

# The Next Wave of Faculty Research and Teaching

**E**ach year, scholars and teachers from the most select universities in the country join the faculty of NJIT. These faculty appointments build on the university's long tradition of fostering excellence in both research and teaching. Leveraging their unique skills and experience, each of these individuals is poised to have a significant impact on the NJIT community.

"We are excited to have another cohort of new faculty join us in each of our colleges and schools across campus," said Fadi P. Deek '85, '86, '97, provost and senior executive vice president at NJIT. "These outstanding scholars and dedicated teachers will make significant contributions to research and education that will strengthen our community and enhance our global impact."

Read more about these exceptional individuals and their accomplishments in the following pages.

## COLLEGE OF SCIENCE AND LIBERAL ARTS



### **JULIE ANCIS**

**Professor of Humanities,  
Director of the  
Cyberpsychology Program  
(Fall, 2020)**

Julie Ancis joins NJIT from the Georgia Institute of Technology, where she is associate vice president of Institute Diversity, responsible for advancing the university's goals around diversity, equity and collaboration. Prior to her current position, Ancis was a professor in the Department of Counseling and Psychological Services at Georgia State University, specializing in research on racial and gender attitudes, multicultural competence, the perceptions and experiences of diverse students on university campuses and women's legal experiences. She is a Fellow of the American Psychological Association.



### **OMOWUNMI SADIK**

**Professor of Chemistry,  
Department Chair**

Omowunmi Sadik comes to NJIT from the State University of New York at Binghamton (SUNY Binghamton), where she was a professor of chemistry and director of the Center for Research in Advanced Sensing Technologies & Environmental Sustainability. Her research areas include surface chemistry, sensors, energy and the environment, along with new measurement approaches and their application to solving problems in biological systems, including early diagnosis of cancer, DNA testing, detection of pain biomarkers and food safety. Her DNA sensor, for example, monitors cells continuously for mutations.



**FARNAZ SHAKIB**  
Assistant Professor,  
Chemistry

Farnaz Shakib comes to NJIT from the University of California, San Diego,

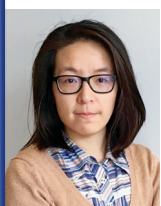
where she was a postdoctoral research fellow in the Department of Chemistry and Biochemistry. A theoretical and computational chemist, she researches the dynamics of electrons and protons when exposed to sunlight, which is the basis of energy conversion reactions in photosynthesis, fuel and solar cells. Her theories describe these phenomena with the goal of designing green and sustainable “artificial photosynthesis” energy resources. Efficiency levels depend, she shows, on the coupled motion of protons and electrons acting upon each other.



**ZUOFENG SHANG**  
Associate Professor,  
Mathematics

Zuofeng Shang joins NJIT from Indiana University-Purdue University

Indianapolis, where he was an assistant professor of statistics who integrated his discipline with data science and statistical machine learning. Shang focuses on various aspects of machine learning, including big data theory and deep learning theory; his work plays a central role in modern scalable algorithms and deep algorithms. Applications include the analysis of massive data, such as internet searches, social networks, mobile devices, satellites, genomics and medical scans. His methods aim for greater computational capability and efficiency.



**XIAONAN TAI**  
Assistant Professor,  
Biology (Fall, 2020)

Xiaonan Tai joins NJIT from the University of Utah, where she is a

postdoctoral fellow at the Global Change

& Sustainability Center. She combines geospatial observations obtained from remote sensing and ground instruments with physics-based modeling to investigate ecosystems’ responses to global environmental change, including resistance to drought. Working with hydrologists, geologists, plant biologists and social scientists, Tai integrates plant hydraulics that characterizes water movement within plants and hydrological modeling that simulates water flow in the subsurface to examine a range of forest ecosystems, from montane aspen to riparian cottonwoods.



**JUNJIE YANG**  
Assistant Professor, Physics

Junjie Yang comes to NJIT from Central Michigan University, where he was an assistant professor of

physics focused on the study of quantum materials. Quantum materials, in which the interactions between the constituent particles cannot be treated in a semiclassical manner, exhibit exotic electronic and magnetic properties such as multiferroics. The materials he explores exhibit ferroelectricity and magnetism simultaneously. They have potential for use in actuators, switches and magnetic field sensors, as well as applications in ultralow energy and ultrafast data storage technologies.

## **J. ROBERT AND BARBARA A. HILLIER COLLEGE OF ARCHITECTURE AND DESIGN**



**HYOJIN KIM**  
Associate Professor,  
Architecture

Hyojin Kim joins NJIT from the Catholic University of America, where she

was an assistant professor in the School of Architecture and Planning. Kim focuses on energy efficiency and indoor environmental quality (IEQ) in next-generation buildings, striving to find a balance between the two,

as IEQ can impact occupants’ comfort and well-being. Working with the National Institute of Standards and Technology, Samsung Electronics and others, she develops statistical and graphical methods for evaluating low-energy building systems and technologies in terms of their energy efficiency and IEQ performance.



**VERA PARLAC**  
Associate Professor,  
Architecture

Vera Parlac comes to NJIT from the University of Calgary, where she

was an assistant professor of architecture and founding director of the Laboratory for Integrative Design. She explores the intersections of architecture and biology, materials science, soft robotics, computation and digital fabrication. Parlac currently focuses on the integration of responsive materials, such as shape memory alloys, and inflatable pneumatic actuators into architectural assemblies that adapt through sensing and movement to external and internal influences such as changes in temperature, light levels and human movement.

## **NEWARK COLLEGE OF ENGINEERING**



**FATEMEH AHMADPOOR**  
Assistant Professor,  
Mechanical and Industrial Engineering

Fatemeh Ahmadpoor joins

NJIT from Brown University, where she was a postdoctoral research associate in the School of Engineering. She studies the enhanced electromechanical properties of cellular membranes, with applications in biological phenomena such as hearing mechanisms and ion-channel activation and thermal fluctuations and entropic effects on the mechanical properties of two-dimensional materials. Her research

on entropic effects — the impact that thermal fluctuations have on overall material behavior — and the interaction of nanomaterials with biological systems has applications in drug delivery systems and the potential toxicity of nanomaterials.



**SAMANEH FAROKHIRAD**  
Assistant Professor,  
Mechanical and Industrial  
Engineering

Samaneh Farokhirad comes to NJIT from the University of Pennsylvania, where she was a postdoctoral research fellow in the Department of Chemical and Biomolecular Engineering and the Penn Institute for Computational Science. Among other areas, she researches complex fluids and soft matter, including multiphase flows that can include a mixture of liquids, gases and solids, for example, and biologically active matters such as bacterial cells and cellular tissues. She develops multiscale modeling and novel simulation methods for designing deformable nanoparticles for targeted drug delivery and diagnostic applications.



**JONATHAN GRASMAN**  
Assistant Professor,  
Biomedical Engineering

Jonathan Grasman joins NJIT from Tufts University, where he was a postdoctoral fellow in biomedical engineering. He develops tissue models to understand how nerves grow into repairing tissues and to study soft tissue reconstruction, with an emphasis on understanding cell-biomaterial interactions. He seeks to develop mechanisms to repair large volumetric muscle loss by identifying relationships between blood vessels and axons to better regenerate skeletal muscle tissue. His biopolymer-based tissues generate neurovascular and skeletal muscle tissue mimetics to enhance regeneration and innervation related to traumatic injury, neuropathy or genetic disorders.



**WILLIAM H. PENNOCK**  
Assistant Professor,  
Civil and Environmental  
Engineering (Fall, 2020)

William H. Pennock comes to NJIT from Cornell University, where he is a National Science Foundation Graduate Research Fellow in environmental engineering. Within Cornell's AguaClara Program, he focuses on expanding municipal drinking water treatment globally by improving gravity-powered technology, free of electricity and moving parts, and studying the fluid mechanics and chemistry governing coagulation, which is an upstream process for most treatment. On a Fulbright-Nehru Program this year in India, he is working on the development, dissemination and adoption of a new modular, village-scale drinking water treatment plant.



**JOSHUA YOUNG**  
Assistant Professor,  
Chemical and Materials  
Engineering

Joshua Young joins NJIT from SUNY Binghamton, where he was a postdoctoral research fellow in the Department of Physics. He uses computational methods to explore and design two-dimensional materials, complex oxides and liquid electrolytes for energy and electronics applications, including batteries, photovoltaics and memory devices. He primarily uses quantum mechanics-based computational methods to predict the structure and properties of as-yet-unsynthesized materials for a variety of applications. Young generates large data sets and employs machine-learning algorithms to link atomic-scale structural features to the properties of interest.

## MARTIN TUCHMAN SCHOOL OF MANAGEMENT



**AICHIH (JASMINE) CHANG**  
Assistant Professor,  
Business Data Science

Aichih (Jasmine) Chang comes to NJIT from Rutgers

Business School at Rutgers University, where she completed a Ph.D. in supply chain management. She also has an MBA in finance and supply chain management from Rutgers. Chang engages in data-focused research in diverse sectors: maximizing service quality in hospital operations; identifying efficiencies in the coffee bean supply chain in developing countries to improve farmers' livelihoods; text analytics of financial news designed to generate insights into investments; and the use of blockchain technology to improve supply chain performance.



**ALBERTO MARTÍN-UTRERA**  
Assistant Professor, Finance

Alberto Martín-Utrera joins NJIT from Lancaster University, where he was

a lecturer of finance. He earned a Ph.D. at Universidad Carlos III de Madrid. His research lies at the interface of asset pricing and machine learning, with a focus on investments and portfolio optimization. Martín-Utrera employs machine-learning techniques to construct investment strategies, including the development of investment portfolio strategies that consider real-world frictions such as transaction costs, which are normally disregarded in empirical asset pricing models, but are of interest to investors and financial institutions.

## YING WU COLLEGE OF COMPUTING



**DAVID A. BADER**  
Distinguished Professor,  
Computer Science

David A. Bader comes to NJIT from the Georgia Institute of Technology, where he was a professor and chair of the School of Computational Science and Engineering, a multidisciplinary school he founded. His interests lie at the intersection of data science and high-performance computing, with applications in cybersecurity, massive-scale analytics and computational genomics. He has served as the lead scientist in such DARPA programs as High Productivity Computing Systems in collaboration with IBM and is an adviser to the White House on the National Strategic Computing Initiative.



**CODY BUNTAIN**  
Assistant Professor,  
Informatics

Cody Buntain joins NJIT from New York University, where he was a postdoctoral research fellow at the Social Media and Political Participation Lab. He applies large-scale analysis to study social media and the larger information ecosystem, focusing on how individuals engage socially and politically and respond to crises and disasters in online spaces. Working with political scientists, he tracks online foreign election interference in U.S. elections, develops techniques to detect this interference across online social platforms and devises information retrieval methods for rapid searches across these platforms.



**JACOB CHAKARESKI**  
Associate Professor,  
Informatics

Jacob Chakareski comes to NJIT from the University of Alabama, where he

was an assistant professor of electrical and computer engineering. He seeks to enable ubiquitous networked immersion, akin to virtual human teleportation, to assist with societal challenges in areas such as remote sensing, search and rescue and telecommuting. He develops novel methods to integrate nontraditional emerging wireless technologies, such as free-space-optics and millimeter waves that transmit data using very high electromagnetic wave frequencies, to enable the ultrahigh data rates and ultra-low latencies required by next-generation VR/AR applications.



**SALAM DAHER**  
Assistant Professor,  
Informatics

Salam Daher joins NJIT from the University of Central Florida, where she was a postdoctoral researcher at the Synthetic Reality Lab focusing on the use of augmented reality (AR) in health care simulation. Daher uses AR to combine virtual content with the real world, such as 3D modeling of humans in synthetic environments. Her Physical-Virtual Patients, for example, allow health care educators to experience real-time cues such as temperature, pulse, speech, heart sounds, facial expressions and changes in appearance, as in skin color and wounds in simulated patients.



**PRZEMYSŁAW MUSIALSKI**  
Associate Professor,  
Computer Science

Przemyslaw Musialski comes to NJIT from the Vienna University of Technology in Austria, where he headed the computational fabrication group at the Center for Geometry and Computational Design and was a university assistant at the Institute of Discrete Mathematics and Geometry. He researches computer graphics and computational fabrication, developing a framework for shape optimization that takes into account

physical properties of the fabricated product, such as structural strength. He seeks to enable designers to create new products directly on the computer, averting the need to manufacture preliminary prototypes.



**TOMER WEISS**  
Assistant Professor,  
Informatics

Tomer Weiss comes to NJIT from the Computer Graphics and Vision

Laboratory at the University of California, Los Angeles, where he finished his doctoral studies in 2018. Broadly, he is interested in visual computing, including the virtual simulation of physically embodied AI agents and algorithmic content creation for virtual, augmented and other immersive reality media. He recently developed software for automatically furnishing interior spaces, which recommends, places and visualizes furniture arrangements in a room. Before becoming an academic, he held research scientist positions at Amazon and Autodesk Research.



**PAN XU**  
Assistant Professor,  
Computer Science

Pan Xu comes to NJIT from the University of Maryland, where he completed a Ph.D.

in computer science. He also has a Ph.D. from Iowa State University in operations research, an interdisciplinary field that uses mathematical techniques to solve large-scale optimization problems in the real world. He focuses on problems featuring uncertain inputs that arise in e-commerce, internet advertising, crowdsourcing markets, data mining, databases and revenue management, such as online allocation policy for real-time matching markets, including crowdsourcing markets such as Amazon Mechanical Turk that match workers and tasks.

*Author: Tracey L. Regan is an NJIT Magazine contributing writer.*