLC)
- Gel Permeation Chromatography (GPC)
- Veeco Multimode Scanning Probe Microscopy (SPM)
- Micromeritics BET Surface Area Analyzer

Learn more about the Biomedical Engineering Department at http://ceid.utsa.edu/bme/.

Dr. Mark Appleford

Associate Professor, Dept. of Biomedical Engineering
Associate Dean of Undergraduate Programs

RESEARCH AREAS

- Protein signaling of mechanical transduction in bone cells
- Bone reconstruction following osteosarcoma and severe trauma
- Investigation of angiogenesis applied to tissue engineering strategies
- Experimental and theoretical mechanical behavior of orthopedic implants and tissue-material hybrids

RECENT PUBLICATIONS

Bone Formation is Affected by Matrix Advanced Glycation End Products (AGEs) In Vivo *(Calcified Tissue International, 2016)*

Age-Related Effects of Advanced Glycation End Products (Ages) in Bone Matrix on Osteoclastic Resorption *(Calcified Tissue International, 2015)*

Pretensioning of Soft Tissue Grafts in Anterior Cruciate Ligament Reconstruction *(Orthopedics, 2015)*

RECENT FUNDED GRANTS

Engineer Your World - Dual Enrollment COE (Year 2 Funding)
Role: PI
Sponsor: The University of Texas at Austin
Amount: $28,000
Project Period: 6/1/17 – 5/31/18

Engineer Your World - Dual Enrollment COE
Role: PI
Sponsor: The University of Texas at Austin
Amount: $72,000
Project Period: 1/11/17 – 12/31/17

Material Processing by Lyophilization and EtO Sterilization
Role: PI
Sponsor: Material Processing by Lyophilization and EtO Sterilization
Amount: $1,500
Project Period: 1/1/14 – 1/31/15

Contact: Mark.Appleford@utsa.edu
Learn more about Mark Appleford here.

Dr. Rena Bizios

Professor, Dept. of Biomedical Engineering
Peter T. Flawn Distinguished Professorship

RESEARCH AREAS

- Cellular and tissue engineering
- Tissue regeneration
- Biomaterials (including nanostructured)
- Mechanisms of cellular response to stimuli (chemical, mechanical, magnetic, electrical)
- Biocompatibility (specifically, cell-biomaterial interactions)

RECENT PUBLICATIONS

Electrochemically Preadsorbed Collagen Promotes Adult Human Mesenchymal Stem Cell Adhesion *(Tissue Engineering – Part C, 2016)*

Adult Human Mesenchymal Stem Cell Differentiation at the Cell Population and Single-Cell Levels Under Alternating Electric Current *(Tissue Engineering – Part A, 2015)*

Human Mesenchymal Stem Cell Responses to Hydrostatic Pressure and Shear Stress *(European Cells and Materials, 2016)*

RECENT FUNDED GRANTS

S-STEM: UTSA's Scholarship Program for Undergraduate's Retention and Success (SPURS)
Role: Co-PI
Sponsor: National Science Foundation
Amount: $626,890
Project Period: 8/1/15 – 7/31/20

Torsional Indirect Traumatic Neuropathy (TITON): Animal Model for Diagnostics, Drug Delivery, and Therapeutics for Central Nervous System Injury
Role: Co-PI
Sponsor: US Dept. of Defense
Amount: $1,000,000
Project Period: 9/1/14 – 8/31/17

MRI: Acquisition of a BioMark HD System for Single-cell Genomics Research
Role: Co-PI
Sponsor: National Science Foundation
Amount: $370,570
Project Period: 8/1/13 – 7/31/16

OTHER HIGHLIGHTS

- National Academy of Medicine, and Academy of Medicine, Engr. & Science of Texas Member
- Fellow of 5 national and international scientific societies
- Theo C. Pilkington Outstanding Educator Award (2014), SFB Founders Award (2014), Women's Initiatives Mentorship Excellence Award, AIChE (2014) Awardee
- Charter Member, Academy of Distinguished Researchers, UTSA (2015)

Contact: Rena.Bizios@utsa.edu
Learn more about Rena Bizios here.

Dr. Eric Brey

Chair, Dept. of Biomedical Engineering

RESEARCH AREAS

- Vascularization
- Tissue Engineering
- Biomaterials
- Imaging
- Engineering Education

RECENT PUBLICATIONS

Engineering Clinically-Relevant Volumes of Vascularized Bone *(Journal of Cellular and Molecular Medicine, 2015)*

Evaluating 3D Printed Biomaterials as Scaffolds for Vascularized Bone Tissue Engineering *(Advanced Materials, 2015)*

X-ray Phase Contrast Imaging of Calcified Tissue and Biomaterial Structure in Bioreactor Engineered Tissues *(European Cells and Materials, 2015)*

OTHER HIGHLIGHTS

- Fellow, American Institute for Medical and Biological Engineering
- 2015 Tissue Engineering & Regenerative Medicine International Society (TERMIs) Americas Educational Award Recipient
- Sigma Xi Award for Excellence in Research

RECENT FUNDED GRANTS

An Enabling Technology for Preclinical X-ray Imaging of Biomaterials in-vivo
Role: PI
Sponsor: National Institutes of Health
Amount: $2,262,105
Project Period: 2016-2020

Standard Proposal: A Bottom-Up Approach to Building a Culture of Responsible Research and Practice in STEM
Role: Co-PI
Sponsor: National Science Foundation
Amount: $335,800
Project Period: 2016-2019

Guided Tissue Engineering of 3D Vascularized Tissues
Role: PI
Sponsor: Veterans Administration
Amount: $975,100
Project Period: 2014-2018

Contact: Eric.Brey@utsa.edu
Learn more about Eric Brey here.

Dr. Hugo Giambini

Assistant Professor, Dept. of Biomedical Engineering

RESEARCH AREAS

- Rotator cuff tears (degenerative and sports)
- Vertebral fractures (osteoporosis and metastasis)
- Tibia fractures (sports and military training)

RECENT PUBLICATIONS

Quantitative Computed Tomography Protocols Affect Material Mapping and Quantitative Computed Tomography-Based Finite-Element Analysis Predicted Stiffness. (*Journal of Biomechanics*, 2016)

A quantitative alternative to the Goutallier classification system using Lava Flex and Ideal MRI techniques: volumetric intramuscular fatty infiltration of the supraspinatus muscle, a cadaveric study. Magn Reson Mater Phy (2019).

RECENT FUNDED & ACTIVE GRANTS

Metastatic Spine Tumors: Minimally Invasive Fracture Risk Analysis and Treatment
Role: Co-I
Sponsor: National Institutes of Health
Amount: $2,546,332
Project Period: 2015-2020

ACTIVE EXTERNAL COLLABORATORS

Mayo Clinic:
Biomechanics: Dr. Kai-Nan An, Dr. Chunfeng Zhao.
Orthopedic Surgery: Dr. Michael Yaszemski.
Tissue Eng. & Biomaterials: Dr. Lichun Lu.

UTHSCSA:
Orthopedic Surgery: Dr. Christopher Chaput, Dr. Philip Jacobs.
Radiology: Dr. Angel Gomez-Cintron, Dr. Michael Davis.

Military:
Goldie R Boone, Lt Col USAF 59, BSC
Bianca Cerqueira, Ph.D.

OTHER HIGHLIGHTS

- Has published 42 refereed articles and holds 2 patents.
- More than 50 conference presentations.
- Active reviewer for multiple distinguished journals.
- Patrick J. Kelly Special Fellow Award. Department of Orthopedic Surgery, Mayo Clinic.
- NIH – Ruth L. Kirschstein National Research Service Award (F32)
- Supervising 1 Ph.D, 1 MS, 1 visiting Ph.D research fellow, and 4 undergraduate students.

Contact: hugo.giambini@utsa.edu
Learn more about Hugo Giambini here

Dr. Teja Guda

Assistant Professor, Dept. of Biomedical Engineering

RESEARCH AREAS

- Bioreactors for musculoskeletal tissues
- Bone tissue engineering
- Interplay of biophysical and biochemical stimuli
- Cell and drug delivery for orthopedic regeneration
- Mechanical modeling of biological architectures

RECENT PUBLICATIONS

Hydroxyapatite Coating on PEEK Implants: Biomechanical and Histological Study in a Rabbit Model *(Materials Science and Engineering, 2016)*

Connexin 43 Channels are Essential for Normal Bone Structure and Osteocyte Viability *(Journal of Bone & Mineral Research, 2015)*

Effect of Calcium Phosphate Coating and rhBMP-2 on Bone Regeneration in Rabbit Calvaria Using Poly(propylene fumarate) Scaffolds *(Acta biomaterialia, 2015)*

RECENT FUNDED GRANTS

GREAT: Scaffolds with Soft Zones for Bone Regeneration
Role: PI
Sponsor: UTSA VPR Office
Amount: $20,000
Project Period: 9/1/17 – 8/31/18

NSF I-Corps Site Renewal Grant
Role: Co-PI
Sponsor: National Science Foundation
Amount: $299,820
Project Period: 1/1/18 – 12/31/20

Biomechanical Tissue Graft Tester to Evaluate Properties for Synthetic Diabetic Wound Dressings
Role: PI
Sponsor: San Antonio Area Foundation
Amount: $30,600
Project Period: 1/6/17 – 5/31/18

Contact: Teja.Guda@utsa.edu
Learn more about Teja Guda here.

Dr. Marzieh Hajiaghamemar

Assistant Professor, Dept. of Biomedical Engineering, COE

RESEARCH AREAS

- Injury/Impact biomechanics
- Traumatic brain injury (TBI)
- Finite element modeling
- Injury mitigation device development
- Acute, subacute, and chronic outcomes of TBI
- Preclinical-to-clinical translation of TBI
- Soft tissue mechanics
- Biomechanics

RECENT PUBLICATIONS

- Multi-scale white matter tract embedded brain finite element model predicts the location of traumatic diffuse axonal injury, 2020
- Head rotational kinematics, tissue deformations, and their relationships to the acute traumatic axonal injury, 2020
- Using serum amino acids to predict traumatic brain injury: A systematic approach to utilize multiple biomarkers, 2020
- Embedded axonal fiber tracts improve finite element model predictions of traumatic brain injury, 2019
- Infant skull fracture risk for low height falls,2019
- Toward development of clinically translatable diagnostic and prognostic metrics of traumatic brain injury using animal models: A review and a look forward, 2019

RECENT FUNDED GRANTS

Objective Translational Multi-Domain Early Concussion Assessment
Role: Sub-awardee PI ; Sponsor: NIH
Amount: $698K
Project Period: 02/01/2019 – 08/31/2021

Contact: marzieh.memar@utsa.edu

Dr. Joo L. Ong

Professor, Dept. of Biomedical Engineering
Associate Dean of Administration

RESEARCH AREAS

- Tissue engineering
- Surface modification
- Implants
- Materials characterization
- In vitro cell culture studies
- In vivo animal studies

RECENT PUBLICATIONS

Synthesis of a Novel, Sequentially Active-Target Drug Delivery Nanoplatform for Breast Cancer Therapy *(Biomaterials, 2015)*

Silk Fibroin Scaffolds Promote Formation of the Ex Vivo Niche for Salivary Gland Epithelial Cell Growth, Matrix Formation, and Retention of Differentiated Function *(Tissue Engineering – Part A, 2015)*

Effect of Silver Nanoparticle Geometry on Methicillin Susceptible and Resistant Staphylococcus Aureus, and Osteoblast Viability *(Journal of Materials Science: Materials in Electronics, 2015)*

RECENT FUNDED GRANTS

Therapeutic Targeting of EYA2 Phosphatase in Triple Negative Breast Cancer Cells by a Novel Self-Assembled Peptide
Role: PI
Sponsor: San Antonio Area Foundation
Amount: $27,000
Project Period: 7/1/15 – 6/30/16

Recapitulation of the Salivary Gland Niche Ex-Vivo for Stem Cell-Based Therapies
Role: PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $127,008
Project Period: 4/1/16 – 3/31/21

Bone regeneration evaluation in Rat Cavlaria
Role: PI
Sponsor: US Naval Medical Research Unit - SA
Amount: $21,000
Project Period: 2/22/16 – 2/21/17

OTHER HIGHLIGHTS

- USAA Foundation Distinguished Professor
- Fellow of the American Institute for Medical and Biological Engineering
- Associate Editor, Journal of Biomedical Materials Research, Part B

Contact: Anson.Ong@utsa.edu
Learn more about Anson Ong here.

Dr. Amina Ann Qutub

Associate Professor, Dept. of Biomedical Engineering

RESEARCH AREAS

- Systems Biology
- Neurovascular Regeneration
- Computational Modeling
- Proteomics
- Digital Health & Machine Learning

RECENT PUBLICATIONS

Leukemia Protein Atlas: A Quantitative Analysis of Heterogeneities and Hallmarks in Acute Myelogenous Leukemia (AML) *(Nature Biomedical Engineering, 2019)*

Living Neural Networks: Dynamic Network Analysis of Developing Neural Progenitor Cells *(bioRXiv, 2018)*

A Crowd Sourcing Approach to Developing and Assessing Prediction Algorithms for AML Prognosis *(PLOS Computational Biology, 2016)*

Inferring Causal Molecular Networks: Empirical Assessment through A Community-Based Effort *(Nature Methods, 2016)*

OTHER HIGHLIGHTS

- NSF CAREER Awardee
- Bioinformatics Peer Prize
- National Academies Keck Future Initiatives Grantee
- Hamill Innovation Awardee (2)
- U.S. National Academies Frontiers of Engineering Symposia Organizer (2016-2017) & Speaker
- DREAM 8 Breast Cancer Data Sub-Challenge Winner & DREAM 9 AML Prediction Challenge Scientific Lead

RECENT FUNDED GRANTS

NCS-FO: Identifying Design Principles of Neural Progenitor Cells
Role: PI
Sponsor: National Science Foundation
Amount: $920,000
Project Period: 2015-2018

Tuning Chemosensitivity of Acute Myeloid Leukemia Cells via Targeted Depletion of Protein Signature Biomarkers
Role: Co-PI
Sponsor: Kleberg Foundation
Amount: $279,587
Project Period: 2016-2018

Modeling of pathological significance of non-coding DNA variants in cis-overlapping motifs of p53 and cMyc
Role: co-I
Sponsor: National Institutes of Health
Amount: $319,522
Project Period: 2016-2019

Contact: Amina.Qutub@utsa.edu
Learn more about Amina Qutub here.

Dr. Christopher Rathbone

Assistant Professor, Dept. of Biomedical Engineering

RESEARCH AREAS

- Cell-based therapies for orthopaedic injuries
- Tissue engineering strategies for improving tissue perfusion
- Bioreactor technology development for skeletal muscle injuries/diseases
- Regenerative medicine and tissue regeneration

OTHER HIGHLIGHTS

- Has published 82 refereed articles and holds 12 patents
- Has served as reviewer for NIH, NSF and other sponsors
- Senior Member of the IEEE
- Recipient of NASA Patent Application Award
- Recipient of Outstanding Research Scientist Award, University of Michigan

RECENT PUBLICATIONS

Alternatives to autograft evaluated in a rabbit segmental bone defect *(International Orthopaedics, 2016)*

Transplantation and Perfusion of Microvascular Fragments in a Rodent Model of Volumetric Muscle Loss Injury *(Journal of European Cells and Materials, 2014)*

Accelerated Functional Recovery Following Skeletal Muscle Ischemia-reperfusion Injury Using Freshly Isolated Bone Marrow Cells *(Journal of Surgical Research, 2014)*

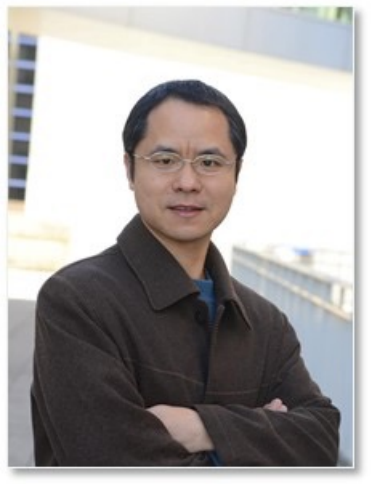
RECENT FUNDED GRANTS

Science and Technology Acquisition and Retention
Role: PI
Sponsor: The University of Texas System
Amount: $400,000
Project Period: 8/15/16 – 8/1/18

Therapeutic Evaluation of Microvascular Fragments for Musculoskeletal Defects
Role: PI
Sponsor: US Dept. of Defense
Amount: $621,826
Project Period: 2/01/13 – 1/12/15

Repair of Large Segmental Bone Defects: Point of Care Autologous Stem Cell Concentrate for Bone Defect Repair
Role: Co-PI
Sponsor: US Dept. of Defense
Amount: $92,000
Project Period: 10/1/12 – 10/31/15

Contact: Christopher.Rathbone@utsa.edu
Learn more about Christopher Rathbone here.



Dr. Liang Tang

Associate Professor, Dept. of Biomedical Engineering

RESEARCH AREAS

- Nanomaterials, biomaterials, nanocomposites, nanopattern assembly, nano-biotechnology, nanosensor, nano-photonics, nanomedicine
- Drug/siRNA delivery
- Theranostic nanoparticles
- Microfluidics
- bioMEMS
- Lab-on-a-chip
- Microfabrication and bioinstrumentation

OTHER HIGHLIGHTS

- Has supervised 12 graduate students
- NSF and NIH peer reviewer
- Specialized in nanomedicine and nanobiotechnology
- Member of SigmaXi and Tau Beta Pi honors societies

RECENT PUBLICATIONS

Water Dispersion of Magnetic Nanoparticles with Selective Biofunctionality *(Talanta, 2015)*

Gold Nanorod Biochip Functionalization by Antibody Thiolation *(Talanta, 2015)*

Multiplexed Gold Nanorod Array Biochip for Multi-sample Analysis *(Biosensor and Bioelectronics, 2014)*

RECENT FUNDED GRANTS

IFSEEN – Integrating Food Science / Engineering and Education Network: A Partnership to Integrate Efforts and Collaboration to Shape Tomorrow's Hispanic Food Safety / Science Leaders
Role: Co-PI
Sponsor: US Dept. of Agriculture
Amount: $46,597
Project Period: 9/1/15 – 8/31/19

Biomarkers of Sick Sinus Syndrome
Role: PI
Sponsor: DHHS / NIH
Amount: $1,806,250
Project Period: 12/1/11 – 11/30/16

Contact: Liang.Tang@utsa.edu
Learn more about Liang Tang here.

Dr. Jingyong Ye

Professor, Dept. of Biomedical Engineering

RESEARCH AREAS

- Label-free bioassays with photonic crystal biosensors
- Photoacoustic tomography
- In vivo fiber-optic biosensing and imaging
- Noninvasive prostate cancer diagnosis
- In vivo monitoring of drug delivery
- Synthesis of novel nanoparticles as imaging contrast agents and nanobiosensors

OTHER HIGHLIGHTS

- Has published 82 refereed articles and holds 12 patents
- NIH, NSF and other sponsor peer reviewer
- Co-founder of a biotech company and on the advisory board for EchoLase, Inc.
- Recipient of NASA Patent Application Award
- Recipient of Outstanding Research Scientist Award, University of Michigan

RECENT PUBLICATIONS

Study of the Interactions of Fusarium virguliforme Toxin FvTox1 with Synthetic Peptides by Molecular Simulations and a Label-Free Biosensor *(Analytical Chemistry, 2016)*

An Adaptive Filtered Back-projection for Photoacoustic Image Reconstruction *(Medical Physics, 2015)*

Label-free Detection of Cardiac Troponin I with a Photonic Crystal Biosensor *(Biosensors and Bioelectronics, 2014)*

RECENT FUNDED GRANTS

Establish Advanced Photoacoustic Imaging Facility at UTSA
Role: PI
Sponsor: US Dept. of Defense
Amount: $312,356
Project Period: 4/24/17 – 4/23/18

Noninvasive Detection of Prostate Cancer with a Label-Free Imaging System
Role: PI
Sponsor: National Institutes of Health
Amount: $354,617
Project Period: 1/7/17 – 6/30/19

CONNECT: Ultrasound Mediated Drug Delivery in 3D Tissue Model Quantified by Photoacoustic Tomography
Role: PI
Sponsor: UTSA VPR Office
Amount: $50,000
Project Period: 9/1/16 – 8/31/17

Contact: Jingyong.Ye@utsa.edu
Learn more about Jingyong Ye here.

Chemical Engineering Program

RESEARCH EXPERTISE

- Catalyst Characterization
- Hydrogen Production Catalysis
- Fischer-Tropsch Synthesis
- Renewable Energy
- Materials (including Nanomaterial) Development & Production
- Macromolecular Bio-Interfaces for cell manipulation
- Biologically-inspired Drug Delivery Systems

DEGREE PROGRAMS

- B.S. in Chemical Engineering

FACULTY (FALL 2020)

- 5 Tenured and Tenure-Track Faculty
- 40% T/TT Female Faculty

STUDENTS (FALL 2020)

- 26 Undergraduate Students

RESEARCH LABORATORIES

- Fluid Mechanics
- Heat and Mass Transfer
- Reaction Kinetics and Process Control
- Ion Exchange and Membrane Units
- Pilot-scale Polymerization Reactor and Fermentor
- Pilot-scale Double-pipe Heat Exchanger
- Gas Absorption Columns and Distillation Columns
- Wet Labs with Bench Top and Walk-in Hoods

Learn more about the Chemical Engineering Program at http://ceid.utsa.edu/chemical/.

Dr. Nehal I. Abu-Lail

Associate Professor
Dept. of Biomedical Engineering and Chemical Engineering

RESEARCH AREAS

- Tissue Engineering of articular cartilage: Combined mechanical and chemical stresses
- Bacterial adhesion and biofilm formation: environmental to biomedical applications
- Physiochemical Characterization of surfaces
- Why women are minorities in engineering in the US and developed countries?

OTHER HIGHLIGHTS

- 60 Publications
- Over 100 talks
- Fulbrighter
- Supervised 3 post docs, 10 graduate students and 69 undergraduate students
- 3M non-tenured faculty awardee
- Editorial board member of 11 journals
- National Academy of Engineering Frontiers of Engineering Education symposium participant

RECENT PUBLICATIONS

M. Deliorman, F. P. Gordesli Duatepe, E. K. Davenport, B. A. Fransson, D. R. Call, H. Beyenal, and N. I. Abu-Lail, Responses of *A. baumannii* extracellular polymeric substances to maltodextrin combined with or without tobramycin: An atomic force microscopy study, *Langmuir*, **2019**, 9; 35(27):9071-9083, https://doi:10.1021/acs.langmuir.9b01227.

S. Uzoechi and N. I Abu-Lail. Changes in cellular elasticities and conformational properties of bacterial surface biopolymers of multidrug-resistant *Escherichia coli* (MDR-*E. coli*) strains in response to ampicillin, *The Cell Surface*, **2019**, https://doi.org/10.1016/j.tcsw.2019.100019.

S. Uzoechi and N. I Abu-Lail. The effects of β-lactam antibiotics on surface modifications of multidrug-resistant *Escherichia coli*: A multiscale approach, *Microscopy and Microanalysis*, 25(1), **2019**, 135-150, https://doi.org/10.1017/S1431927618015696.

RECENT FUNDED GRANTS

GOALI: Enhancing cartilage tissue engineering through synergistic influence of co-Culture, mechano-chemical factors, and 3D printed scaffolds in a novel centrifugal bioreactor
Role: co-PI, Sponsor: National Science Foundation
Amount: $475,000
Project period: 9/1/2016-03/31/2020

Women's engineering participation in the US: What can the US learn from women's decisions to pursue engineering in diverse predominantly Muslim settings?
Role: co-PI, Sponsor: National Science Foundation
Amount: $589,200
Project period: 9/1/2016-8/31/2020

Contact: Nehal.abu-lail@utsa.edu

Dr. Mahmoud Abdelwahed

Associate Professor, Chemical Engineering, Dept. of Biomedical Engineering

RESEARCH AREAS

- Development of new 1-D, 2-D, and 3-D smart functional materials
- Renewable Energy
- Ultrahigh resolution spectroscopy and imaging in the nanometric scale.
- Study the mechanism of the nanocatalysis and photocatalysis.
- Study the optical and optoelectrical properties of 2D materials

RECENT PUBLICATIONS

Electromagnetic Field of Plasmonic Nanoparticles Extends the Photoisomerization Lifetime of Azobenzene *(The Journal of Physical Chemistry C, 2017)*

Overgrowth of 2D Anisotropic Nanocrystals on a Substrate into Vertically Aligned 1D Nanoparticles to be used for Chromatic Light Polarization *(ACS Applied Materials Interfaces, 2016)*

An Optical Ruler and Protractor from Silver Nanodisk Monolayers with Different Surface Coverages Deposited in a Gradient Manner on a Substrate *(Langmuir, 2016)*

RECENT FUNDED GRANTS

None at this time.

OTHER HIGHLIGHTS

- Fellow of 4 national and international scientific societies ACS, AICHE, MRS, and APS.

Contact: Mahmoud.Abdelwahed@utsa.edu

Learn more about Mahmoud Abdelwahed here.

Dr. Gary Jacobs

Assistant Professor, Chemical Engineering Program
Dept. of Biomedical Engineering / Dept. of Mechanical Engineering

OTHER HIGHLIGHTS

- Guest Editor, Catalysts
- Plenary Lecture, Natural Gas Conversion Symposium 11, 2016
- Four Elsevier Top-50 Most-Cited Author Awards
- Keynote Lecture, Syngas Convention, 2012

RESEARCH AREAS

- Heterogeneous Catalysis for Alternative Fuels
- Fischer-Tropsch Synthesis
- Hydrogen Production
- Synchrotron Characterization
- Catalysis for Naphtha Reforming

RECENT PUBLICATIONS

de Souza, P.M., Inocêncio, C.V.M., Perez, V, Rabelo-Neto, R.C., Gonçalves, V.O.O, Jacobs, G., Richard, F., da Silva, V.T., Noronha, F.B., " Hydrodeoxygenation of phenol using nickel phosphide catalysts. Study of the effect of the support," Catalysis Today, available online, 2019.

Martinelli, M., Watson, C.D., Jacobs, G., "Sodium doping of Pt/m-ZrO2 promotes C-C scission and decarboxylation during ethanol steam reforming," International Journal of Hydrogen Energy, available online, 2019.

Ma, W., Jacobs, G., Sparks, D.E., Todic, B., Bukur, D.B., Davis, B.H., "Quantitative comparison of iron and cobalt based catalysts for the Fischer-Tropsch synthesis under clean and poisoning conditions," Catalysis Today, available online, 2019.

Shafer, W.D., Gnanamani, M.K., Graham, U.M., Yang, J., Masuku, C.M., Jacobs, G., Davis, B.H., "Fischer-Tropsch: Product Selectivity–The Finger Print of Synthetic Fuels," Catalysts 9 (2019) 259 (57 pages).

Teles, C.A., de Souza, P.M., Braga, A.H., Rabelo-Neto, R.C., Teran, A., Jacobs, G., Resasco, D.E., Noronha, F.B., "The Role of Defect Sites and Oxophilicity of the Support on the Phenol Hydrodeoxygenation Reaction," Applied Catalysis B: Environmental 249 (2019) 292-305.

Mehrbod, M., Martinelli, M., Martino, A.G., Cronauer, D.C. Cronauer, Kropf, A.J., Marshall, C.L., Jacobs, G., "Fischer-Tropsch synthesis: direct cobalt nitrate reduction of promoted Co/TiO2 catalysts," Fuel 245 (2019) 488-504.

Martinelli, M.; Mehrbod, M.; Graham, U.M.; Hu, Y.; Gnanamani, M.K.; Jacobs, G., "Soft x-ray characterization of sulfur poisoned cation-exchanged Pt/KL catalysts for aromatization of hexane," Chapter 9 in Chemistry Solutions to Challenges in the Petroleum Industry, ACS Books, Rahimi, P. and Koenig, A., eds., Copyright 2019, Washington, D.C. DOI: 10.1021/bk-2019-1320.ch009

Shafer, W.D.; Jacobs, G.; Graham, U.M.; Hamdeh, H.H.; Davis, B.H., "Increased CO2 hydrogenation to liquid products using promoted iron catalysts," Journal of Catalysis 369 (2019) 239-248.

RECENT FUNDED GRANTS

Fischer-Tropsch conversion of Wyoming Coal-derived Syngas Using a Small Channel Reactor for Improving Efficiency and Limiting Emissions
Role: Co-PI
Sponsor: Wyoming Clean Coal/Advanced Conversion Technology Fund
Amount: $1,977,458
Project Period: 12/12 – 11/15

Relating Fischer-Tropsch Synthesis Catalyst Properties to Performance
Role: Co-PI
Sponsor: NASA Glenn Research Center
Amount: $491,293
Project Period: 4/12 – 4/13

Kinetics of Slurry Phase Fischer-Tropsch Synthesis on a Cobalt Catalyst
Role: PI
Sponsor: Material Processing by Lyophilization and EtO Sterilization
Amount: $300,000
Project Period: 9/9 – 5/13

Contact: Gary.Jacobs@utsa.edu
Learn more about Gary Jacobs here.

Dr. Esteban Ureña-Benavides

Assistant Professor, Chemical Engineering Program, Department of Biomedical Engineering and Chemical Engineering

RESEARCH AREAS

- Processing, design and applications of "green" nanoparticles
- Colloids and surface science
- Interfacial aspects of sustainable chemical processes
- Underground sequestration of CO_2
- Nanocomposites

OTHER HIGHLIGHTS

- Supervised 1 postdoc, 6 graduate students, 13 undergraduates, 1 high school student.
- Junior Faculty Research Award, School of Engineering, University of Mississippi
- Served as reviewer for NSF, USDA-NIFA, ACS-PRF, DOE.

RECENT PUBLICATIONS

- Surface properties of cellulose nanocrystal stabilized crude oil emulsions and their effect on petroleum biodegradation (*Colloid. Surface. A, 2020*)
- Surface and Interfacial Interactions in Dodecane/Brine Pickering Emulsions Stabilized by Combination of Cellulose Nanocrystals and Emulsifiers (*Langmuir, 2019*)
- Dynamic mechanical and thermal properties of cellulose nanocrystal/epoxy nanocomposite (*Green Materials, 2017*)
- Low Adsorption of Magnetite Nanoparticles with Uniform Polyelectrolyte Coatings in Concentrated Brine on Model Silica and Sandstone (*Ind. Eng. Chem. Res., 2016*)

RECENT FUNDED GRANTS

Collaborative Research: Superparamagnetic Cellulose and Lignin Nanoparticles as Recyclable Additives to Enhance the Liquid/Liquid Extraction of Ethanol from Aqueous Solutions
Role: PI; Sponsor: NSF
Amounts: $149,950
Project Period: 07/01/2017 to 06/30/2021

Development of Multifunctional Coatings Using Cellulose Nanocrystals and Nanofibers onto Paper Substrates for Food Packaging Applications
Role: Co-PI; Sponsor: USDA-NIFA
Amount: $150,000
Project Period: 07/01/2017 to 06/30/2020

Fundamental Studies on Nanocrystal Stabilized CO_2 Foams and Emulsions
Role: PI; Sponsor: ACS-PRF
Amount: $110,000
Project Period: 6/1/2017 to 8/31/2020

Contact: esteban.urena-benavides@utsa.edu

Dr. Gabriela Romero Uribe

Assistant Professor, Chemical Engineering Program

RESEARCH AREAS

- Stimuli-responsive hybrid materials to control cellular signaling
- Biologically inspired drug delivery systems
- Biomedical soft materials
- Macromolecular bio-interfaces for cell manipulation

OTHER HIGHLIGHTS

- National Science Foundation CAREER Awardee (2021)

RECENT PUBLICATIONS

Localized Excitation of Neural Activity via Rapid Magnetothermal Drug Release
(Advanced Functional Materials, 2016)

Protective polymer coating for high-throughput, high-purity cellular isolation (*ACS Applied Materials & Interfaces, 2015*)

Wireless magnetothermal deep brain stimulation (*Science, 2015*)

RECENT FUNDED GRANTS

NSF CAREER
Role: PI Sponsor: NSF
Amounts: $611K
Project Period: 2021-2026

SCH1: On-Demand Magnetothermal Drug Release
Role: PI Sponsor: NIH
Amounts: $1.18M
Project Period: 2020-2024

On-Demand Pharmacological Modulation of Neural Activity
Role: PI
Sponsor: NIH Natl Inst of Neuro Disorder/Stroke
Amounts: $391K
Project Period: 2019-2021

MRI: Acquisition of two photon spatial light modulation microscope
Role: co-PI Sponsor: NSF
Amounts: $570K
Project Period: 2018-2020

Contact: Gabrielaromero.Uribe@utsa.edu
Learn more about Gabriela Uribe here.

School of Civil & Environmental Engineering and Construction Management

RESEARCH EXPERTISE

- Geoenvironmental studies
- Biological, chemical, and physical processes for water and wastewater
- Membrane separation for air and water systems
- Environmental Biotechnology
- Water quality analysis
- Nanomaterials for water applications
- Reinforced concrete
- Earthquake engineering
- Hydrological analysis, modeling and prediction
- Energy and environmental quality
- Environmental fluid mechanics
- Coastal engineering
- Aging infrastructure
- Computational approaches for structures
- Corrosion of steel and other materials
- Transportation and infrastructure management
- Pavement materials

RESEARCH LABORATORIES

- Geomaterials Lab (AASHTO accredited)
- Structures Lab
- Geotechnical Lab
- Environmental and Environmental Biotechnology Lab
- High Bay *($10M building, anticipated in 2019)*
- Hydraulics Lab
- Hydrometeorology/GIS Lab

DEGREE PROGRAMS

- B.S. in Civil Engineering
- M.S. in Civil Engineering
- Masters of Civil Engineering
- Graduate Certificate in Construction Engineering, Science and Management
- Ph.D. in Civil Engineering Ph.D. in Environmental Science and Engineering

FACULTY (FALL 2020)

- 27 Tenured and Tenure-Track Faculty
- 6 Lecturers, Assistant Professor in Practice

STUDENTS (FALL 2020)

- 832 Undergraduate Students
- 60 Post-Bac & Master's Students
- 57 Doctoral Students

Learn more about the Civil & Environmental Engineering Department at http://ceid.utsa.edu/ce/.

Dr. Ibukun Awolusi

Assistant Professor, Dept. of Construction Science

RESEARCH AREAS

Construction Safety and Health
Innovation and Technology in Construction
Wearable Technology and Internet of Things
Data Analytics and Decision Support Systems
Work Zone Safety and Safety in Manufacturing
Sustainable Infrastructure

RECENT PUBLICATIONS

Wearable Sensing Devices: Potential Impact and Current Use for Incident Prevention (*Professional Safety*, 2020)

Active Work Zone Safety: Preventing Accidents using Intrusion Sensing Technologies *(Frontiers in Built Environment, 2019)*

Wearable Technology for Personalized Construction Safety Monitoring and Trending: Review of Applicable Devices *(Automation in Construction, 2018)*

Forklift Safety: Sensing the Dangers with Technology *(Professional Safety, 2017)*

Safety Activity Analysis Framework to Evaluate Safety Performance in Construction *(Journal of Construction Engineering & Management., 2016)*

OTHER HIGHLIGHTS

- Best Poster Award, 55th Annual Associated Schools of Construction International Conference, 2019
- Bibb Graves Award for Outstanding Graduate Teaching Assistant, 2018
- Chi Epsilon Honor, the Civil Engineering Honor Society, 2018
- Engineering Council of Birmingham (ECOB) Ph.D. Student of the Year, 2017
- Most Outstanding Thesis Award for College of Engineering, 2016

RECENT FUNDED GRANTS

Construction Safety and Health Activity Analysis using Unmanned Aerial Systems and Deep Learning
Role: PI
Sponsor: UTSA VPREDKE
Amount: $20,000
Project Period: 08/01/2020 – 08/31/2021

Wearable Internet of Things for Construction Safety and Health Monitoring
Role: PI
Sponsor: Construction Industry Advisory Council
Amount: $5,000
Project Period: 08/01/2019 – 08/31/2020

Enhancing the Diffusion of Wearable Sensing Devices for Personalized Safety and Health Monitoring in Construction
Role: PI
Sponsor: UTSA VPREDKE
Amount: $5,000
Project Period: 08/01/2019 – 08/31/2020

Contact: ibukun.awolusi@utsa.edu
Learn more about Ibukun Awolusi here

Dr. Alberto Arroyo

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Structures – forensic analysis

RECENT PUBLICATIONS

An Example of Course and Program Outcome Assessment *(ASEE Annual Conference Proceedings, 2004)*

Data Base on Under-slab Moisture Contents in San Antonio and Houston areas, Texas *(Expansive Clay Soils and Vegetative Influence on Shallow Foundations, 2001)*

Data Base on Under-slab Moisture Contents in San Antonio and Houston Areas, Texas *(Geotechnical Special Publication, 2001)*

RECENT FUNDED GRANTS

Dwight D. Eisenhower Transportation Fellowship Program (2015)
Role: Co-PI
Sponsor: US Dept. of Transportation
Amount: $30,000
Project Period: 9/1/15 – 5/31/16

Dwight D. Eisenhower Transportation Fellowship Program (2014)
Role: Co-PI
Sponsor: US Dept. of Transportation
Amount: $10,000
Project Period: 9/1/14 – 9/1/15

Dwight D. Eisenhower Transportation Fellowship Program (2012)
Role: PI
Sponsor: US Dept. of Transportation
Amount: $30,500
Project Period: 8/29/12 – 5/31/13

Contact: AArroyo@utsa.edu
Learn more about Alberto Arroyo here.

Dr. Sazzad Bin-Shafique

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Beneficial use of wastes and industrial by-products
- Solidification and stabilization of soil and waste
- Waste geotechnics
- Remediation geotechnics
- Leachability testing and groundwater contaminant transport modeling

RECENT PUBLICATIONS

Experimental and Numerical Study of Geosynthetic Reinforced Soil over a Channel *(Geotextiles and Geomembranes, 2015)*

Parametric Study on Performance of Laterally Loaded Drilled Shafts in an MSE Wall *(Soils and Foundations, 2015)*

RECENT FUNDED GRANTS

Maximize Savings and Minimize Air Pollution with On-Site Manufacturing of Embankment Soils
Role: PI
Sponsor: Texas Dept. of Transportation
Amount: $166,714
Project Period: 9/1/16 – 8/31/18

Live Load Effect of Railroad on Retaining Walls and Temporary Shoring
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $82,988
Project Period: 9/1/12 – 8/31/14

Design Parameters and Methodology for Mechanically Stabilized Earth (MSE) Walls
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $74,789
Project Period: 9/1/11 – 8/31/13

Contact: Sazzad.Shafique@utsa.edu
Learn more about Sazzad Bin-Shafique here.

Dr. Kristen Brown

Assistant Professor, Civil and Environmental Engineering

RESEARCH AREAS

- Large Scale Energy Systems
- Electricity generation portfolios
- Renewable Energy
- Energy for transportation
- Decision scenarios
- Air Quality, Outdoor
- Atmospheric modeling
- Emissions modeling
- Urban measurements
- Health effects of air pollution
- Decision making related to energy choices

RECENT PUBLICATIONS

- Comparing health benefit calculations for alternative energy futures, Air Quality, Atmosphere, and Health, 2020
- Energy and emissions implications of automated vehicles in the US energy system, Transportation Res. Part D, 2019
- Market sensitivity of solar-fossil hybrid electricity generation to price, efficiency, and fuel projections, Clean Tech. and Env. Policy, 2019
- Evolution of the US energy system and related emissions under varying social and technological development paradigms, Env. Sci & Tech, 2018

RECENT FUNDED GRANTS

Changing Environment in the Glacial Watershed of the Cordillera Blanca, Peru under the Warming Climate: Understanding the shifting local dynamics of water availability, agriculture, and energy production
Role: Co-PI
Sponsor: VPREDKE
Amount: $20,000
Project Period: 10/1/21-7/31/22

Best Management Practices (BMP) Maintenance Requirements to Ensure Protection of Edwards Aquifer Water Quality
Role: Co-PI
Sponsor: the San Antonio River Authority
Amount: $619,656
Project Period: 5/1/21-4/30/24

OTHER HIGHLIGHTS

- Formerly with US Environmental Protection Agency
- Involved with STEM outreach

Contact: Kristen.Brown2@utsa.edu
Learn more about Kristen Brown here.

Dr. JoAnn Browning

Professor, Dept. of Civil & Environmental Engineering
Dean and David & Jennifer Spencer Distinguished Chair, College of Engineering

RESEARCH AREAS

- Structural engineering
- Earthquake engineering
- Engineering materials
- Reinforced concrete design and analysis

RECENT PUBLICATIONS

Corrosion Performance of Prestressing Strands in Contact with Dissimilar Grouts *(ACI Materials Journal, 2015)*

Effect of Slag Cement on Drying Shrinkage of Concrete *(ACI Materials Journal, 2015)*

Implementation of Concrete Aggregate Optimization *(Construction and Building Materials, 2015)*

RECENT FUNDED GRANTS

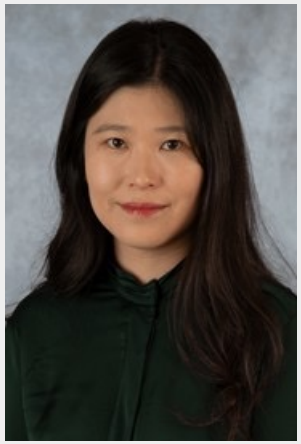
NSF NHERI Network Coordination Office
Role: PI
Sponsor: Purdue University / National Science Foundation
Amount: $1,864,537
Project Period: 3/1/16 – 2/28/21

Deep Roots: Wide-Spread Implementation of Community-Driven Evidence-Based Pedagogy
Role: PI
Sponsor: National Science Foundation
Amount: $223,072
Project Period: 8/1/15 – 7/31/20

Network for Earthquake Engineering Simulation (NEES) (Subaward to UTSA)
Role: PI
Sponsor: Purdue University / National Science Foundation
Amount: $8,256
Project Period: 8/4/14 – 9/30/14

Contact: JoAnn.Browning@utsa.edu
Learn more about JoAnn Browning here.

Dr. Jiannan Cai



Assistant Professor, Department of Construction Science, CACP

RESEARCH AREAS

- Automation and Robotics in Construction
- Human-Robot Collaboration
- Cyber-Physical System
- Computer Vision
- Artificial Intelligence
- Data Sensing and Analysis
- Civil Integrated Management
- Infrastructure Public-Private Partnerships

RECENT PUBLICATIONS

- Robust Hybrid Approach of Vision-Based Tracking and Radio-Based Identification and Localization for 3D Tracking of Multiple Construction Workers, *Journal of Computing in Civil Engineering*, 2020
- Fusing Heterogeneous Information for Underground Utility Map Generation Based on Dempster-Shafer Theory, *Journal of Computing in Civil Engineering, 2020*
- Two-step long short-term memory method for identifying construction activities through positional and attentional cues, *Automation in Construction*, 2019
- Empirical analysis of capital structure determinants in infrastructure projects under public–private partnerships, *Journal of Construction Engineering and Management*, 2019

RECENT FUNDED GRANTS

OTHER HIGHLIGHTS

- Pai Tao Yeh Fellowship and Andrews Fellowship, Lyles School of Civil Engineering, Purdue University
- Conference Travel Grant, Purdue University
- Served as reviewer for ASCE Journal of Computing in Engineering

Contact: jiannan.cai@utsa.edu
Learn more about Jiannan Cai:
Google Scholar
ResearchGate

Debaditya Chakraborty

Assistant Professor

RESEARCH AREAS

- Applied Artificial Intelligence
- Energy Modeling & Optimization
- Hydrological Modeling & Analysis
- Climate Change

RECENT PUBLICATIONS

1. A Hybridized NGBoost-XGBoost Framework for Robust Evaporation and Evapotranspiration Prediction. Hydrology and Earth System Sciences, under review. DOI: https://doi.org/10.5194/hess-2020-260.
2. Early detection of faults in HVAC systems using an XGBoost model with a dynamic threshold. Energy and Buildings. DOI: https://doi.org/10.1016/j.enbuild.2018.12.032
3. Building information modeling enabled cascading formwork management tool. Automation in Construction. DOI: https://doi.org/10.1016/j.autcon.2017.08.016
4. Performance testing of energy models: are we using the right statistical metrics?. Journal of Building Performance Simulation. DOI: https://doi.org/10.1080/19401493.2017.1387607
5. Advanced machine learning techniques for building performance simulation: a comparative analysis. Journal of Building Performance Simulation. DOI: https://doi.org/10.1080/19401493.2018.1498538
6. A vague set fuzzy multi-attribute group decision-making model for selecting onsite renewable energy technologies for institutional owners of constructed facilities. Sustainable cities and society, 35, 430-439. DOI: https://doi.org/10.1016/j.scs.2017.08.025
7. Generation of accurate weather files using a hybrid machine learning methodology for design and analysis of sustainable and resilient buildings. Sustainable Cities and Society. DOI: https://doi.org/10.1016/j.scs.2016.04.009

OTHER HIGHLIGHTS

Program Coordinator: CSM Track in Civil Engineering Ph.D. Program

Program Coordinator: Graduate Certificate in CESM.

RECENT FUNDED GRANTS

INTRA: Energy Performance Analysis of Urban Buildings under Climate Change Scenarios
Role: PI
Sponsor: UTSA VPR
Amount : $5,000
Project period: 09/01/2020 - 08/31/2021

GREAT: Construction Safety and Health Activity Analysis using Unmanned Aerial Systems and Deep Learning
Role: Co-PI
Sponsor: UTSA VPR
Amount: $20,000
Project period: 09/01/2020 - 08/31/2021

Artificial Intelligence-based aquifer recharge projections under future climate change scenarios
Role: PI
Sponsor: Edwards Aquifer Authority
Amount: $13,500
Project period: 08/01/2020 - 05/31/2021

Contact: Debaditya.Chakraborty@utsa.edu
Learn more about Debaditya Chakraborty here.

Dr. Samer Dessouky

Professor, Dept. of Civil & Environmental Engineering

OTHER HIGHLIGHTS

- Supervised 3 PhD, 26 MS and 23 UG students
- Fellow of ASCE
- ASCE Innovative Green Engineering Technology award 2016 and 2017
- Second place innovation award -Airport Cooperative Research Program.
- Board member of ASCE bituminous committee

RESEARCH AREAS

- Asphalt pavement materials / design
- Infrastructure sustainability
- Energy harvesting
- Highway traffic safety

RECENT PUBLICATIONS

Roshani, H., Jagtap P, Dessouky S., Montoya, A. and A.T. Papagiannakis "Theoretical and Experimental Evaluation of Two Roadway Piezoelectric-Based Energy Harvesting Prototypes" ASCE Journal of Materials (2018).

Dessouky S., A.T. Papagiannakis, Roshani, H. and A. Abbas "Placement of Level-Up Patches to Improve Pavement Ride and Texture: Current Practices and Field Performance" Journal of Transportation Engineering, Part B: Pavements (2018)

Datta U., Dessouky S. and A.T. Papagiannakis. "Harvesting of Thermoelectric Energy from Asphalt Pavements" Transportation Research Record: Journal of the Transportation Research Board (2017)

RECENT FUNDED GRANTS

"Technical Assistance Agreement between UTSA and City of San Antonio-Traffic Study"
Role: PI
Sponsor: City of San Antonio
Amount: $150,000
Project Period: 9/1/17 – 8/31/19

"A Hybrid Integrated Sensing and Energy Conversion (HISEC) System For Harvesting Mechanical and Thermal Energy from Roadways"
Sponsor: CPS Energy
Role: PI
Amount: $598,881
Project Period: 09/2017-08/2019

"Regional University Transportation Center-Transportation Consortium of South-Central States (TRAN-SET)"
Sponsor: US Dept. of Transportation
Role: PI and associate director
Budget: $1,500,000
Project Period: 11/16-11/22

Contact: Samer.Dessouky@utsa.edu
Learn more about Samer Dessouky here.

Dr. Manuel Diaz

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Structures / bridges

RECENT PUBLICATIONS

Closure to "Alternate Path Method in Progressive Collapse Analysis: Variation of Dynamic and Nonlinear Load Increase Factors" *(Practice Periodical on Structural Design and Construction, 2016)*

"Structural Silicone Effect on Window Frames Subjected to Blast Loading" (Proceedings, Spring 2015 ASCE Structures Congress)

Improving Asphalt Mixtures Performance by Mitigating Oxidation Using Anti-oxidants Additives *(Proceedings of the TMS Middle East – Mediterranean Materials Congress on Energy and Infrastructure Systems, MEMA, 2015)*

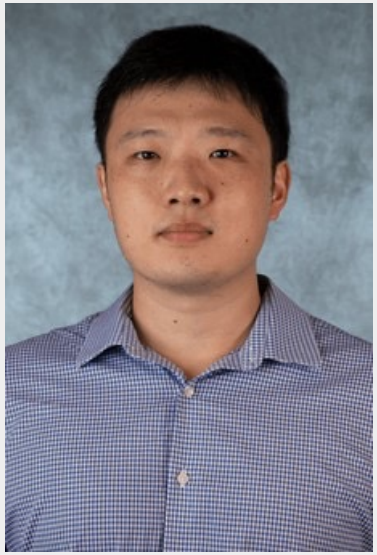
RECENT FUNDED GRANTS

Dwight D. Eisenhower Transportation Fellowship Program (2017)
Role: PI
Sponsor: US Dept. of Transportation
Amount: $24,000
Project Period: 9/1/17 – 5/31/18

Dwight D. Eisenhower Transportation Fellowship Program (2015)
Role: PI
Sponsor: US Dept. of Transportation
Amount: $30,000
Project Period: 9/1/15 – 5/31/16

Dwight D. Eisenhower Transportation Fellowship Program (2014)
Role: PI
Sponsor: US Dept. of Transportation
Amount: $10,000
Project Period: 9/1/14 – 9/1/15

Contact: Manuel.Diaz@utsa.edu
Learn more about Manuel Diaz here.



Dr. Ao Du

Assistant Professor, Civil and Environmental Eng, COE

RESEARCH AREAS

- Earthquake engineering
- Probabilistic seismic hazard assessment
- Multi-hazard risk and resilience assessment of regional built environment
- Uncertainty quantification and propagation
- Data analytics and surrogate modeling using statistical machine learning
- Structural reliability
- Composite structures

OTHER HIGHLIGHTS

- H. W. Reeves Endowed Scholarship, Rice University, 2020
- Department Fellowship, Rice University, 2016
- NSF travel grant, 2020
- NSF travel grant, 2019
- Member of EERI

RECENT PUBLICATIONS

- Entropy-based intensity measure selection for site-specific probabilistic seismic risk assessment. *Earthq Eng Struct Dyn*. 2020
- Multivariate return period-based ground motion selection for improved hazard consistency over a vector of intensity measures. *Earthq Eng Struct Dyn*. 2020
- Influence of intensity measure selection on simulation-based regional seismic risk assessment. *Earthquake Spectra*. 2020
- Investigation of multivariate seismic surrogate demand modeling of multi-response structural systems. *Engineering Structures*. 2020

RECENT FUNDED GRANTS

Contact: ao.du@utsa.edu
ResearchGate
Google Scholar

Dr. Wassim Ghannoum

Associate Professor, Dept. of Civil & Environmental Engineering

UNIQUE EXPERTISE / RESOURCES / AWARDS / QUALITIES / OTHER

- **Fellow** of the American Society of Civil Engineers' Structural Engineering Institute (ASCE/SEI)
- **Chair** of the American Concrete Institute's (ACI) Committee on *Seismic Repair and Rehabilitation*
- Recipient of the Concrete Reinforcing Steel Institute's (CRSI) Research Fellowship

RESEARCH AREAS

- Assessment and behavior of reinforced concrete structures
- Life-span extension of infrastructure
- Repair and retrofit of structures
- Earthquake engineering
- Extreme loading on structures

RECENT PUBLICATIONS

Use of Anchored CFRP Strips for Shear Strengthening of Large Girders *(ACI Structural Journal, 2017)*

Assessment of International Standard Provisions on Stiffness of Reinforced Concrete Moment Frame and Shear Wall Buildings (*Engineering Structures, 2016*)

High-Strength Reinforcement in Columns under High Shear Stresses (*ACI Structural Journal, 2016*)

Shear Behavior of Full-Scale Reinforced Concrete T-Beams using CFRP Strips and Anchors (*Construction and Building Materials, 2015*)

RECENT FUNDED GRANTS

Decision Oriented Column Simulation Capabilities for Enhancing Disaster Resilience of Reinforced Concrete Buildings and Related Standards
Role: PI
Sponsor: NIST
Amount: $798,892
Project Period: 8/15/17 – 8/31/20

Evaluating Bridge Behavior Using Ultra-High Resolution Next-Generation Digital Image Correlation (DIC): Applications in Bridge Inspection and Damage Assessment
Role: PI
Sponsor: Texas Department of Transportation
Amount:$419,432
Project Period: 09/01/17 - 12/31/20

Acceptable Elongations and Low-Cycle Fatigue Performance for High-Strength Reinforcing Bars
Role: PI
Sponsor: Charles Pankow Foundation, ACI Foundation, CRSI
Amount: $248,083
Project Period: 8/15/16 – 8/31/18

Contact: Wassim.Ghannoum@utsa.edu
Learn more about Wassim Ghannoum here.

Dr. Marcio Giacomoni

Assistant Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Water resources systems analysis
- Water resources planning and management
- Stormwater green infrastructure
- Drought management and water conservation

RECENT PUBLICATIONS

Multiobjective Genetic Optimization Approach to Identify Pipe Segment Replacements and Inline Storages to Reduce Sanitary Sewer Overflow *(Water Resources Management, 2016)*

A Complex Adaptive Simulation Framework for Evaluating Adaptive Demand Management for Urban Water Resources Sustainability *(Journal of Water Resources Planning and Management, 2015)*

An Evolutionary Algorithm Approach to Generate Distinct Sets of Non-dominated Solutions for Wicked Problems *(Engineering Applications of Artificial Intelligence, 2013)*

RECENT FUNDED GRANTS

Monitoring Stormwater Quality at UTSA Main Campus
Role: PI
Sponsor: Greater Edwards Aquifer Alliance
Amount: $27,800
Project Period: 1/1/16 – 12/31/16

Modeling Stormwater Runoff at UTSA Main Campus
Role: PI
Sponsor: San Antonio River Authority
Amount: $15,000
Project Period: 3/1/16 – 2/28/17

Opportunities for Higher Education and Research Experience in Renewable Energy and Water Quality to Enable STEM Hispanic Leaders
Role: Co-PI
Sponsor: US Dept. of Agriculture
Amount: $290,000
Project Period: 8/1/14 – 7/31/18

OTHER HIGHLIGHTS

- Member of the American Society of Civil Engineers (ASCE) and the Environmental and Water Sources Institute (EWRI)
- Has supervised 1 MS student
- Currently advising 2 PhD students

Contact: Marcio.Giacomoni@utsa.edu
Learn more about Marcio Giacomoni here.

Dr. Artyom Grigoryan

Associate Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Computed Tomography (CT)
- Color Image Enhancement and Visibility
- Quaternion Imaging
- Color Face Recognition / Analytics
- Quantum Fourier transform / Algorithms
- Quantum Computing in Imaging
- Image Compression and Cryptography

RECENT FUNDED GRANTS

None at this time.

OTHER HIGHLIGHTS

- Senior member of IEEE
- Member of SPIE, AMS
- Has supervised 8 PhD students
- Recipient of Research Award for "Tissue Microarray FISH and Digital Imaging…" *American Society of Human Genetics*
- 2000 Outstanding Scientists of the 21st Century, *Int. Bio. Centre,* Cambridge England

RECENT PUBLICATIONS

Paired Quantum Fourier Transform with log2N Hadamard Gates (*Quantum Information Processing, 2019)*

Quaternion and Octonion Color Image Processing with MATLAB (*SPIE, 2018*)

Image Processing Contrast Enhancement, (*Wiley Encyclopedia of Electrical and Electronics Engineering, 2017*)

Solution of the Problem on Image Reconstruction in Computed Tomography (*Journal of Mathematical Imaging and Vision, 2016*)

Optimal Wiener and homomorphic filtration: Review *(Signal Processing, 2016)*

Contact: Artyom.Grigoryan@utsa.edu

Learn more about Artyom Grigoryan here.

Dr. Jie Huang

Assistant Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Earth retaining structures
- Geosynthetics
- Ground improvement
- Underground tunneling
- Bio-soil
- Computational geomechanics

RECENT PUBLICATIONS

Experimental and Numerical Study of Geosynthetic Reinforced Soil over a Channel *(Geotextiles and Geomembranes, 2015)*

Parametric Study on Performance of Laterally Loaded Drilled Shafts in an MSE Wall *(Soils and Foundations, 2015)*

Stabilizing Sulfate-Rich High Plasticity Clay with Moisture Activated Polymerization *(Engineering Geology, 2016)*

RECENT FUNDED GRANTS

Maximize Savings and Minimize Air Pollution with On-Site Manufacturing of Embankment Soils
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $164,686
Project Period: 9/1/16 – 8/31/18

GREAT: Converting Ubiquitous Biomass into Sustainable Civil Engineering Materials Based on Polymerization and Cross-linking
Role: PI
Sponsor: UTSA VPR Office
Amount: $20,000
Project Period: 9/1/16 – 8/31/17

Evaluating Use of Sub-Grade Drains with PFC for Stormwater Drainage
Role: PI
Sponsor: Texas Dept. of Transportation
Amount: $99,530
Project Period: 9/1/14 – 8/31/15

Contact: Jie.Huang@utsa.edu
Learn more about Jie Huang here.

Dr. Drew Johnson

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Novel membrane separation and transfer processes for air and water systems
- Biological, physical and chemical processes for water, wastewater and waste treatment
- Water conveyance and conservation

RECENT PUBLICATIONS

Plant Root Templated Irrigation *(Irrigation and Drainage, 2016)*

Aggregated Nanoparticle Morphology Effects on Membrane Filtration *(Chemical Engineering Communications, 2015)*

Durability of Polymer Infused Roots Used for Soil Stabilization *(Journal of Materials in Civil Engineering, 2014)*

OTHER HIGHLIGHTS

- Member of the North American Membrane Association
- Professional Engineer (PE)

RECENT FUNDED GRANTS

Activated Sludge Aeration Waste Heat for Membrane Evaporation of Desalination Brine Concentrate: A Bench Scale Collaborative Study
Role: PI
Sponsor: US Dept. of the Interior
Amount: $85,587
Project Period: 9/1/14 – 8/31/15

Support for Historical Data Review and Source Analysis for Lower Leon Creek Watershed
Role: PI
Sponsor: Texas Commission on Env. Quality
Amount: $62,881
Project Period: 9/1/14 – 8/31/15

Characterization of Nanofluid Heat Transfer Enhancements
Role: PI
Sponsor: Air Force Office of Scientific Research
Amount: $203,812
Project Period: 9/1/10 – 8/31/13

Contact: Drew.Johnson@utsa.edu
Learn more about Drew Johnson here.

Dr. Vikram Kapoor

Assistant Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Environmental microbiology and biotechnology
- Water and wastewater treatment
- Storm water management
- Microbial source tracking using novel indicators and methodologies
- Environmental and public health

OTHER HIGHLIGHTS

- Member, Global Water Pathogen Project, UNESCO
- Has supervised 1 MS student and currently supervising 2 PhD and 2 MS students
- Active in Association of Environmental Engineering and Science Professors

RECENT PUBLICATIONS

Real-Time Quantitative PCR Measurements of Fecal Indicator Bacteria and Human-Associated Source Tracking Markers in a Texas River following Hurricane Harvey *(Environmental Science and Technology Letters, 2018)*

Structural and functional interrogation of selected biological nitrogen removal systems in the United States, Denmark, and Singapore using shotgun metagenomics *(Frontiers in Microbiology, 2018)*

Impact of Heavy Metals on Transcriptional and Physiological Activity of Nitrifying Bacteria *(Environmental Science and Technology, 2015)*

RECENT FUNDED GRANTS

Tracking the Primary Sources of Fecal Pollution in the Recharge and Contributing Zones of Edwards Aquifer in Bexar County, TX using Molecular Tools
Role: PI
Sponsor: City of San Antonio
Amount: $692,452
Project Period: 11/1/17 – 12/31/20

RAPID: Mobilization and transport of microbial contaminants along Texas waterways following Hurricane Harvey
Role: PI
Sponsor: National Science Foundation
Amount: $79,277
Project Period: 10/1/17 – 9/30/18

Development and Deployment of a New Class of Environmental Tracers
Role: PI
Sponsor: UTSA-SwRI Connect Program
Amount: $125,000
Project Period: 9/1/18 – 8/31/19

Contact: Vikram.Kapoor@utsa.edu
Learn more about Vikram Kapoor here.

Yilmaz H. Karasulu, PhD

Associate Professor, Department of Construction Science

RESEARCH AREAS

- Data Analysis and Modelling
- Construction Scheduling and Planning
- Occupational Safety
- Geotechnical Engineering

OTHER HIGHLIGHTS

- 2016 Richard S. Howe Excellence in Service to Undergraduate Students Award
- 2014 ABC Associated Builders and Contractors Chairman's Award
- 2012 Associated General Contractors of America Education and Research Foundation's Outstanding Educator of the Year (National)
- Founding Chair of the UTSA Department of Construction Science

RECENT PUBLICATIONS

- H. Karasulu and Martinez. "Construction Field Inspection Using 3D PDF Documents" Under Review, Construction Innovation: Information, Process, Management.
- H. Karasulu, 2020. "'A Conceptual Approach to Graphically Compare Construction Schedules." Construction Innovation: Information, Process, Management.
- Tumay, H. Karasulu, and Yilmaz. 2017. "Evaluation of Undrained Shear Strength of Soft soils using CPT and VST Technologies" 19th International Conference on Soil Mechanics and Geotechnical Engineering, Seoul, South Korea

RECENT FUNDED GRANTS

- "SPARK Community Park Project at Wheatley Middle School." (Outreach/Service) (2015)
  PI with Nishimoto (Joint PI)
  Funding by: San Antonio Sports in collaboration with HEB & San Antonio ISD

- "Bartlett Cocke General Contractors Teaching and Research Laboratory." (Infrastructure) (2014-2015)
  Funding by: Bartlett Cocke General Contractors

- "Modeling Household Energy Consumption in Bexar County" (2011- 2012)
  Co-PI with Gomes, Potter, Nishimoto, and Gunhan
  Funding by: CPS Energy and Texas Sustainable Energy Institute

Contact: yilmaz.karasulu@utsa.edu
Learn more about Dr. Karasulu here.

Dr. Amit Kumar

Assistant Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Connected and Autonomous Vehicles
- Transportation Planning
- Traffic Safety and Incident Management
- Sustainable Transportation
- Electric Vehicles and Energy
- Intelligent Transportation Systems
- Transportation, Air Quality and Health

RECENT FUNDED GRANTS

None at this time.

OTHER HIGHLIGHTS

- Has published 31 refereed journal articles and conference proceedings
- More than 30 conference presentations
- Supervising 1 PhD and 2 MS students
- Friend member of multiple committees of Transportation Research Board (TRB) of National Academies

RECENT PUBLICATIONS

Multi-criteria based approach to identify critical links in a transportation network *(Case Studies on Transport Policy , 2019)*

A simplified framework for sequencing of transportation projects considering user costs and benefits. *(Transportmetrica A: Transport Science, 2018)*

Routing aspects of electric vehicle drivers and their effects on network performance *(Transportation Research Part D:* Transport and Environment, *2016)*

Challenges to CV and AV applications in truck freight operations (*NCHRP, 2016*)

Contact: Amit.Kumar@utsa.edu

Learn more about Amit Kumar here.

Dr. Sandeep Langar

Assistant Professor, Dept. of Construction Science

RESEARCH AREAS

- Sustainability in the Built Environment
- Resilient facilities
- Adoption & Diffusion of Sustainable Innovations
- Information Technology adoption and implementation

RECENT PUBLICATIONS

Perceptions for Residential Resilience. (*Residential Building Design & Construction Conference - 2020).*

Evaluation of Disaster Resilience Preparation in the Construction Education Curriculum. (*American Society for Engineering Education* -2020).

Building Information Modeling (BIM) Outsourcing: Identifying Trends and Impacts on the Architecture, Engineering, and Construction (AEC) Industry. (*Automation in Construction*- 2018)

RECENT FUNDED GRANTS

Building a Sacred Places Heritage Network for Disaster Resilience in the Texas Gulf Coast
Role: Co-PI
Funding Agency: Texas Historical Commission (THC), TX
Amount: $248,667
Status: Work in Progress

Social Behavioral, and Evacuation choices of Homeowners against Natural Disasters
Role: PI
Funding Agency: Construction Industry Advisory Council (CIAC), UTSA
Amount: $5,000
Status: Work in Progress

The Construction of Transportation Academy-Summer Camp: Pilot
Role: Co-PI
Funding Agency: San Antonio Independent School District (SAISD)
Award Amount: $29,994
Status: Completed

OTHER HIGHLIGHTS

- Awarded Regional Teaching Award by the Associated Schools of Construction (2020)
- Awarded Outstanding Doctoral Candidate in The College of Architecture & Urban Studies (CAUS), by the Graduate School at Virginia Tech, (2012)

Contact: sandeep.langar@utsa.edu

Learn more about ...

Dr. Adolfo Matamoros

Peter T. Flawn Distinguished Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Design and behavior of reinforced concrete members
- Fatigue repair and structural steel bridges
- Earthquake engineering

RECENT PUBLICATIONS

Effect of Preexisting Cracks on Lap Splice Strength of Reinforcing Bars *(ACI Structural Journal, 2016)*

Repairing Distortion-Induced Fatigue Cracks in Steel Bridge Girders Using Angles-with-Plate Retrofit Technique. I: Physical Simulations *(Journal of Structural Engineering, 2014)*

Use of CFRP Overlays to Repair Fatigue Damage in Steel Plates under Tension Loading *(Journal of Composites for Construction, 2014)*

RECENT FUNDED GRANTS

GREAT: Converting Ubiquitous Biomass into Sustainable Civil Engineering Materials Based on Polymerization and Cross-linking
Role: Co-PI
Sponsor: UTSA VPR Office
Amount: $20,000
Project Period: 9/1/16 – 8/31/17

Static and Dynamic Testing of Energy Absorbing Connectors for Blast-Loaded Components
Role: PI
Sponsor: Protection Engineering Consultants, Inc.
Amount: $5,276
Project Period: 12/15/14 – 6/30/15

Composite Action in Prestressed NU I-Girder Bridge Deck Systems Constructed with Bond Breakers to Facilitate Deck Removal
Role: PI
Sponsor: University of Kansas Center for Research, Inc.
Amount: $7,647
Project Period: 9/1/14 – 9/30/16

Contact: Adolfo.Matamoros@utsa.edu

Learn more about Adolfo Matamoros here.

Dr. Arturo Montoya

Assistant Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Safety and reliability of suspension bridge main cables
- Friction and fracture of corroded high strength steel wires
- Aging infrastructure
- Crack propagation
- Structural performance evaluation of concrete safety barriers

RECENT PUBLICATIONS

Complex Finite Element Sensitivity Method for Creep Analysis *(International Journal of Pressure Vessels and Piping, 2015)*

A Virtual Crack Extension Method to Compute Energy Release Rates Using a Complex Variable Finite Element Method *(Engineering Fracture Mechanics, 2016)*

Physics-based Stochastic Model to Determine the Failure Load of Suspension Bridge Main Cables *(Journal of Computing in Civil Engineering, 2014)*

RECENT FUNDED GRANTS

Three Dimensional Fracture Mechanics Capability for Structures operating in High Temperature Thermal Environments
Role: Co-PI
Sponsor: US Dept. of the Army
Amount: $397,843
Project Period: 8/21/15 – 8/20/18

Potential Risk of Hydrogen Embrittlement of ZnNi Coated High Strength Steel
Role: PI
Sponsor: Southwest Research Institute
Amount: $66,028
Project Period: 11/15/14 – 9/30/15

Harvesting Energy from Roadways using Piezoelectric-Based Systems
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $3,490,339
Project Period: 9/1/14 – 2/29/16

OTHER HIGHLIGHTS

- Zarem Educator Award, American Institute of Aeronautics and Astronautics (2015)
- Has supervised 4 PhD students
- Simulation software: ABAQUS, FEAP, LSDYNA
- Q-Fog Corrosion Chamber

Contact: Arturo.Montoya@utsa.edu
Learn more about Arturo Montoya here.

Dr. John D. Murphy Jr.

Executive Director, International Study Center at Urbino
Assoc. Vice Provost of Global Initiatives
Professor of Architecture

RESEARCH AREAS

- Indoor Air Quality
- Environmental Quality of Adaptive Reuse or Restoration of Historic Structures

OTHER HIGHLIGHTS

- Dean, CACP 2009-2019
- Created UTSA International Study Center at Urbino in 2012, UTSA's first international micro campus
- Exec. Director, ISCU 2019-present
- International collaboration in research/scholarship for over two decades

RECENT PUBLICATIONS

- **Murphy**, John. (2019, March). Considerazioni Sulla Qualità Ambientale In Caso Di Riuso De Edifici Storici a Sequito Di Danni Da Terremoto / **Environmental Quality Considerations in Historic Structure Adaptive Reuse After Event Related Damage: Earthquake**. History Meets Science Between Abruzzo & Texas. Ciranna, Lombardi, Montuori, eds. Pgs. 115-127. Edizioni Quasar. ISBN 978-88-7140-966-5.
- Lombardi, A., Laurini, E., Ciranna, S., Rashed-Ali, H., Montuori, P., **Murphy**, J., De Berardinis, P. (2017, July). **Natural Ventilation Systems in Texas Courthouses Designed by James Riley Gordon: an Analysis of Development of Climate Responsive Typologies**. PLEA2017 Conference, Edinburgh, Scotland.
- Lombardi, A, **Murphy**, J., Ciranna, S., Montuori, P., De Leon, E. (2017, June). **Case Studies of Environmental Quality of Buildings Damaged by Earthquake, Prior to Adaptive Reconstruction: Palazzo Moscardelli in Ofena and Ex-Colonia IX Maggio at Monteluco Di Roio, L'Aquila, Italy**. WESSEX 9th Conference on Sustainable Development and Planning, Bristol, UK. June 27-29, 2017
- **Murphy**, J., Orlandi, J, Lombardi, A.. (2016, July). **Indoor Air Quality Assessment in Adaptive Reuse of Historic Buildings: an Overview and Comparison of Standards and Regulations in Europe and the USA**. SUDEP '16 / International Sustainable Development on Economy and Planning Conference, Istanbul, Turkey July 1 - 2, 2016, pp.123-135.

Contact: John.Murphy@utsa.edu

Dr. A.T. Papagiannakis

Professor, Dept. of Civil & Environmental Engineering
Robert F. McDermott Endowed Chair in Engineering

RESEARCH AREAS

- Asphaltic material
- Pavement-vehicle interaction
- Pavement traffic loading
- Micromechanical analysis of asphalt concretes

RECENT PUBLICATIONS

Experimental and Numerical Study of Geosynthetic Reinforced soil Over a Channel *(Geotextiles and Geomembranes, 2015)*

Simulation of Asphalt Concrete Plastic Deformation Behavior *(Bituminous Mixtures and Pavements VI – Proceedings of the 6th International Conference on Bituminous Mixtures and Pavements, 2015)*

Analysis of Dynamic Vehicle Loads Using Vehicle Pavement Interaction Model *(KSCE Journal of Civil Engineering, 2014)*

RECENT FUNDED GRANTS

Harvesting Energy from Roadways using Piezoelectric-Based Systems
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $3,490,339
Project Period: 9/1/14 – 2/29/16

Evaluation of the Benefits of Diamond Grinding of CRC Pavements
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $79,992
Project Period: 6/15/14 – 8/31/15

Phase III: Technical Assistance Agreement Between the University of Texas at San Antonio and the City of San Antonio
Role: Co-PI
Sponsor: City of San Antonio
Amount: $50,000
Project Period: 5/15/13 – 5/14/14

OTHER HIGHLIGHTS

- Fellow of the American Society for Civil Engineering
- ASCE Award for Innovation for Energy Harvesting Project (2016)
- Has supervised 7 PhD students
- Past Department Chair, Civil & Environmental Engineering, UTSA

Contact: AT.Papagiannakis@utsa.edu
Learn more about AT Papagiannakis here.

Dr. Hatim Sharif

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Hydrometeorological analysis, modeling and prediction
- Traffic safety
- Remote sensing applications in hydrometeorology
- Application of geographic information systems (GIS) in water resources, water quality and contaminant transport modeling

OTHER HIGHLIGHTS

- Fulbright Scholar
- Fulbright Senior Specialist
- Has supervised 11 PhD and 17 MS students
- Senior scientific visitor at international institutions
- Attracted more that $10 million in funding, most as PI, including NASA, NSF, NOAA, DoD, DoEd, and state
- NASA, NSF,USDA regular panelist
- Summer Faculty Fellowship, NASA (2010)

RECENT PUBLICATIONS

Bayabil, H. K., A. Fares, H. O. Sharif, D. T. Ghebreyesus, and H. A. Moreno, 2019: Effects of Spatial and Temporal Data Aggregation on the Performance of the Multi-Radar Multi-Sensor System. *Journal of the American Water Resources Association*. In press.

Al Abdouli, K., K. Hussein , D. Ghebreyesus, and H. O. Sharif, 2019: Coastal Runoff in the United Arab Emirates—The Hazard and Opportunity. *Sustainability*. DOI: 10.3390/su11195406.

Omranian, S. E., H. O. Sharif, and Ahmad A. Tavakoly, 2018: How Well Can Global Precipitation Measurement (GPM) Capture Hurricanes? Case Study: Hurricane Harvey. *Remote sensing*. DOI: 10.3390/rs10071150.

RECENT FUNDED GRANTS

Hydrology Infrastructure Data Collection and Analysis Role: PI
Sponsor: Texas General Land Office
Amount: $1,516,419
Project Period: 2/1/19 – 12/31/19

Corrugated Metal Pipe (CMP) Infrastructure Rehabilitation
Role: PI
Sponsor: City of San Antonio
Amount: $750,000
Project Period: 7/1/19 – 12/31/19

Developing Peak Rate Factor (PRF) Guidance in Hydrologic Modeling
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $154,179
Project Period: 7/1/10 – 8/31/20

Contact: Hatim.Sharif@utsa.edu
Learn more about Hatim Sharif here.

Dr. Les Shephard

Professor, Dept. of Civil & Environmental Engineering
Robert F. McDermott Endowed Chair in Engineering

RESEARCH AREAS

- Characterization and analyses of Earth systems
- Energy-water nexus
- Energy technology

RECENT PUBLICATIONS

Atmospheric Water Generation: A Path to Net-Zero *(IEEE Green Technologies Conference, 2016)*

Bifacial Solar Photovoltaics - A Technology Review *(Renewable and Sustainable Energy Reviews, 2016)*

Understanding Campus Energy Consumption - People, Buildings and Technology *(IEEE Green Technologies Conference, 2016)*

RECENT FUNDED GRANTS

Behavior Driven Transactive Energy For Residential Buildings
Role: Co-PI
Sponsor: US Dept. of Energy
Amount: $37,615
Project Period: 1/1/16 – 12/31/17

Transforming and Modernizing the Electric Sector
Role: PI
Sponsor: City Public Service
Amount: $620,000
Project Period: 10/1/15 – 5/31/16

National Incubator Initiative for Clean Energy
Role: PI
Sponsor: The University of Texas at Austin
Amount: $50,000
Project Period: 9/1/14 – 8/31/17

Contact: Les.Shephard@utsa.edu
Learn more about Les Shephard here.

Dr. Heather Shipley

Professor, Dept. of Civil & Environmental Engineering
Burzik Endowed Professorship in Engineering Design
Senior Vice Provost Academic Affairs & Dean, University College

RESEARCH AREAS

- Water quality monitoring
- Fate and transport of pollutants
- Water conservation, recycling and sustainability (e.g. rain water harvesting)
- Water purification, including the use of nanomaterials
- Technology comparisons and improvements for water and wastewater treatment, and remediation

OTHER HIGHLIGHTS

- Has supervised 4 Post doctoral fellows, 8 PhD and 8 MS students
- Active in Association of Environmental Engineering and Science Professors

RECENT PUBLICATIONS

Aeration Waste Heat for Membrane Evaporation of Desalination Brine Concentrate (*Journal of Membrane Science, 2017)*

Inorganic Nano-adsorbents for the Removal of Heavy Metals and Arsenic: A Review *(RSC Advances, 2015)*

Stability and Competition of T7aiiA Phage Lysates (*Environmental Engineering and Science, 2017)*

RECENT FUNDED GRANTS

Rain Gardens to Improve Stormwater Treatment at the University of Texas at San Antonio Main Campus Role: Co-PI
Sponsor: City of San Antonio
Amount: $1,069,663
Project Period: 6/1/17 – 5/31/22

Understanding Interactions of Chemical Contaminants to DOE Facility Materials using Spectroscopic Techniques
Role: PI
Sponsor: DOE
Amount: $273,134
Project Period: 3/14/17 – 5/31/18

S-STEM: UTSA's Scholarship Program for Undergraduates' Retention and Success (SPURS)
Role: PI
Sponsor: National Science Foundation
Amount: $626,890
Project Period: 8/1/15 – 7/31/20

Contact: Heather.Shipley@utsa.edu
Learn more about Heather Shipley here.

Dr. Tulio Sulbaran

Professor – Department of Construction Science

RESEARCH AREAS

- Decision Making and Support
- Artificial Intelligence, Data Analytics
- Transportation Safety and Analysis
- Education
- Construction Education

RECENT PUBLICATIONS

- Sulbaran, T., and Langar, S. (2020). "South Atlantic Architects Validation of the Construction Decision Making Inventory (CDMI)." Construction Research Congress (CRC), Arizona State University, AZ, USA.
- Harper, C., Sulbaran, T., (2019) "Measuring the Reliability of Construction Decision Making Inventory in Construction Management", Associated Schools of Construction Denver, CO
- Sulbaran, T., & Ahmed, F. (2017). "Expert System for Construction Scheduling Decision Support Based on Travelling Salesman Problem" Associated Schools of Construction, Seattle, WA
- F. Askew, Sulbaran, T., (2014) "Highway Funding and Its Impact on Freight Transportation", Logistics, Trade and Transportation Symposium 2014, Long Beach, MS

RECENT FUNDED GRANTS

- Dr. Sulbaran, (2019) "Best Practices for Lighting and Marking Construction/Maintenance Equipment for Safety", Mississippi Department of Transportation. UTSA Routing Number: 7966.
- Dr. Sulbaran, Dr. Langar (2019), "Construction of Transportation Infrastructure Academy – Summer Camp Pilot I", San Antonio Independent School District. UTSA Routing Number: 9449
- Dr. Sulbaran, (2019) "Construction Recruitment Materials Repository (CRMR) of Middle-School and High School Students", TEXO. UTSA Routing Number: 8859
- Dr. Sulbaran (2018), "Initial Project Management Restoration Manual - 1907 Kelso House Case study", City of San Antonio, UTSA Routing Number: 8717

CONTACT: Tulio.Sulbaran@utsa.edu

Dr. Firat Testik

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Environmental fluid mechanics
- Coastal engineering
- Coastal hydrodynamics and nearshore processes
- Precipitation microphysics
- Hydraulics
- Sediment transport
- Physical modeling and experimentation

RECENT PUBLICATIONS

Free Fall of Water Drops in Laboratory Rainfall Simulations *(Atmospheric Research, 2016)*

High-speed Optical Disdrometer for Rainfall Microphysical Observations *(Journal of Atmospheric and Oceanic Technology, 2016)*

On the Self-similar Propagation of Gravity Currents Through an Array of Emergent Vegetation-like Obstacles *(Journal of Hydraulic Engineering, 2016)*

RECENT FUNDED GRANTS

Advanced Optical Disdrometer for Precipitation Observations
Role: PI
Sponsor: National Science Foundation
Amount: $22,254
Project Period: 9/1/15 – 4/30/16

Critical Raindrop Characteristics: Fall Speed, Shape, and Size Distributions
Role: PI
Sponsor: National Science Foundation
Amount: $135,177
Project Period: 9/1/15 – 8/31/16

Critical Raindrop Characteristics: Fall Speed, Shape, and Size Distributions
Role: PI
Sponsor: National Science Foundation
Amount: $504,150
Project Period: 9/1/12 – 12/31/15

OTHER HIGHLIGHTS

- Has supervised 8 PhD students
- Invented the High-speed Optical Disdrometer
- Has served as Editor and Editorial Board Member for a book and international journals

Contact: Firat.Testik@utsa.edu
Learn more about Firat Testik here.

Dr. Jose Weissmann

Professor, Dept. of Civil & Environmental Engineering

RESEARCH AREAS

- Transportation infrastructure management
- Pavement materials

RECENT PUBLICATIONS

Estimating Bridge Consumption Costs for Oversize-overweight Permitted Trucks *(Bridge Maintenance, Safety, Management and Life Extension – Proceedings of the 7th International Conference of Bridge Maintenance, Safety and Management, 2014)*

Distribution of Materials in Road Earthmoving and Paving: Mathematical programming approach *(Journal of Construction Engineering and Management, 2013)*

Potential Impacts of Longer and Heavier Vehicles on Texas Pavements *(Journal of Transportation Engineering, 2013)*

RECENT FUNDED GRANTS

Assessing the Safety Issues Associated with Isolated Rural Intersections
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $266,800
Project Period: 9/1/16 – 8/31/18

Incorporating Wildlife Crossings into TxDOT's Project Development, Design and Operations Processes
Role: PI
Sponsor: Texas Dept. of Transportation
Amount: $87,346
Project Period: 9/1/16 – 8/31/17

Development of Pavement and Bridge Consumption Cost Library
Role: PI
Sponsor: Texas Dept. of Transportation
Amount: $50,000
Project Period: 3/1/16 – 10/31/16

Contact: JWeissmann@utsa.edu
Learn more about Jose Weissmann here.

Department of Electrical & Computer Engineering

RESEARCH EXPERTISE

- Cyber security
- Cloud computing
- Cyber physical systems
- Computer architecture and embedded systems
- VLSI design
- Unmanned systems
- Artificial intelligent and computer vision
- Image processing
- Electronic and optoelectronic materials and devices
- Bioinformatics and data analytics
- Distributed sensors and secure network
- Electronic sensors and actuators
- Power electronics and energy research
- Wireless and fiber optic communication
- Positioning and navigation
- Renewable energy and smart grids

FACULTY (FALL 2020)

- 28 Tenured and Tenure-Track Faculty
- 9 Lecturers, Assistant Professors of Research
- 4 NSF CAREER Awardees
- 29% T/TT Female Faculty

RESEARCH LABORATORIES

- Multimedia and Mobile Signal Processing
- Photonics Lab
- Control, Computation and Cybernetics (C3) Lab
- Autonomous Control Engineering
- Multifunctional Electronic Materials & Devices Lab
- Computer Architecture and Systems Lab (CASL)
- Unmanned Systems Laboratory
- Power Electronics and Electrical Power Lab
- Software Communication and Navigation Systems Lab
- Wireless Next Generation Systems (WiNGS) Lab

DEGREE PROGRAMS

- B.S. in Electrical Engineering
- B.S. in Computer Engineering
- M.S. in Electrical Engineering
- M.S. in Computer Engineering
- M.S. in Advanced Material Engineering
- Ph.D. in Electrical Engineering

STUDENTS (FALL 2020)

- 707 Undergraduate Students
- 109 Post-Bac & Master's Students
- 104 Doctoral Students

Learn more about the Electrical & Computer Engineering Department at http://ece.utsa.edu.

Dr. Sara Ahmed

Assistant Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Modeling, simulation and analysis of power electronics systems, focused on stability, fault analysis, and integration of renewables
- Design and control of three phase converters and AC drives

RECENT FUNDED GRANTS

CONNECT: Promoting Sustainability and Safety for Texas Rural Roadways Through Self-Powered Sensing And Detection Systems
Role: Co-PI
Sponsor: UTSA VPR Office
Amount: $50,000
Project Period: 9/1/17 – 8/31/18

OTHER HIGHLIGHTS

- Co-advisor for 2 PhD Students
- Senior Scientist in ABB US Corporate Research Center, Raleigh, NC (2011-2016)
- APEC (Applied Power Electronics Conference) Best Paper Award (2011)
- Who's Who Among American Universities Award Recognition (2006)

RECENT PUBLICATIONS

Small-signal model of a voltage source inverter (VSI) considering the dead-time effect and space vector modulation types *(IEEE Transactions on Power Electronics, 2016)*

Restart Strategy for PMSM using scalar control *(IEEE Transactions in Industry Applications, 2016)*

Instability Detection and Protection Scheme for Efficiency Optimized V/f Driven Synchronous Reluctance Motors (SynRM) *(IEEE Energy Conversion Congress and Exposition, 2016)*

Contact: Sara.Ahmed@utsa.edu
Learn more about Sara Ahmed here.

Dr. Ethan C. Ahn

Assistant Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Energy-efficient logic and memory devices for data-centric computing
- Carbon-based and other emerging nanomaterials
- Experimental and computational nano-devices, specifically electronic/ thermal/ magnetic transport
- Beyond-CMOS nanoelectronics

RECENT PUBLICATIONS

Energy-Efficient Phase-Change Memory with Graphene as a Thermal Barrier *(Nano Letters, 2015)*

Vertical and Lateral Copper Transport through Graphene Layers *(ACS Nano, 2015)*

1D Selection Device Using Carbone Nanotube FETs for High-density Cross-point Memory Arrays *(IEEE TED, 2015)*

RECENT FUNDED GRANTS

Advancing Emerging Non-volatile Memory with Carbon-based Nanomaterials
Role: PI
Sponsor: UT System
Amount: $250,000
Project Period: 9/1/16 – 8/31/18

OTHER HIGHLIGHTS

- John Bardeen Research Award for Excellence in Nanodevices Research (2014)
- IBM T.J. Watson Best Summer Post Award (2013)
- Expertise in Micro/Nano Device Fabrication (E-beam Lithography)
- Served as a Sr. Panel Process Engineer at Apple Inc. (2016)

Contact: Chiyui.Ahn@utsa.edu
Learn more about Ethan Ahn here.

Dr. David Akopian

Professor, Electrical and Computer Eng, Associate Dean of Research, COE

RESEARCH AREAS

- Data collection, processing and apps
- Positioning and navigation algorithms
- GPS, A-GPS, Galileo, GNSS
- Indoor positioning, WLAN fingerprinting
- Collaborative positioning
- Human-machine automated protocols
- Activity sensors, sensor fusion and filters
- Mobile computing and applications
- Automated messaging, mHealth
- Software-defined radio
- Implementation platforms

OTHER HIGHLIGHTS

- 30 patents, 170 pubs
- NAI Fellow,
- IEEE SM, ION Member
- About 70 supervised graduate students
- Location Technologies
- Activity Data Collection
- Automated messaging

RECENT PUBLICATIONS

- Real-Time Rejection and Mitigation of Time Synchronization Attacks on the Global Positioning System, IEEE Trans. on Industrial Electronics, 2018
- Modern WLAN fingerprinting indoor positioning methods and deployment challenges, IEEE Comm. Surveys & Tutorials, 2017
- Text and mobile media smoking cessation service for young adults, Health Promotion Practice, 2017
- Inference of Network Delays for SUPL Assisted GNSS *(GPS Solutions, 2016)*

RECENT FUNDED GRANTS

Tobacco Cessation Texting Services (Chatbots)
Role: PI; Sponsor: CPRIT/UTHSA
Amounts: $181K and $300K
Project Period: 2014-2017-2020

Integrated Framework for Detection and Mitig. of GPS Spoofing Attacks in Smart Grids
Role: Co-PI; Sponsor: NSF
Amount: $399K
Project Period: 8/1/17 – 7/30/20

Extending GPS Operation in GPS-denied Areas through Jamming Cancellation
Role: Co-PI; Sponsor: US Dept. of the Air Force
Amount: $194,800
Project Period: 8/15/15 – 12/31/17

Acquisition of S-Unmanned Aerial Systems for Advancing Cooperative Man-Machine Systems
Role: Co-PI; Sponsor: US Dept. of the Army
Amount: $446,105
Project Period: 2/1/15 – 1/31/16

Contact: David.Akopian@utsa.edu
Learn more about David Akopian here.

Dr. Miltos Alamaniotis

Assistant Professor, Electrical and Computer Engineering

RESEARCH AREAS

- Applied Artificial Intelligence
- Machine Learning in Data Analysis
- Smart Energy and Power Systems
- Smart Cities
- Intelligent Signal Analytics
- Pattern Recognition in Engineering
- Nuclear Security
- AI in Nuclear Energy

RECENT FUNDED GRANTS

Critical System Simulation Tool for Investigating the Resilience of a Cyberphysical Security Ecosystem
Role: Co-PI; Sponsor: ONR
Amount: $550,000
Project Period: 2018-2020

NSF Travel Award 2018 – Amount: $2,000
Sponsor: IEEE Smart Cities Conf.

Machine Intelligence for Dynamic Data-Driven Morphing of Nodal Demand in Smart Energy Systems
Role: Co-PI; Sponsor: NSF/AFOSR
Amount: $160,000
Project Period: 2015-2017

OTHER HIGHLIGHTS

- **127 pubs**
- **Distinguished Alumni** Award – U. of Thessaly
- **Program Chair** – IEEE Int. Conf. on Tools with Artificial Intelligence 2018
- **Outstanding Reviewer** of Electric Power Systems Research Journal
- **BRAVO Award** recipient – COE, Purdue University

RECENT PUBLICATIONS

- Enhancing Privacy in Smart Cities through Morphing of Anticipated Demand Utilizing Self-Elasticity and Genetic Algorithms, *Sustainable Cities and Society*, 2019
- Virtual Budget: Integration of Electricity Load and Price Anticipation for Load Morphing in Price-Directed Energy Utilization," *Electric Power Systems Research*, 2018
- Probabilistic Kernel Machines for Predictive Monitoring of Weld Residual Stress in Energy Systems," *Engineering Applications of Artificial Intelligence*, 2018
- Prediction of welding residual stresses using machine learning: Comparison between neural networks and neuro-fuzzy systems," *Applied Soft Computing Journal*, 2018
- Fuzzy Data Fusion Utilizing Relevance Vector Machines with Application to Pressurized Water Reactor Monitoring," *11th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies Conference*, 2019

Contact: miltos.alamaniotis@utsa.edu
Learn more about Miltos Alamaniotis here.

Dr. Taposh Banerjee

Assistant Professor, Electrical and Computer Engineering
Cloud Technology Endowed Professorship, IV, College of Engineering

RESEARCH AREAS

- Statistical Signal Processing
- Sequential Analysis
- Quickest Change Detection
- Reinforcement Learning
- Machine Learning
- High-Dimensional Statistics
- Biomedical Signal Processing

RECENT FUNDED GRANTS

Real-Time Anomaly Detection Using Multi-Modal Data
Role: Sole-PI;
Sponsor: U.S. Army Research Lab.
Amounts: $280,739
Project Period: 2018-2021

RECENT PUBLICATIONS

- Quickest Detection of Deviations From Periodic Statistical Behavior, IEEE ICASSP, 2019.
- Sequential Detection of Regime Changes in Neural Data, IEEE EMBC NER, 2019.
- Cyclostationary Statistical Models and Algorithms for Anomaly Detection Using Multi-Modal Data, IEEE GlobalSIP, 2018.
- Quickest Detection of Changes in Maximal kNN Coherence of Random Matrices, IEEE Transactions on Signal Processing, 2018.
- Sequential Event Detection Using Multi-Modal Data in Nonstationary Environments, FUSION, 2018.
- Classification of Local Field Potentials Using Gaussian Sequence Model, IEEE SSP 2018.

OTHER HIGHLIGHTS

- Abraham Wald Prize in Sequential Analysis 2016.
- Cloud Technology Endowed Professorship IV
- ISIT Travel Award 2014.
- Graduate Aptitude Test in Engineering All India Rank 59.

Contact: taposh.banerjee@utsa.edu
https://sites.google.com/view/taposhbanerjee/home

Dr. Amar S. Bhalla

Research Professor, Dept. of Electrical & Computer Engineering and Interdisciplinary Graduate Program in Advanced Materials Engineering

RESEARCH AREAS

- Sensors and transducers
- Electronic ceramics – piezoelectric, ferroelectric, and pyroelectrics
- Nanomaterials and nanosystems
- Multifunctional materials: multiferroics and bioferroics.

OTHER HIGHLIGHTS

- Fellow of Optical Society of America and American Ceramics Society
- Mitsui Toatsu Chem. Chair in Frontier Chemistry, University of Tokyo, Japan (90-91)
- Program Director, Div. of Materials Research, NSF (1993-96)
- Editor/Principal Editor of Journal of Materials Research('95-'98), Landolt-Börnstein Series, and Ferroelectrics ('88 –current).
- Has supervised 30 PhD students

RECENT PUBLICATIONS

Enhanced Ferroelectricity, Piezoelectricity and Ferromagnetism in $(Ba_{0.75}Ca_{0.25})\ TiO_3$ Modified $BiFeO_3$ Multiferroic Ceramics *(Journal of Alloys and Compounds, 2016)*

Magnetic Field Tunable Capacitive Dielectric: ionic-liquid Sandwich Composites *(Materials Research Express, 2016)*

Switchable Diode Effect in $BaZrO_3$ Thin Films *(RSC Advances, 2016)*

RECENT FUNDED GRANTS

Unified Approach to Increase STEM Undergraduate Students Employment in Department of the Navy
Role: Co-PI;
Sponsor: Department of the Navy
Amount: $255,000;
Project Period: 4/2014 – 9/2017

Piezoelectric Resonance Defined High Performance Sensors and Modulators
Role: Co-PI;
Sponsor: Department of Defense (ARO/ONR)
Amount: $619,494;
Project Period: 3/2012-2/2016

International Network on Advanced and Multifunctional Materials (INAMM)
Role: PI;
Sponsor: National Science Foundation
Amount: $975,000;
Project Period: 9/2009 – 8/2015

Contact: Amar.Bhalla@utsa.edu
Learn more about Amar Bhalla here.

Dr. Yongcan Cao

Assistant Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Autonomous systems
- Cyber-physical systems
- Sensor networks
- Human-robot interaction
- Machine learning
- Artificial intelligence

RECENT PUBLICATIONS

Distributed Adaptive Fault-tolerant Control of Uncertain Multi-agent Systems (*Automatica, 2018*)

Machine Learning Approaches for Multi-Sensor Data Pattern Recognition: K-means, Deep Neural Networks, and Multi-layer K-means *(AIAA SciTech Conference, 2018)*

Multi-target Localization on Road Networks with Hidden Markov Rao–Blackwellized Particle Filters *(AIAA Journal of Aerospace Information Systems, 2017)*

OTHER HIGHLIGHTS

- Top 1% most highly cited papers in Engineering worldwide (2016)
- AFOSR Summer Faculty Fellow (2016)
- National Research Council Research Associateship Award (2012-2015)

RECENT FUNDED GRANTS

Human-inspired Decision Making for Swarm Robots
Role: PI
Sponsor: Office of Naval Research
Amount: $507,388
Project Period: 7/1/17 – 6/30/20

Dynamic Data-Driven Intelligence, Surveillance, and Reconnaissance
Role: PI
Sponsor: Air Force Office of Scientific Research
Amount: $50,918
Project Period: 9/30/16 – 9/29/17

AFRL Summer Faculty Fellowship
Role: PI
Sponsor: US Air Force
Amount: $16,000
Project Period: 5/9/16 – 7/1/16

Contact: Yongcan.Cao@utsa.edu
Learn more about Yongcan Cao here.

Dr. Guenevere (Qian) Chen

Assistant Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Self-Protecting IoT Ecosystems
- Autonomic Computing
- Intrusion Detection and Response Systems
- Malware Forensics Analysis
- Risk Assessment (e.g. Pen Testing)
- End-to-end Security Solutions for Industrial Control Systems, High Performance Computing and distributed systems etc.

OTHER HIGHLIGHTS

- Member, IEEE

RECENT PUBLICATIONS

Towards Realizing a Distributed Event and Intrusion Detection System (*FNSS 2017*)

Towards a Cyber Defense Framework for SCADA Systems Based on Power Consumption Monitoring (*HICSS-50, 2017*)

A Data Integrity Verification Scheme in Mobile Cloud Computing. (*Elsevier Journal of Network and Computer Applications 2016*)

RECENT FUNDED GRANTS

Research Initiation Award: Towards Realizing a Self-protecting Healthcare Information System for the Internet of Medical Things
Role: PI
Sponsor: National Science Foundation
Amount: $299,991
Project Period: 05/15/17 – 04/30/2020

Targeted Infusion Project in Interdisciplinary Data Analytics (TIP-IDA)
Role: Co-PI
Sponsor: National Science Foundation
Amount: $399,974
Project Period: 05/15/17 – 04/30/2020

Scalable Distributed Event & Intrusion Detection Systems for Cyber-Physical Power Systems (subcontract)
Role: PI
Sponsor: Department of Homeland Security/ Mississippi State University
Amount: $2,4777
Project Period: 01/01/17 – 06/30/17

Contact: guenevereqian.chen@utsa.edu
Learn more about Qian (Guenevere) Chen here.

Dr. Nikolaos Gatsis

Assistant Professor, Dept. of Electrical & Computer Engineering

OTHER HIGHLIGHTS

- Co-Guest Editor of IEEE JSTSP *Special Issue on Critical Infrastructures*
- Publication featured in the IEEE Comm. Society *Best Readings on Smart Grid Communications*
- Third Place in the BATADL Competition on *Cyber-Attack Detection in Water Distribution Systems* (with Drs. Giacomoni and Taha)
- Currently supervising 4 PhD students

RESEARCH AREAS

- Smart power grids
- Security of critical infrastructures
- Cyber-physical systems
- Stochastic and robust optimization
- Statistical signal processing

RECENT PUBLICATIONS

Real-Time Rejection and Mitigation of Time Synchronization Attacks on the Global Positioning System (*IEEE Transactions on Industrial Electronics, 2018*)

Comprehensive Modeling of Three-Phase Distribution Systems via the Bus Admittance Matrix (*IEEE Transactions on Power Systems, 2018*)

The Battle Of The Attack Detection Algorithms: Disclosing Cyber Attacks On Water Distribution Networks (*Journal of Water Resources Planning and Management, 2018*)

Monitoring and optimization for power grids: A signal processing perspective *(IEEE Signal Processing Magazine, 2013)*

RECENT FUNDED GRANTS

Integrated Framework for Detection and Mitigation of GPS Spoofing Attacks in Smart Grids
Role: PI
Sponsor: National Science Foundation
Amount: $399,934
Project Period: 8/1/17 – 7/31/20

Collaborative Research: Selecting Sensors and Actuators for Topologically Evolving Networked Dynamical Systems: Battling Contamination in Water Networks
Role: Co-PI
Sponsor: National Science Foundation
Amount: $299,974
Project Period: 8/1/17 – 7/31/20

CIF: Small: Collaborative: From Communication to Power Networks: Adaptive Energy Management for Power Systems with Renewables
Role: PI
Sponsor: National Science Foundation
Amount: $171,409
Project Period: 9/1/2014 – 8/31/18

Contact: Nikolaos.Gatsis@utsa.edu

Learn more about Nikolaos Gatsis here.

Dr. Artyom Grigoryan

Associate Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Signal and image processing
- Fourier analysis
- Applied mathematics

RECENT FUNDED GRANTS

None at this time.

OTHER HIGHLIGHTS

- Senior member of IEEE
- Member of SPIE, AMS
- Has supervised 6 PhD students
- Recipient of Research Award for "Tissue Microarray FISH and Digital Imaging…" *American Society of Human Genetics*
- 2000 Outstanding Scientists of the 21st Century, *Int. Bio. Centre,* Cambridge England

RECENT PUBLICATIONS

Solution of the Problem on Image Reconstruction in Computed Tomography *(Journal of Mathematical Imaging and Vision, 2016)*

Optimal Wiener and homomorphic filtration: Review *(Signal Processing, 2016)*

New Look on q2^r-point Fast Fourier Transforms *(IEEE Transactions on Signal Processing, 2016)*

Contact: Artyom.Grigoryan@utsa.edu

Learn more about Artyom Grigoryan here.

Dr. Yanmin Gong

Assistant Professor, Electrical and Computer Eng, COE

RESEARCH AREAS

- Machine learning security and privacy
- Internet of things and cyber-physical systems
- Security and privacy in mobile computing, and wireless networks.

RECENT PUBLICATIONS

- DP-ADMM: ADMM-based Distributed Learning with Differential Privacy, IEEE Transactions on Information Forensics & Security (TIFS), 2019
- Protecting Operation-Time Privacy of Primary Users in Downlink Cognitive Two-Tier Networks, IEEE Transactions on Vehicular Technology (TVT), 2019
- Stochastic ADMM Based Distributed Machine Learning with Differential Privacy, EAI SecureComm, 2019.
- Targeted Poisoning Attacks on Social Recommender Systems, IEEE GLOBECOM, 2019.

RECENT FUNDED GRANTS

Embracing Dynamic Spectrum Sharing without Privacy Concerns
Role: PI; Sponsor: NSF
Amounts: $175K
Project Period: 10/01/19 - 09/30/21

Association of Cyber and Visual IDs of Drones with Backscatter Tags
Role: Contractor; Sponsor: Air Force Research Laboratory (AFRL)
Amount: $10K
Project Period: 9/1/19 – 2/1/20

OTHER HIGHLIGHTS

- Best Paper Award of Globecom 2017
- Technical Editor of IEEE Wireless Communications
- TPC Member of IEEE INFOCOM 2017-2020
- Publicity Chair of IEEE MASS 2017, Publication Chair of EAI MobiQuitous 2019
- Cybersecurity
- Machine Learning
- Wireless Networks

Contact: yanmin.gong@utsa.edu
Learn more about Yanmin Gong here.

Dr. Ruyan Guo

Professor, Dept. of Electrical & Computer Engineering
Robert E. Clarke, Jr. Distinguished Professorship in Electrical Engineering
Director, Interdisciplinary Graduate Program in Advanced Materials Engineering

RESEARCH AREAS

- Electronic and optoelectronic materials and devices, including:
- ferroelectric, piezoelectric, pyroelectric, dielectric, and multiferroic ceramics and crystals
- electro-optical-mechanical-magnetic sensors, modulators, actuators, energy-convertors, and tunable devices

RECENT PUBLICATIONS

Magneto-elasto-electroporation (MEEP): In-vitro Visualization and Numerical Characteristics *(Scientific Reports – Nature, 2016)*

Optical and Microstructural Characterization of Multilayer PZT Thin Films Correlating Ellipsometry and Nanoscopy *(Journal of Materials Science, 2016)*

Understanding the Dynamic Magnetization Process for the Magnetoelectric Effect in Multiferroic Composites *(Journal of Applied Physics, 2016)*

RECENT FUNDED GRANTS

Hybrid 3-D Digital Deposition Platform for Bottom-Up Fabrication of Multicomponent-Multiferroic Composites (DURIP: H3DPlatform)
Role: PI
Sponsor: US Dept. of the Navy
Amount: $577,100
Project Period: 7/15/16 – 7/14/17

S-STEM: UTSA's Scholarship Program for Undergraduates' Retention and Success (SPURS)
Role: Co-PI
Sponsor: National Science Foundation
Amount: $626,890
Project Period: 8/1/15 – 7/31/20

Harvesting Energy from Roadways using Piezoelectric-Based Systems
Role: Co-PI
Sponsor: Texas Dept. of Transportation
Amount: $3,490,339
Project Period: 9/1/14 – 2/29/16

OTHER HIGHLIGHTS

- Fellow of IEEE, SPIE, and American Ceramics Society
- Excellence in Research Award, College of Engineering, UTSA (2013)
- Xerox Award in Materials Research, Penn State University (1991)
- Has supervised 15 PhD students
- Interferometry; vibrometry; XRD/AFM; Optical microscopy, dielectric spectroscopy, electromechanical testing

Contact: Ruyan.Guo@utsa.edu
Learn more about Ruyan Guo here.

Dr. Mo Jamshidi

Professor, Dept. of Electrical & Computer Engineering
Lutcher Brown Endowed Distinguished Chair

RESEARCH AREAS

- Large-scale systems
- Cyber-physical systems
- Big data analytics
- Computational intelligence
- Mobile robotics
- Cloud-based robotics

RECENT PUBLICATIONS

Big Data Analytic Paradigms: From Principle Component Analysis to Deep Learning *(Book Chapter, Robust Intelligence and Trust in Autonomous Systems, 2016)*

Teleoperation by Using Nonisomorphic Mechanisms in the Master–Slave Configuration for Speed Control *(IEEE Systems Journal, 2016)*

A Closed-Loop Transmission Power Control System Using a Nonlinear Approximation of Power-Time Curve *(IEEE Systems Journal, 2015)*

RECENT FUNDED GRANTS

Integrating OpenStack New Features and Docker Containers for the JetStream System
Role: Co-PI
Sponsor: Indiana University / National Science Foundation
Amount: $400,000
Project Period: 6/1/16 – 5/31/20

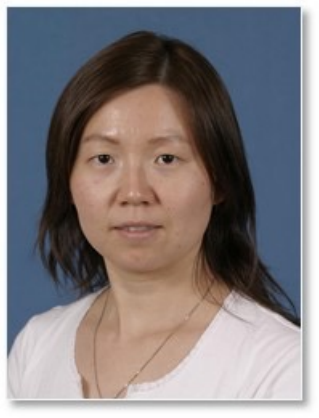
Modeling, Analysis and Control of Large Scale Autonomous System of Vehicles
Role: PI
Sponsor: North Carolina Agricultural & Tech State
Amount: $266,200
Project Period: 1/2/15 – 12/31/19

Intelligent Energy Systems Research Program
Role: Co-PI
Sponsor: City Public Service Energy
Amount: $467,974
Project Period: 2/1/14 – 8/31/14

OTHER HIGHLIGHTS

- IEEE, ASME, AAAS, NYAS, TWAS, AF AIAA Fellow
- Has supervised 19 PhD students
- Currently supervising 20 PhD students
- Cyber-physical systems
- Autonomous vehicles
- Bio-informatics
- Assistive robotics

Contact: Mo.Jamshidi@utsa.edu
Learn more about Mo Jamshidi here.



Dr. Yufang Jin

Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Mathematical modeling of cardiovascular systems
- Boolean network control
- Systems biology

OTHER HIGHLIGHTS

- IEEE and AHA Member
- Has supervised 5 PhD students
- Excellence in Research Award Recipient, UTSA
- Panel reviewer for NIH, NSF and AHA
- Working group leader for high performance computing MSM

RECENT PUBLICATIONS

Deriving A Cardiac Ageing Signature to Reveal MMP-9-dependent Inflammatory Signaling in Senescence *(Cardiovascular Research, 2015)*

Systems Analysis of Gene Ontology and Biological Pathways Involved in Post-myocardial Infarction Reponses *(BioMed Central, Genomics, 2015)*

State-Feedback Control Design for Dynamic Boolean Networks *(BioMed Central, Systems Biology, 2016)*

RECENT FUNDED GRANTS

San Antonio Cardiovascular Proteomic Center
Role: Co-PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $256,269
Project Period: 8/15/14 – 8/14/15

NHLBI San Antonio Proteomic Center
Role: Co-PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $240,009
Project Period: 8/15/13 – 8/14/14

NHLBI UTHSCSA Proteomic Center
Role: Co-PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $335,938
Project Period: 8/15/12 – 8/14/13

Contact: Yufang.Jin@utsa.edu
Learn more about Yufang Jin here.

Dr. Eugene John

Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Energy efficient computing
- Energy efficient circuits and systems
- Low power VLSI systems
- Power aware cloud computing
- Post-aware and secure systems
- Computer architecture and benchmarking

RECENT PUBLICATIONS

A Thermal-aware Scheduling Algorithm for Core Migration in Multicore Processors *(Journal of Low Power Electronics, 2015)*

Reducing Power and Cycle Requirement for Fast Fourier Transform of Electrocardiogram Signals Through Low Level Arithmetic Optimizations for Cardiac Implantable Devices *(Journal of Low Power Electronics, 2016)*

Time Series Forecasting of Cloud Data Center Workloads for Dynamic Resource Provisioning *(Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications, 2015)*

RECENT FUNDED GRANTS

REU Site: ESCAPE: Experimental Study on Computer Architecture and Performance Evaluation
Role: Co-PI
Sponsor: National Science Foundation
Amount: $356,732
Project Period: 5/1/11 – 4/30/14

Ultra Low Power Integrated Circuits and Systems for Cardiac Pacemakers
Role: PI
Sponsor: National Institutes of Health
Amount: $ 441,000
Project Period: 4/1/12 – 3/31/16

OTHER HIGHLIGHTS

- The University of Texas System Regents' Outstanding Teaching Award (August 2014)
- Inducted into the Academy of Distinguished Teaching Scholars, UTSA (September 2014)
- Faculty Award for Excellence in Teaching, College of Engineering, UTSA (May 2012)
- Faculty Award for Excellence in Service, College of Engineering, UTSA (Spring 2016)

Contact: Eugene.John@utsa.edu
Learn more about Eugene John here.

Dr. Brian Kelley

Associate Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Wireless communications, networks and 4G
- Smart grid power systems
- Cyber-physical systems
- Software defined radio (SDR)

RECENT PUBLICATIONS

Characterization of the LIGO Detectors During Their Sixth Science Run *(Classical and Quantum Gravity, 2015)*

A Beamforming Approach to Smart Grid Systems Based on Cloud Cognitive Radio *(IEEE Systems Journal, 2014)*

An Efficient Time Synchronization Scheme for Broadband Two-Way Relaying Networks Based on Physical-Layer Network Coding *(IEEE Communications Letters, 2012)*

RECENT FUNDED GRANTS

[NSA Fellowship – Title?]
Role: PI
Sponsor: US National Security Agency
Amount: $106,090
Project Period: 8/23/15 – 8/20/16

Modeling, Analysis and Control of Large Scale Autonomous System of Vehicles
Role: Co-PI
Sponsor: North Carolina Agricultural & Tech State
Amount: $266,200
Project Period: 1/2/15 – 12/31/19

Contact: Brian.Kelley@utsa.edu
Learn more about Brian Kelley here.

Dr. Ram Krishnan

Microsoft President's Endowed Associate Professor
Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Cybersecurity issues in domains such as cloud and mobile computing, Internet of Things, and social networking
- Foundational aspects of authorization in information systems including access control, security policy specification and enforcement, formal analysis of security policies, etc.

OTHER HIGHLIGHTS

- The University of Texas System Regents' Outstanding Teaching Award (2015)
- UTSA President's Distinguished Award for Research Achievement (2016)
- National Science Foundation CAREER Awardee (2016)

SELECTED PUBLICATIONS

Malware Detection in Cloud Infrastructures using Convolutional Neural Networks (IEEE International Conference on Cloud Computing, 2018)

Clustering-Based IaaS Cloud Monitoring *(IEEE International Conference on Cloud Computing, 2017)*

Toward a Framework for Detecting Privacy Policy Violation in Android Application Code *(International Conference on Software Engineering, 2016)*

RECENT FUNDED GRANTS

CREST Center for Security and Privacy Enhanced Cloud Computing (C-SPECC)
Role: Co-PI
Sponsor: National Science Foundation
Amount: $5,000,000
Project Period: 09/1/17 – 08/31/22

CAREER: Group-Centric Secure Information Sharing - Models, Properties, and Implementation
Role: PI
Sponsor: National Science Foundation
Amount: $544,376
Project Period: 7/1/16 – 6/30/21

Fine-Grained, Dynamic Virtual Resource Separation in Cloud Platforms for Assured Delivery of Cloud Based Services
Role: PI
Sponsor: US Dept. of the Army
Amount: $593,514
Project Period: 8/21/15 – 8/20/19

Contact: Ram.Krishnan@utsa.edu
Learn more about Ram Krishnan here.

Dr. Claire Walton

Assistant Professor, Electrical and Computer Eng, Mathematics

RESEARCH AREAS

- Computational optimal control
- Robust control of nonlinear systems
- Parameter uncertainty
- Autonomous vehicle path planning for mobile sensors, optimal search, mine counter-measures, energy-efficient path planning for endurance flight
- Largescale systems, empirical observability,
- Real-time optimization, scalable swarm tactics

OTHER HIGHLIGHTS

- Formerly at Naval Postgraduate School
- Joint position in COE and COS

RECENT PUBLICATIONS

- Consistent numerical methods for state and control constrained trajectory optimisation with parameter dependency. International Journal of Control, 2020
- Optimal Multi-Vehicle Motion Planning using Bernstein Approximants. IEEE Transactions on Automatic Control, 2020
- Partial Observability Analysis of an Adversarial Swarm Model. Journal of Guidance, Control, and Dynamics, 2020
- Alternate strategies for optimal unmanned aerial vehicle thermaling. Journal of Aircraft, 2018

RECENT FUNDED GRANTS

Fundamental Issues for Observability of Adversarial Swarm Strategies
Role: Co-PI; Sponsor: ONR Science of Autonomy
Amounts: $310k
Project Period: 10/1/2017-6/1/2020

Onboard and Real-Time Implementation of Optimal Motion Planning Algorithms with Uncertainty
Role: PI; Sponsor: NRC
Amount: $70K
Project Period: 5/18/17– 11/17/18

Fundamental Issues in the Defense Against Autonomous Swarms: Real-Time Defense Strategies for Uncertain Swarms
Role: Co-PI; Sponsor: ONR Science of Autonomy
Amount: $255K
Project Period: 10/1/16– 9/30/17

Closing the Experimental Gap in the Search and MCM Communities
Role: Co-PI; Sponsor: Consortium for Robotics and Unmanned Systems Education and Research
Amount: $150K
Project Period: 10/1/16 – 9/30/17

Contact: Claire.Walton@utsa.edu

Dr. Wonjun Lee

Assistant Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Secure virtualization
- Accountable cloud computing
- Root-kit detection
- Secure internet of things (IoT)

RECENT PUBLICATIONS

None available at this time.

RECENT FUNDED GRANTS

The Machine Learning Based Immune System for Containerized Cloud Computing
Role: PI
Sponsor: UTSA Open Cloud Institute
Amount: $30,000
Project Period: 9/1/17 – 8/31/18

Detection of Kernel Level Rootkits Targeting Linux Containers
Role: PI
Sponsor: Samsung SDS Co., LTD
Amount: $20,000
Project Period: 8/1/16 – 11/30/16

Contact: Wonjun.Lee@utsa.edu
Learn more about Wonjun Lee here.

Dr. Wei-Ming Lin

Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Computer architecture
- Parallel and distributed computing
- Computer network
- Autonomous performance optimization
- Neural network and deep learning

RECENT PUBLICATIONS

Efficient Physical Register File Allocation with Thread Suspension for Simultaneous Multi-Threading Processors *(ISCA 25th International Conference on Data Engineering and Software Engineering, SEDE, 2016)*

Efficient Resource Sharing Algorithm for Physical Register File in Simultaneous Multi-Threading Processors *(Microprocessors and Microsystems, 2016)*

Improving Resource Utilization by Curbing Speculative Trace Progression in Simultaneous Multi-Threading CPUs *(Journal of Information Science and Engineering, 2016)*

OTHER HIGHLIGHTS

- Has supervised / graduated 6 PhD students and over 30 MS students
- Three Best Paper Awards in international conferences
- Teaching Excellence Award, College of Engineering, UTSA (2014)
- UT Regents' Outstanding Teaching Award Nominee, College of Engineering (2015)

RECENT FUNDED GRANTS

EAGER: Collaborative: IC Supply Chain Security and Quality Control in a Business and Social Context
Role: PI
Sponsor: National Science Foundation
Amount: $179,997
Project Period: 9/1/15 – 8/31/17

REU Site: ESCAPE: Experimental Study on Computer Architecture and Performance Evaluation
Role: Co-PI
Sponsor: National Science Foundation
Amount: $356,732
Project Period: 5/1/11 – 4/31/14

Integrating High Performance Computing in Research and Education for Simulation, Visualization and Real-Time Prediction
Role: Co-I
Sponsor: National Science Foundation
Amount: $5,000,000
Project Period: 9/1/09 – 8/31/14

Contact: Weiming.Lin@utsa.edu
Learn more about Wei-Ming Lin here.

Dr. J. Jeff Prevost

Assistant Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Cloud computing
- Virtual resource placement optimization
- Auto-deploy and configure domain Specific cloud resources
- Quantum computation
- Quantum key security

RECENT PUBLICATIONS

Pedestrian detection system for smart communities using deep Convolutional Neural Networks *(System of Systems Engineering Conference (SoSE), 2017)*

Task Allocation Using Parallelized Clustering and Auctioning Algorithms for Heterogeneous Robotic Swarms Operating on a Cloud Network *(Autonomy and Artificial Intelligence, 2017)*

Securing Cloud Containers Using Quantum Networking Channels *(Smart Cloud (SmartCloud), IEEE International Conference 2016)*

OTHER HIGHLIGHTS

- Assistant Director and Co-Founder of the UTSA Open Cloud Institute

RECENT FUNDED GRANTS

Modeling, Analysis and Control of Large Scale Autonomous System of Vehicles
Role: Co-PI
Sponsor: North Carolina Agricultural & Technical State University
Amount: $266,200
Project Period: 1/2/15 – 12/31/19

CREST Center for Security and Privacy Enhanced Cloud Computing (C-SPECC)
Role: Co-PI
Sponsor: National Science Foundation
Amount: $5,000,000
Project Period: 1/2/15 – 12/31/19

Technical Application: Cloud-Based IoT Edge Framework for Real-time Control of Remote Agents
Role: PI
Sponsor: UTSA Open Cloud Institute
Amount: $30,000
Project Period: 9/1/17 – 8/31/18

Contact: Jeff.Prevost@utsa.edu
Learn more about Jeff Prevost here.

Dr. Chunjiang (CJ) Qian

Professor & Chair, Dept. of Electrical & Computer Engineering
Mary Lou Clarke Endowed Distinguished Professorship for Leadership

RESEARCH AREAS

- Robust and adaptive control of nonlinear systems
- Homogeneous systems theory
- Output feedback control
- Observer design and fault detection
- Intelligent control systems
- Control of nonholonomic systems
- Underactuated mechanical systems
- Aerospace systems
- Communication network
- Robotics

RECENT PUBLICATIONS

Adaptive Robust Finite-Time Trajectory Tracking Control of Fully Actuated Marine Surface Vehicles *(IEEE Transactions on Control Systems Technology, 2016)*

Robust Control for a Class of Nonlinear Systems with Unknown Measurement Drifts *(Automatica, 2016)*

Universal Finite-Time Observer Design and Adaptive Frequency Regulation of Hydraulic Turbine Systems *(IET Control Theory and Applications, 2016)*

RECENT FUNDED GRANTS

Study of Modeling and Control of Solar Thermal Power Generation
Role: PI
Sponsor: Alstom Power, Inc.
Amount: $6,000
Project Period: 11/9/12 – 4/30/13

Acquisition of Small Unmanned Aerial Systems for Advancing Cooperative Man-Machine Systems Research and Education
Role: Co-PI
Sponsor: US Dept. of the Army
Amount: $446,105
Project Period: 2/1/15 – 1/31/16

Contact: Chunjiang.Qian@utsa.edu
Learn more about Chunjiang Qian here.

Dr. Mehdi Shadaram

Professor, Dept. of Electrical & Computer Engineering
The Janey and Dolph Briscoe Endowed Distinguished Professorship

RESEARCH AREAS

- Fiber optic communications
- Photonic generation and transmission of millimeter waves
- Broadband communications systems
- Optical sensing

OTHER HIGHLIGHTS

- Senior member of IEEE
- Registered Professional Engineer
- Has supervised 12 PhD students
- Recipient of Excellence in Research Award, UTSA
- Sensing using accoustooptic technique
- Millimeter wave generation using EO devices

RECENT PUBLICATIONS

Characterization of Pressure Transients Generated by Nanosecond Electrical Pulse (nsEP) Exposure *(Scientific Reports, 2015)*

Introduction to the Special Issue on "Wireless Systems: Networks, routing, security and reliability" *(Computers and Electrical Engineering, 2015)*

Special Issue On Recent Developments in Cognitive Radio Sensor Networks *(Pervasive and Mobile Computing, 2015)*

RECENT FUNDED GRANTS

Summer Engineering Camp for Texas Students
Role: PI
Sponsor: Texas Higher Education Coordinating Board
Amount: $13,998
Project Period: 6/1/15 – 8/31/15

Somerset ISD GEAR
Role: PI
Sponsor: Somerset ISD, Office of the Superintendent
Amount: $15,600
Project Period: 6/1/14 – 9/30/14

Engineering Summer Residential Camp for Texas High School Students
Role: PI
Sponsor: Texas Higher Education Coordinating Board
Amount: $12,500
Project Period: 6/1/14 – 8/31/14

Contact: Mehdi.Shadaram@utsa.edu
Learn more about Mehdi Shadaram here.

Dr. J. Michelle Zhang

Associate Professor, Dept. of Electrical & Computer Engineering

RESEARCH AREAS

- Signal processing for bioinformatics and biomedical applications
- Information theory and applications in genomics
- Wireless communications

RECENT PUBLICATIONS

Early Disease Correlated Protein Detection Using Early Response Index (ERI) *(Conference Contribution, IEEE EMBS International Conference on Biomedical and Health Informatics, 2016)*

Applications of Particle Filtering to Communications: A Review *(Conference Contribution, European Signal Processing Conference, 2015)*

MZDASoft: A Software Architecture that Enables Large-Scale Comparison of Protein Expression Levels Over Multiple Samples Based on Liquid Chromatography / Tandem Mass Spectrometry *(Rapid Communications in Mass Spectrometry, 2015)*

RECENT FUNDED GRANTS

Graphical models for characterizing global RNA methylation
Role: Co-PI
Sponsor: National Institutes of Health
Amount: $1,085,774
Project Period: 1/1/14 – 12/31/16

RCMI Center for Interdisciplinary Health Research CIHR
Role: PI
Sponsor: National Institutes of Health
Amount: $114,207
Project Period: 9/30/98 – 6/30/14

Dynamic Cyber-Attack Detection and Mitigation for Secure Smart Grids
Role: PI
Sponsor: UTSA VPR Office
Amount: $30,000
Project Period: 2/1/16 – 10/31/16

Contact: Michelle.Zhang@utsa.edu
Learn more about Michelle Zhang here.

Department of Mechanical Engineering

RESEARCH EXPERTISE

- Advanced Manufacturing and System Engineering
- Mechanics, Materials, and Tissue Biomechanics
- Thermal and Fluid Systems
- Robotics, Design and Dynamic Controls
- Oil, Gas and Renewable Energy

DEGREE PROGRAMS

- B.S. in Mechanical Engineering
  *Optional: Oil & Gas Certificate Program
- M.S. in Mechanical Engineering
- M.S. in Advanced Manufacturing and Enterprise Eng
- Ph.D. in Mechanical Engineering

FACULTY (FALL 2020)

- 22 Tenured and Tenure-Track Faculty
- 13 Lecturers, Assoc. Prof. of Research/Practice
- 3 Adjunct Faculty
- 14% T/TT Female Faculty

STUDENTS (FALL 2020)

- 1,072 Undergraduate Students
- 86 Post-Bac & Master's Students
- 47 Doctoral Students

RESEARCH LABORATORIES

- Built Environment Simulation & Testing (BEST) Lab
- Cardiovascular Biomechanics Lab
- Computational Bioengineering and Nanotechnology Lab
- Computational Geomechanics Lab
- Computational Mechanics Lab
- Computational Reliability and Visualization Lab
- Control of Flow and Dynamical Systems Laboratory
- Flexible Manufacturing and Lean Systems Lab
- Hard Tissue Biomechanics Lab
- Manufacturing Systems and Automation Lab
- Multiphase Flow Simulation Laboratory
- Nonequilibrium Phenomena Lab
- Robotics and Motion Lab
- Sustainable Manufacturing Systems Lab
- Turbulence in Natural Systems Laboratory

RESEARCH CENTERS

- Center for Advanced Manufacturing and Lean Systems (CAMLS)
- The Texas Sustainable Energy Research Institute at UTSA (TSERI)

Learn more about Mechanical Engineering Department http://ceid.utsa.edu/me/.

Dr. Adel Alaeddini

Assistant Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Reliability and quality control
- Applied multivariate analysis
- Statistical learning and data mining
- Design of experiments
- Response surface methodology and process optimization
- Simulation
- Lean healthcare

RECENT PUBLICATIONS

An Area-based Methodology for the Monitoring of General Linear Profiles *(Quality and Reliability Engineering International, 2016)*

On the Application of Multicomplex Algebras in Numerical Integration *(Applied Mathematics and Information Science, 2016)*

Reducing Hospital Readmissions by Integrating Empirical Prediction with Resource Optimization *(Production and Operations Management, 2016)*

RECENT FUNDED GRANTS

Prediction and Optimization in Engineered Residual Stresses (ERS) with Minimum Data
Role: PI
Sponsor: Clarkson Aerospace Corp
Amount: $100,000
Project Period: 9/1/16 – 8/31/18

Active Learning in Expensive Testing Design and Optimization
Role: PI
Sponsor: US Dept. of the Air Force
Amount: $371,937
Project Period: 1/1/16 – 12/31/18

A Novel Probabilistic Methodology for Prediction of Emerging Diseases in Patients with Multiple Chronic Conditions
Role: PI
Sponsor: National Institutes of Health
Amount: $441,000
Project Period: 9/1/15 – 8/31/18

Contact: Adel.Alaeddini@utsa.edu
Learn more about Adel Alaeddini here.

Dr. Kiran Bhaganagar

Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Waves / current interactions in the ocean
- Turbulent oscillatory and pulsatile flows
- Diffusion of turbulent plumes
- Coastal flows

RECENT PUBLICATIONS

Characterizing Turbulent Flow Over 3-D Idealized and Irregular Rough Surfaces at Low Reynolds Number *(Applied Mathematical Modeling, 2015)*

The Effects of Mean Atmospheric Forcings of the Stable Atmospheric Boundary Layer on Wind Turbine Wake *(Journal of Renewable and Sustainable Energy, 2015)*

Direct Numerical Simulation of Lock-Exchange Density Currents Over the Rough Wall in Slumping Phase *(Journal of Hydraulic Research, 2014)*

RECENT FUNDED GRANTS

Novel Technology for Detection and Prediction of Spreading of Air-Borne Chemicals
Role: PI
Sponsor: Minority Serving Institutions STEM Research & Development Consortium (MSRDC)
Amount: $258,515
Project Period: 10/1/15 – 9/30/18

Intelligent Energy Systems Research Program
Role: Co-PI
Sponsor: City Public Service
Amount: $467,974
Project Period: 1/2/14 – 8/31/14

Research: Entrainment in Dense Currents over a Rough Bottom
Role: PI
Sponsor: National Science Foundation
Amount: $254,417
Project Period: 7/15/13 – 6/30/16

Contact: Kiran.Bhaganagar@utsa.edu
Learn more about Kiran Bhaganagar here.

Dr. Krystel K. Castillo

Professor, Dept. of Mechanical Engineering
Greenstar Endowed Professorship in Energy
Director, Texas Sustainable Energy Research Institute

RESEARCH AREAS

- Mathematical programming
- Computational optimization methods
- Large-scale systems modeling
- Applications: logistics and transportation; bioenergy supply chain

OTHER HIGHLIGHTS

- Fellow of the National Academy of Engineering (invitation only, 2015)
- Supervises 5 PhD students
- Summer Faculty Fellowship, Air Force Research Laboratory (2014, 2015)
- Faculty Award for Excellence in Research, College of Engineering, UTSA (2014)

RECENT PUBLICATIONS

A Metaheuristic-based Approach for the Capacitated Supply Chain Network Design Problem Including Imperfect Quality and Rework (IEEE Computational Intelligence Magazine, 2014)

Quantifying the Impact of Feedstock Quality on the Design of Bioenergy Supply Chain Networks *(Energies, 2016)*

Simulation-based Multi-Objective Model for Supply Chains with Disruptions in Transportation *(Robotics and Computer-Integrated Manufacturing, 2015)*

RECENT FUNDED GRANTS

BioEnergy And Water for Agriculture Research and Education (BE AWARE) Network
Role: PI
Sponsor: US Dept. of Agriculture
Amount: $1,000,000
Project Period: 9/1/15 – 8/31/19

Interdisciplinary Hands-on Research Traineeship and Extension Experiential Learning in Bioenergy
Role: PI
Sponsor: US Dept. of Agriculture
Amount: $275,760
Project Period: 9/1/15 – 8/31/18

Big Data Analytics: Quantification of Dimensional Measurement Uncertainty using 3D Laser Scanners for the Assessment of Manufacturing Variability
Role: PI
Sponsor: Clarkson Aerospace Corporation
Amount: $139,189
Project Period: 12/1/15 – 9/30/17

Contact: Krystel.Castillo@utsa.edu
Learn more about Krystel Castillo here.

Dr. F. Frank Chen

Professor, Dept. of Mechanical Engineering
Lutcher Brown Distinguished Chair in Advanced Manufacturing

RESEARCH AREAS

- Design and analysis of advanced (flexible) manufacturing systems
- Intelligent scheduling & shop floor control
- Manufacturing cell design & cell control
- Neural network apps. in manufacturing
- Enterprise modeling & process re-engineering
- Supply chain management & integration
- Activity-based costing

RECENT PUBLICATIONS

Joint Decisions of Shipment Consolidation and Dynamic Pricing of Food Supply Chains *(Robotics and Computer-Integrated Manufacturing, 2016)*

A Web-based Visual Decision Support Systems for a Letter Shop*(Robotics and Computer-Integrated Manufacturing, 2016)*

Pattern Recognition and Group Arrangement for Ship Part Nesting *(Robotics and Computer-Integrated Manufacturing, 2013)*

RECENT FUNDED GRANTS

CAMLS: Education and Mentoring Program for Lean Manufacturing Enterprise Implementation
Role: PI
Sponsor: Goodheart Specialty Foods Co.
Amount: $62,000
Project Period: 1/15/15 – 1/14/17

Opportunities for Higher Education and Research Experience in Renewable Energy and Water Quality to Enable STEM Hispanic Leaders
Role: Co-PI
Sponsor: US Dept. of Agriculture
Amount: $290,000
Project Period: 8/1/13 – 7/31/18

Process Excellence and Continuous Improvement at Harland Clarke
Role: Co-PI
Sponsor: Harland Clarke
Amount: $62,000
Project Period: 7/1/15 – 6/30/17

OTHER HIGHLIGHTS

- Fellow of the Society of Manufacturing Engineers
- Has supervised 12 PhD students, 18 Post Docs
- NSF Presidential Faculty Fellow/PECASE Award (1996)
- Research Award, UTSA and Virginia Tech, Colleges of Engineering
- Editor/Associate Editor: SME Journal of Manufacturing System, Flexible Service and Manufacturing Journal

Contact: FF.Chen@utsa.edu
Learn more about Frank Chen here.

Dr. Christopher S. Combs

Assistant Professor, Dept. of Mechanical Engineering
Dee Howard Endowed Faculty Fellow

RESEARCH AREAS

- High-speed aerodynamics
- Hypersonic and supersonic flows
- Turbulence
- Energy
- Development of optical diagnostics and novel measurement techniques
- Advanced image processing and data analysis

OTHER HIGHLIGHTS

- Currently supervising 4 PhD students and 2 MS student
- Constructing a hypersonic (Mach 7) wind tunnel with the help of a team of 40 undergraduate students
- Developing a platform for experimental research into sCO_2 power generation
- Active member of the American Institute of Aeronautics and Astronautics

RECENT PUBLICATIONS

"Simultaneous Measurements of Scalar and Velocity using Naphthalene Planar Laser-Induced Fluorescence," *AIAA Journal*, 2019.

"Unsteady Analysis of Shock-Wave/Boundary-Layer Interaction Experiments at Mach 4.2," *AIAA Journal*, 2019.

"Investigating the Unsteady Dynamics of Cylinder-Induced Shock-Wave/Transitional Boundary-Layer Interactions," *AIAA Journal*, 2018.

RECENT FUNDED GRANTS

Supercritical Carbon Dioxide (sCO_2) Power Generation for Renewable Energy Extraction
Role: PI
Sponsor: CPS Energy
Amount: $800,000
Project Period: 9/1/19-8/31/2021

Center for Advanced Measurements in Extreme Environments (CAMEE)
Role: Co-PI
Sponsor: NASA
Amount: $2,999,999
Project Period: 10/1/2019-9/30/2022

Non-Intrusive Measurements and Simulations of Direct-Fired sCO_2 Flows for Low-Emission Renewable Energy Generation
Role: PI
Sponsor: UTSA VPREDKE
Amount: $50,000
Project Period: 9/1/2019-8/31/2020

Contact: ccombs@utsa.edu
Learn more about Chris Combs here.
@DrChrisCombs

Dr. Yusheng Feng

Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Biomechanics and bioheat transfer
- Computational cancer research
- Image-guided real-time surgical control
- Haptic device enabled surgical simulation
- Medical device design and optimization
- Mathematical modeling, parallel computing and large scale visualization

RECENT PUBLICATIONS

Haptics-enabled Surgical Training System with Guidance Using Deep Learning *(Lecture Notes in Computer Science, 2015)*

Simulation of Temperature Field for Temperature-controlled Radio Frequency Ablation Using a Hyperbolic Bioheat Equation and Temperature-varied Voltage Calibration: A Liver-mimicking Phantom Study *(Physics in Medicine and Biology, 2015)*

Toward Predictive Multiscale Modeling of Vascular Tumor Growth: Computational and Experimental Oncology for Tumor Prediction *(Archives of Computational Methods in Engineering, 2015)*

RECENT FUNDED GRANTS

Medical Device Design for Emergency Medicine
Role: PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $9,600
Project Period: 6/1/16 – 8/31/16

Radical Cystectomy compared with combined Moda Treatment for Muscle Invasive Bladder Cancer: A Pilot Randomized Control Trial
Role: PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $10,140
Project Period: 1/4/16 – 3/31/17

RAPID: I-Corps Teams: Portable Hands Free Medical Suction Device for Combat and Emergency Medicine
Role: PI
Sponsor: National Science Foundation
Amount: $50,000
Project Period: 7/15/14 – 1/14/16

Contact: Yusheng.Feng@utsa.edu

Learn more about Yusheng Feng here.

Dr. Zhi-Ghang Feng

Associate Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Multiphase flow modeling and simulation
- Computational fluid dynamics
- Heat and mass transfer in engineering systems

RECENT PUBLICATIONS

Application of a Three-Dimensional Immersed Boundary Method for Free Convection from Single Spheres and Aggregates *(Journal of Fluids Engineering, Transactions of the ASME, 2016)*

A Resolved Eulerian-lagrangian Simulation of Fluidization of 1204 Heated Spheres in a Bed with Heat Transfer *(Journal of Fluids Engineering, Transactions of the ASME, 2016)*

Modeling of Drug Delivery by a Pump Driven Micro-needle Array System *(Archives of Computational Methods in Engineering, 2015)*

RECENT FUNDED GRANTS

Use of an Accurate DNS Method to Derive, Validate and Supply Constitutive Equations for the MFIX Code
Role: PI
Sponsor: US Dept. of Energy
Amount: $189,825
Project Period: 7/1/15 – 6/30/16

Direct Numerical Simulation of Monodisperse and Polydisperse Particulate Flows
Role: PI
Sponsor: National Science Foundation
Amount: $96,512
Project Period: 9/1/11 – 8/31/12

Contact: Zhigang.Feng@utsa.edu
Learn more about Zhigang Feng here.

Dr. Ender A. Finol

Associate Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Vascular biomechanics
- Abdominal aortic aneurysms
- Pulmonary hypertension
- Non-destructive tissue mechanics

RECENT PUBLICATIONS

A Methodology for the Derivation of Unloaded Abdominal Aortic Aneurysm Geometry with Experimental Validation *(Journal of Biomechanical Engineering, 2016)*

An approach for Patient-Specific Multi-domain Vascular Mesh Generation Featuring Spatially Varying Wall Thickness Modeling *(Journal of Biomechanics, 2015)*

The Role of Wall Shear Stress in the Assessment of Right Ventricle Hydraulic Workload *(Pulmonary Circulation, 2015)*

RECENT FUNDED GRANTS

Mechanistic Justification for Pentagalloyl Glucose Mediated AAA Suppression
Role: PI
Sponsor: American Heart Association
Amount: $750,000
Project Period: 7/1/16 – 6/30/19

Geometric Surrogates for Clinical Management of Abdominal Aortic Aneurysms
Role: PI
Sponsor: National Institutes of Health
Amount: $1,787,053
Project Period: 4/1/15 – 3/31/19

Geometric, Hemodynamic, and Biomechanical Metrics in Cardiopulmonary Remodeling
Role: PI
Sponsor: American Heart Association
Amount: $140,000
Project Period: 1/1/14 – 12/31/16

OTHER HIGHLIGHTS

- Associate Editor for Annals of Biomedical Engineering and Journal of Biomechanical Engineering
- Has supervised 14 postdoctoral fellows and PhD students
- Member of ASME, BMES, and AHA

Contact: Ender.Finol@utsa.edu
Learn more about Ender Finol here.

Dr. Hai-Chao Han

Professor and Chair, Dept. of Mechanical Engineering
Zachry Endowed Chair

RESEARCH AREAS

- Cardiovascular biomechanics
- Left ventricular remodeling post-myocardial infarction or due to aging
- Vascular remodeling in response to mechanical stress
- Mechanism of artery buckling and tortuosity

OTHER HIGHLIGHTS

- Fellow, American Heart Association
- Fellow, ASME
- Fellow, AIMBE
- Has supervised 5 PhD students and 9 postdoctoral fellows
- Associate Editor, ASME Journal of Biomechanical Engineering
- NSF CAREER Award Recipient (2007)

RECENT PUBLICATIONS

Artery Buckling Analysis Using a Two-layered Wall Model with Collagen Dispersion *(Journal of the Mechanical Behavior of Biomedical Materials, 2016)*

Buckling Reduces eNOS Production and Stimulates Extracellular Matrix Remodeling in Arteries in Organ Culture *(Annals of Biomedical Engineering, 2016)*

Computational Simulation of Platelet Interactions in the Initiation of Stent Thrombosis Due to Stent Malapposition *(Physical Biology, 2016)*

RECENT FUNDED GRANTS

A New Treatment for Diastolic Heart Failure: Trabecular Cutting
Role: PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount:$8,153
Project Period: 1/1/15 – 12/31/16

Biomechanical Mechanisms of Artery Tortuosity
Role: PI
Sponsor: National Institutes of Health
Amount: $1,821,770
Project Period: 3/1/10 – 12/31/16

Contact: Hai-Chao.Han@utsa.edu
Learn more about Hai-Chao Han here.

Dr. Lyle Hood

Assistant Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Medical Device Design
- Controlled Drug Delivery
- Medical Micro-Electro-Mechanical Systems
- Laser-Tissue Interaction
- Airway Management Devices
- Urological Imaging and Computer Vision
- Rapid Prototyping

OTHER HIGHLIGHTS

- Inventor on 9 patent applications
- Author of 18 peer-reviewed articles
- Member of ASME, BMES, Tau Beta Pi, and Controlled Release Society

RECENT PUBLICATIONS

Summary of Findings and Recommendations for Suction Devices for Management of Prehospital Combat Casualty Care Injuries (*Defense Technical Information Center*, 2018)

Unexpected Behaviors in Molecular Transport Through Size-Controlled Nanochannels Down to the Ultra-Nanoscale. (*Nature Communications*, 2018)

Pioneering Medical Advances through Nanofluidic Implantable Technologies (*Wiley Interdisciplinary Reviews of Nanomedicine and Nanobiotechnology*, 2017)

RECENT FUNDED GRANTS

Universal Limb Stasis System for Extended Storage ULiSSES for Soft Tissue Preservation Following Traumatic Amputation
Role: Sub-Award PI
Sponsor: US Dept. of Defense
Amount: $961,764
Project Period: 10/30/18-10/29/20

An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma
Role: PI
Sponsor: San Antonio Medical Foundation
Amount: $150,000
Project Period: 10/1/18-9/30/19

A Biodegradable, 3D-Printed Implantable for Minimally-Invasive Controlled Delivery
Role: PI
Sponsor: UTSA-SwRI Connect Program
Amount: $125,000
Project Period: 9/1/18-8/31/19

Contact: Lyle.Hood@utsa.edu
Learn more about Lyle Hood here.

Dr. Amir Karimi

Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Metastable thermodynamics
- Phase change heat transfer
- System thermal management

RECENT FUNDED GRANTS

None at this time.

RECENT PUBLICATIONS

How Enhanced Transcripts Can Help Evaluate Graduate School Applications *(Conference Proceedings, American Society for Engineering Education, 2015)*

What Delays Student Graduation *(Conference Proceedings, American Society for Engineering Education, 2015)*

Assessment of Fundamental Concept in Thermodynamics *(Conference Proceedings, American Society for Engineering Education, 2014)*

Contact: Amir.Karimi@utsa.edu

Learn more about Amir Karimi here.

Dr. Ruijie Liu

Associate Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Hydraulic fracturing
- Geomechanics and reservoir dynamics
- Finite deformation for solid materials
- Micro-scale modeling for porous media
- Parallel computing for large systems

RECENT PUBLICATIONS

On the Spatial Formulation of Discontinuous Galerkin Methods for Finite Elastoplasticity *(Computer Methods in Applied Mechanics and Engineering, 2013)*

A Fast Convergent Rate Preserving Discontinuous Galerkin Framework for Rate-Independent Plasticity Problems *(Computer Methods in Applied Mechanics and Engineering, 2010)*

Transformation of the Sandler and Rubin Nonsmooth Cap Model to the Pelessone Smooth Cap Model *(Journal of Engineering Mechanics, 2010)*

RECENT FUNDED GRANTS

None at this time.

Contact: Ruijie.Liu@utsa.edu

Learn more about Ruijie Liu here.

Dr. Randall Manteufel

Associate Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Energy conservation
- Uncertainty analysis
- Engineering education

RECENT PUBLICATIONS

How Enhanced Transcripts Can Help Evaluate Graduate School Applications *(Conference Proceedings, American Society for Engineering Education, 2015)*

What delays student graduation *(Conference Proceedings, American Society for Engineering Education, 2015)*

Assessment of fundamental concept in thermodynamics *(Conference Proceedings, American Society for Engineering Education, 2014)*

RECENT FUNDED GRANTS

Radiant Barrier Retrofits to Improve Energy Efficiency of Older Homes in Hot - Humid Climate Zones
Role: Co-PI
Sponsor: US Department of the Interior, National Parks & Wildlife Service
Amount: $38,500
Project Period: 7/1/14 – 6/30/16

WW Wood, Inc., CAMLS Industry Research Consortium Project
Role: PI
Sponsor: WW Wood, Inc.
Amount: $56,000
Project Period: 2/1/10 – 1/31/12

Energy Efficiency in Industry, Local Government and School Districts in the Border Region of Texas
Role: PI
Sponsor: Texas Commission on Env. Quality
Amount: $32,673
Project Period: 5/1/08 – 8/31/09

Contact: RManteufel@utsa.edu
Learn more about Randall Manteufel here.

Dr. Harry Millwater

Samuel G. Dawson Endowed Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Uncertainty quantification and probabilistic methods development
- Risk assessment methods for fatigue and fracture of aircraft structures
- Enhanced finite element methods for sensitivity analysis
- High performance computational solid mechanics

OTHER HIGHLIGHTS

- Recipient of 40 grants (23 as PI) for more than $13M in funding from NSF, ONR, AFOSR, DoD, AFRL, NRC, NNSA, and FAA
- Has supervised 5 PhD and 23 MS students

RECENT PUBLICATIONS

A Finite Element-based Adaptive Energy Response Function Method for 2D Curvilinear Progressive Fracture *(Int. J. Fatigue, 2019)*

Probabilistic Methods for Risk Assessment of Airframe Digital Twin Structures *(Engineering Fracture Mechanics, 2019)*

Efficient Estimate of Residual Stress Variance Using Complex Variable Finite Element Methods *(Int. J. Pressure Vessels and Piping, 2019)*

RECENT FUNDED GRANTS

Probabilistic Modeling of Random Variables and K-Solution Developments for General Aviation - Extensions to the SMART|DT Software
Role: PI
Sponsor: US Dept. of Transportation, Federal Aviation Administration
Amount: $1,080,000
Project Period: 9/16 – 12/20

Probabilistic Risk Assessment of Stress Corrosion Cracking in Nuclear Facilities
Role: PI
Sponsor: Nuclear Regulatory Comission
Amount: $450,000
Project Period: 6/17 – 6/20

CONNECT- the CONsortium on Nuclear sECurity Technologies
Role: Co-PI
Sponsor: National Nuclear Security Agency
Amount: $3M
Project Period: 10/19-9/22

Contact: Harry.Millwater@utsa.edu
Learn more about Harry Millwater here.

Dr. Daniel I. Pineda

Assistant Professor, Mechanical Engineering, COE

RESEARCH AREAS

- Spectroscopy and laser-based diagnostics
- Combustion and rocket propulsion
- Chemical kinetics and energy conversion
- Air quality and public health
- Wildland/urban fire toxicant detection
- Uncertainty quantification

RECENT PUBLICATIONS

- Carbon oxidation in turbulent premixed jet flames: a comparative experimental and numerical study of ethylene, n-heptane, and toluene, *Combust. Flame*, 2020
- MHz laser absorption spectroscopy via diplexed RF modulation for pressure, temperature, and species in rotating detonation rocket flows, *Appl. Phys. B*, 2020
- Deep neural network inversion for 3D laser absorption imaging of methane in reacting flows, *Opt. Lett.*, 2020
- Interband cascade laser absorption of hydrogen chloride for high-temperature thermochemical analysis of fire-resistant polymer reactivity, *Appl. Opt.*, 2020

RECENT FUNDED GRANTS

OTHER HIGHLIGHTS

- California Alliance Postdoctoral Fellow, 2017–2020
- NSF GRFP Fellow, 2012–2015
- Active member of The Combustion Institute

Contact: daniel.pineda@utsa.edu
Learn more about Daniel Pineda here.
@danielpineda

Dr. David Restrepo

Assistant Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Advanced Materials
- Materials by Design
- Architecture Materials
- Metamaterials
- Bioinspired Materials and Structures

SELECTED PUBLICATIONS

Computational characterization of the wave propagation behavior of multi-stable periodic cellular materials (Extreme Mechanics Letters. 2019)

In situ Wear Study Reveals Role of Microstructure on Self-Sharpening Mechanism in Sea Urchin Teeth (Matter, 2019)

Energy dissipation in functionally two-dimensional phase transforming cellular materials (Scientific Reports, 2019)

Multiscale Toughening Mechanisms in Biological Materials and Bioinspired Designs. (Advanced Materials, 2019)

The Stomatopod Telson: Convergent Evolution in the Development of a Biological Shield (Advanced Functional Materials, 2019)

RECENT FUNDED GRANTS

Novel Metamaterials for Multi-Hazard Resilient Infrastructures
Role: PI
Sponsor: GREAT seed grant, UTSA
Amount: $20,000
Project period: 9/1/2019-8/31/2020

A Novel Cardiac Patch for Treating Myocardial Infarction
Role: Co-PI
Sponsor: San Antonio Area Foundation
Amount: $34,969
Project period: 9/1/2019-831/2020

An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma
Role: Co-PI
Sponsor: San Antonio Medical Foundation
Amount: $150,000
Project period: 10/1/2018-9/30/2019

Contact: david.restrepo@utsa.edu
Learn more about David Restrepo here.

Dr. Can Saygin

Professor, Dept. of Mechanical Engineering
Associate Vice President for Research, Sponsored Project Administration, UTSA

RESEARCH AREAS

- Manufacturing engineering
- Shop floor control
- Distributed decision-making
- Lean six sigma applications
- Radio frequency identification
- Automation

RECENT PUBLICATIONS

A Hidden Semi-Markov Model with Duration-dependent State Transition Probabilities for Prognostics *(Mathematical Problems in Engineering, 2014)*

RFID-based Asset Management of Time and Temperature Sensitive Materials *(Lecture Notes in Mechanical Engineering, 2014)*

Impact of Mahalanobis Space Construction on Effectiveness of Mahalanobis-Taguchi System *(International Journal of Industrial and Systems Engineering, 2013)*

RECENT FUNDED GRANTS

Incorporating Lean-Six Sigma Methodologies into the Institute for Integration of Medicine and Science
Role: PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $50,000
Project Period: 6/1/16 – 5/31/17

Predictive Maintenance - Phase 2: From Data to Performance Metrics
Role: PI
Sponsor: Harland Clarke
Amount: $90,000
Project Period: 8/1/15 – 7/31/16

South Texas STEM Educator Center
Role: PI
Sponsor: Tx Higher Education Coordinator Board
Amount: $570,000
Project Period: 6/1/13 – 8/31/15

OTHER HIGHLIGHTS

- Federal Point of Contact for the Alamo Manufacturing Partnership consortium, a US Department of Commerce Manufacturing Community
- The University of Texas System Regents' Outstanding Teaching Award Recipient (2012)
- Patents in RFID Applications (US 8,143,996 B2 and US 7,752,089 B2

Contact: Can.Saygin@utsa.edu
Learn more about Can Saygin here.

Dr. Brendy Rincon Troconis

Assistant Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Stress corrosion cracking
- Hydrogen embrittlement
- Coating adhesion
- Passivation
- Localized corrosion
- Atmospheric corrosion
- Corrosion inhibitors

OTHER HIGHLIGHTS

- Member of NACE International and ECS
- Has supervised 1 PhD, 1 MS, 5 undergraduate and 1 high school student(s)
- Member of NACE Research Committee
- Vice-chair of the Environmentally Assisted Cracking Symposium at CORROSION 2017
- Access to high temperature / pressure facilities

RECENT PUBLICATIONS

Metallurgical and Electrochemical Characterization of the Corrosion of a Mg-Al-Zn Alloy AZ31B-H24 Tungsten Inert Gas Weld: Galvanic Corrosion Between Weld Zones *(Corrosion, 2016)*

The Effect of Microstructural Variation on the Hydrogen Environment-Assisted Cracking of Monel K-500 *(Metallurgical and Materials Transactions A, 2016)*

Effects of Pretreatments on the Adhesion of Acetoacetate to AA2024-T3 Using the Blister Test *(Corrosion, 2014)*

RECENT FUNDED GRANTS

Faculty Development Program at the University of Texas at San Antonio: Probabilistic Risk Assessment of Stress Corrosion Cracking in Nuclear Facilities
Role: Co-PI
Sponsor: US Nuclear Regulatory Commission
Amount: $450,000
Project Period: 4/1/17 – 3/31/20

Effect of Passive Film Composition on the Electrochemical Behavior and Cracking of Corrosion Resistant Alloys Utilizing Surface Enhanced Raman Spectroscopy
Role: PI
Sponsor: NACE International
Amount: $30,000
Project Period: 7/1/17 – 6/30/18

CONNECT: Effects of Triazine-Based H2S Scavenger Byproducts on the Film Composition and Cracking of Carbon Steel in Oilfield Applications
Role: PI
Sponsor: UTSA VPR Office
Amount: $50,000
Project Period: 9/1/17 – 8/31/18

Contact: Brendy.Rincon@utsa.edu

Learn more about Brendy Rincon Troconis here.

Dr. Hung-Da Wan

Associate Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Sustainability of manufacturing systems
- Leanness of manufacturing systems: assessment, value stream mapping, implementation methods, and training programs
- Web-based applications in manufacturing

RECENT PUBLICATIONS

3D Printing with Reusable Voxels: A Faster and Greener Future *(Conference Proceedings, International Conference on Flexible Automation and Intelligent Manufacturing, 2014)*

Improving Operations Through Dynamic Value Stream Mapping and Discrete-event Simulation *(Conference Proceedings, Institute of Industrial Engineers, 2014)*

RECENT FUNDED GRANTS

Hybrid 3-D Digital Deposition Platform for Bottom-Up Fabrication of Multicomponent-Multiferroic Composites (DURIP: H3DPlatform)
Role: Co-PI: US Dept. of the Navy
Amount: $577,100
Project Period: 7/15/16 – 7/14/17

Incorporating Lean-Six Sigma Methodologies into the Institute for Integration of Medicine and Science
Role: Co-PI
Sponsor: The University of Texas Health Science Center at San Antonio
Amount: $50,000
Project Period: 6/1/16 – 5/31/17

CAMLS: Education and Mentoring Program for Lean Manufacturing Enterprise Implementation
Role: Co-PI
Sponsor: Goodheart Specialty Foods Company
Amount: $62,000
Project Period: 1/15/15 – 1/14/17

Contact: Hungda.Wan@utsa.edu
Learn more about Hung-Da Wan here.

Dr. Xiaodu Wang

Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Nanomechanics of bone
- Prediction / prevention of age-related bone fragility fractures
- Bioinspired design of hybrid nanocomposites
- Digital model of trabecular bone

OTHER HIGHLIGHTS

- Fellow of ASME and AIMBE
- Mentor/advisor for 23 postdoctoral fellows and PhD students
- Associate Editor of Hard Tissue and member of editorial board on Journal of Medical Biomechanics &
- Member of ASME, BMES, ORS and ASBMR

RECENT PUBLICATIONS

Computational investigation of the effect of water on the nanomechanical behavior of bone (*Journal of the Mechanical Behavior of Biomedical Materials, 2019)*

Bioinspired design of hybrid composite materials (*International Journal of Smart and Nano Materials, 2019*)

Age-related deterioration of bone toughness is related to diminishing amount of matrix glycosaminoglycans (GAGs) (*JBMR Plus, 2018*)

RECENT FUNDED GRANTS

Multiscale modeling of ultrastructural origins of bone fragility
Role: PI
Sponsor: NSF
Amount: $368,931
Project Period: 12/1/15 – 12/30/19

Proteoglycans and age-related deterioration of bone toughness
Role: PI
Sponsor: National Institutes of Health
Amount: $2,334,480
Project Period: 7/1/19 – 6/30/24

Contact: Xiaodu.Wang@utsa.edu
Learn more about Xiaodu Wang here.

Dr. Xiaowei Zeng

Associate Professor, Dept. of Mechanical Engineering

RESEARCH AREAS

- Bone and Cell Mechanics
- Computational Mechanics
- Computational Material Failure Analysis
- Hybrid Nanocomposite Material Design
- Multiscale Modeling and Simulation
- Nanomechanics and Microcontinuum Theory

OTHER HIGHLIGHTS

- Associate Editor of CMES-Computer Modeling in Engineering & Sciences
- ASEE, ASME, SES, USACM, IACM Member

RECENT PUBLICATIONS

Computational Investigation of the Effect of Water on the Nanomechanical Behavior of Bone (*Journal of the Mechanical Behavior of Biomedical Materials*, 2020)

Computational Modeling of the Mechanical Behavior of 3D Hybrid Organic-inorganic Nanocomposites (*JOM, 2019)*

Numerical Investigation of the Role of Intercellular Interactions on Collective Epithelial Cell Migration *(Biomechanics and Modeling in Mechanobiology, 2019)*

RECENT FUNDED GRANTS

Multiscale Modeling of Ultrastructural Origins of Bone Fragility
Role: Co-PI
Sponsor: National Science Foundation
Amount: $368,931
Project Period: 10/1/15 – 12/31/19

The Role of Cell-Cell Interactions in Cancer Cell Dissemination
Role: PI
Sponsor: San Antonio Area Foundation
Amount: $30,000
Project Period: 5/1/18 – 4/30/19

Numerical Investigation of Collective Cell Migration
Role: PI
Sponsor: National Institutes of Health
Amount: $441,000
Project Period: 8/1/15 – 4/30/19

Contact: Xiaowei.Zeng@utsa.edu
Learn more about Xiaowei Zeng here.