

COLLEGE OF
ENGINEERING

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THE NORTH TEXAS Engineer

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College of Engineering
Fall 2015



<inside>

NEW FACULTY

RESEARCH VISITS TO CHINA

PATENT

Computer science degrees from UNT receive high ranking for best annual return on investment.

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<New Undergrad, Corporate Relations Deans>

The College of Engineering is proud to announce Regents Professor Dr. Nandika D'Souza (left photo) as the new Associate Dean for Undergraduate Studies and to introduce Dr. Thomas Derryberry (right photo) as the Assistant Dean of Corporate Relations.

D'Souza is taking over as Associate Dean for Undergraduate Studies after Dr. Vijay Vaidyanathan left the position to devote his time to leading the Department of Biomedical Engineering as its Founding Chair. Her proven track record in the areas of undergraduate education, outreach, and undergraduate research will serve her well in her new position.

D'Souza has worked with undergraduate and graduate students in the area of failure analysis, viscoelasticity and material reliability. She is a Fellow of the Society of Plastics Engineers for her contributions to the field of polymers, composites, fibers, films and coatings. Her teaching and research focuses on mechanics and materials and how best to incorporate them reliably in design.

D'Souza has published more than 160 book chapters, journal articles, and peer reviewed conference proceedings. She has earned numerous awards including the UNT Research Leadership Award, UNT College of Engineering Research Award and Vinyl Division Thesis Award from the



International Society of Plastics Engineers. D'Souza also was named the 2009 Engineer of the Year by the American Society of Mechanical Engineers Electronics and Photonics Packaging Division.

Derryberry brings more than 27 years of industry engineering and business experience to the new position of Assistant Dean of Corporate Relations. In this position, he is expanding the College's engagement with industry and is connecting its faculty and graduates with current and future corporate partners.

Before joining UNT, Derryberry worked at Texas Instruments' Advanced Signal Processing Group, at Nokia Research Center's (NRC) Radio Communications



Laboratory, and at BlackBerry's (formerly Research in Motion) Wireless Technology Development Division.

He is the inventor/co-inventor of 15 issued patents shaping commercial wireless communications, has authored/coauthored over 20 professional publications, has given several presentations evangelizing wireless communications technologies, and has served as a reviewer and technical program committee member for several IEEE conferences and publications. Also, Derryberry is a member of Eta Kappa Nu and a Senior Member of IEEE.

For more information about D'Souza and Derryberry, please visit engineering.unt.edu/people.

THE NORTH TEXAS Engineer

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We would like to hear from our alumni! Please help us tell the story of the College of Engineering and promote the achievements of our alumni by completing the form at:
engineering.unt.edu/alumni-information-form

This newsletter is published twice a year, in the Spring and in the Fall, by the College of Engineering, University of North Texas, Denton, TX 76203. All rights reserved. Copyright © 2015 by the College. Periodicals postage paid at Denton, TX. Please send change of address requests and questions to engineering.unt.edu/angela-nelson.

<New Faculty>

Dr. Andrey A. Voevodin, the new Chair of the Department of **Materials Science and Engineering**, brings to the College of Engineering not only a wealth of knowledge from his experience as the Research Team Leader of the Nanoelectronic Materials Branch of the Air Force Research Laboratory (AFRL), but also an eagerness for teaching.

He is an expert in thin films and coatings, plasma processes, surface engineering, surface analysis, electrical, thermal, and mechanical interfaces, and his current research areas are nanolayered, nanostructured, and 2-dimensional materials for electron and phonon transport, hybrid and pulsed plasma deposition technologies, and high-temperature tribology.

Among his accomplishments are about 300 technical publications and 12 patents which include “Nanoparticles and Corona Enhanced MEMS Switch Apparatus”, “A Filtered Cathodic Arc Plasma Source”, and “Laser Ablation, Low Temperature Fabricated Yttria-Stabilized Zirconia Oriented Films”. Additionally, he has contributed to books such as Nanostructured Thin Films and Nanodispersion Strengthened Coatings and Tribology of Mechanical Systems.

Voevodin received a Ph.D. in Materials Science in 1991 from Tula Technical University, Russia, where he then was an Assis-

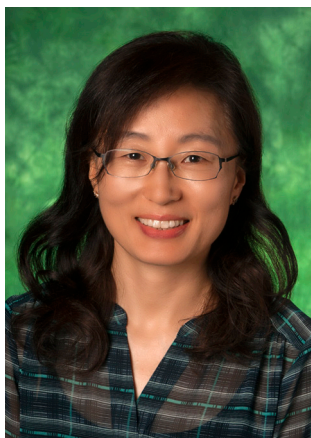


tant Professor of the Engineering Department. Positions he held after Tula include UK Royal Society Fellowship Scientist at The University of Hull, UK; NRC Fellowship Scientist, Tribology and Coatings Branch, WL (now AFRL); Senior Scientist of SYSTRAN Federal Corp. with WL (now AFRL); and Senior Research Engineer, Tribology and Coatings Branch, AFRL.

As the Research Team Leader of the Nanoelectronic Materials Branch at AFRL Materials and Manufacturing Directorate, Voevodin led 35 scientists and engineers in nanoscale electronic materials research. He also has established and led tribological and thermal management laboratories.

He has received many awards and recognitions including the Research Fellowship Award of the U.S. National Research Council, a Service Appreciation from the Society of Tribologists and Lubrication Engineers, U.S. Air Force Outstanding Scientist of the Year, and the Charles J. Cleary Scientific Achievement Award from AFRL/ML.

He also has been teaching since 1998, and has served as graduate student committee advisor or chairman for a number of Master's and Ph.D. students. Voevodin said that his major motivation to join the University of North Texas was the opportunity to work with students and to help younger faculty with their research.



The **Department of Computer Science and Engineering (CSE)** welcomes Dr. Hyunsook Do, who joins the CSE faculty as an Associate Professor. She received her Ph.D. in Computer Science from University of Nebraska-Lincoln in 2007, her M.S. in Computer Science from Tokyo Institute of Technology, Tokyo, Japan, in 1994, and her B.S. in Computer Science from Sungshin Women's University, Seoul, South Korea, in 1989. She was previously employed as an Associate Professor, Computer Science, at North Dakota State University.

Her research interests lie in software engineering, particularly software testing, maintenance, and empirical methodologies. She has been working on problems related to evolution-aware testing techniques including test case prioritization, test selection, test case generation, requirements-based regression testing, and regression testing using data mining approaches.

In 2012, Do received a National Science Foundation CAREER Award for her project “Context-aware Regression Testing Techniques and Empirical Evaluations of Their Economic Impact.”

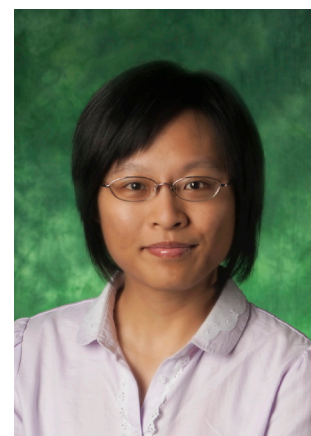
For more information about Do, visit <http://www.cse.unt.edu/~hdo>.

The **Department of Mechanical and Energy Engineering** welcomes Dr. Weihuan Zhao, who joins the department as an Assistant Professor. Zhao received a Ph.D. in 2013 and a M.S. degree in 2009, both in Mechanical Engineering from Lehigh University, and a B.S. in Mechanical Engineering from Shanghai Jiao Tong University in 2007.

She previously worked for two years as a postdoctoral appointee in the Energy Systems Division at Argonne National Laboratory. At Argonne, her research included work on high-temperature latent heat thermal energy storage systems for large-scale electricity generation in concentrated solar power plants.

Zhao's research areas are in thermal-fluid sciences, which include heat transfer, thermodynamics, and fluid dynamics. She focuses on heat transfer and computational fluid dynamics simulations by using programming languages (i.e., Matlab) as well as commercial software (i.e., COMSOL). She is also involved in experimental research activities in thermal-fluid sciences.

For more information about Zhao, visit engineering.unt.edu/mechanicalandenergy/mee-welcomes-new-faculty-dr-zhao.



<Computer Science and Engineering>



Computer science degrees from the College of Engineering ranked fourth in the country for the best annual return on investment value by PayScale.com.

According to the site, computer science degrees from the University of North Texas (UNT) have a 13.5 percent annual return on investment. Computer science majors have the best 20-year return on investment out of all the degrees the site ranks because of the high earning potential a computer science degree warrants in today's technology-driven world, according to PayScale.com's report.

UNT's Department of Computer Science and Engineering (CSE) was founded in 1971. The department offers a Bachelor of Arts in Information Technology, Bachelor of Science, and Master of Science in Computer Science, Bachelor of Science and Master of Science in Computer Engineering, and a Ph.D. in Computer Science and Engineering.

"We are very proud of our many alumni who have contributed to this recognition through their success," said Department Chair Barrett Bryant (to the left in the photo with Mahbuba Khan, Arshad Khan (B.S, CSE, 1995), Eric Ayeh (Ph.D, CSE, 2013), Don Retzlaff (Principal Lecturer, Retired) and Elisa Retzlaff).

“ It is excellent news that our computer science program has been nationally recognized for its value by PayScale.com.

– Barrett Bryant

CSE provides high quality educational programs by maintaining a balance between theoretical and experimental aspects of computer science, as well as a balance between software and hardware issues. The department facilitates a collegial atmosphere that is conducive to intellectual and scholarly pursuits of faculty and students.

Faculty Recognition

Faculty in the department have been recognized by the National Science Foundation, the Association for Computing Machinery, and the Institute of Electrical and Electronics Engineers.

In May 2015, Dr. Renee Bryce, a CSE Associate Professor, received the Undergraduate Research Mentoring Award from the National Center for Women & Information Technology (NCWIT).

This award is presented to faculty members who conduct research with

undergraduate students which embody the objectives of NCWIT: individual or team research experiences, including undergraduate women, leading to student accomplishment, and professional success.

Bryce encourages students to develop research skills and enthusiasm to pursue graduate school. Bryce co-chaired the poster session for the Grace Hopper Conference in which there were more than 150 posters. Thirteen of her students have been funded CRA-W CREU grants, including the USU Best Honors Thesis Award. In addition, 97 percent of the undergraduates she has mentored have earned a Computer Science degree, and 37 percent have gone on to graduate school. Of her undergraduate protégés, 62 percent are female and 27 percent are members of underrepresented groups.

BRAID initiative

Bryce also is part of a CSE team that was selected among 15 universities in the United States to join a nationwide initiative to recruit more women and underrepresented minorities into the ranks of computer science majors and professionals.

The Anita Borg Institute (ABI), a non-profit organization focused on advancing women in computing, and Harvey



(Left photo) Renee Bryce, Margaret Burnett, Mayim Bialik, Colleen Lewis, and Patricia Morreale (accepting award for Lorie Loeb) at the NCWIT Summit. (Right photo) CSE BRAID faculty Phil Sweany, David Keathly, Renee Bryce, Barrett Bryant, and Armin Mikler.

Mudd College have launched the Building Recruiting And Inclusion for Diversity (BRAID) initiative to work with computer science departments at 15 universities across the United States to increase the percentage of their undergraduate majors who are female and students of color.

BRAID is supported by three-year funding commitments from Facebook, Google, Intel, and Microsoft. Participating universities will receive \$30,000 per year for three years to help support their efforts.

UNT's CSE has committed to the following action items over the next three years:

1. Revamping intro courses. CS Principles (CSPrinciples.org) is a framework, supported by the National Science Foundation, to provide a curriculum that will encourage both more students and more diversity among students of computer science in high schools, which should lead to more students and diversity in college and university computer science programs as well.

2. Creating double majors. UNT has recently established an undergraduate concentration in Computational Life Sciences to introduce undergraduate students in computer science to prob-

lems that originate in the life sciences. Past offering of these courses have shown significant interest by women and minorities. CSE commits to work with other departments in the life sciences (such as biology, chemistry, environmental science, and geography) to introduce their students to computational approaches rooted in computer science.

3. Building community and confidence. CSE will continue to serve as Bronze Sponsors of the Grace Hopper Celebration of Women in Computing and Richard Tapia Celebration of Diversity in Computing and CSE will send the students involved in this program to these two conferences.

4. Outreach to high school students and teachers. CSE has several initiatives in this area, such as the summer camps on robotics, game development, and mobile apps for students.

According to Bryant, "UNT and CSE have been very committed to increasing the number of women and minorities in computer science. Our summer camp offerings have led to students studying computer science who might not otherwise have done so. We are very appreciative of this funding that will allow us to expand our initiatives into other areas."



Robocamp has first M.S. Graduate at UNT

This year, Lisa Reynolds became the first of the former Robocamp camp student participants to receive a M.S. degree in computer science from UNT. She attended Robocamp as a freshman and a sophomore in high school. "My parents heard about camp from a friend who worked at UNT, and knew it would be great for me because I was so interested in programming," Reynolds said. "I wasn't thinking of college yet at all, but my mom talked to everyone there about how I could jump start my college education while in high school."

She said that when she was choosing a school, she talked to David Keathly, Principal Lecturer, Computer Science and Engineering (CSE) Department and co-director of the CSE summer camps. "He gave us a tour of Discovery Park and told us about my degree options in the CSE Department and the resources available at UNT."

She enrolled in UNT's CSE program and received her B.S. in Computer Science in 2013. Reynolds defended her thesis, "An Empirical Study of Software Debugging Games with Introductory Students," on June 23, 2015.

While a UNT student, Reynolds worked as a camp counselor at Robocamp. "My first summer in college I got a job helping teach Robocamp," she said. "At first I felt a bit out of place being in charge of students who were often nearly as old as I was, but my coworkers were always ready to help me out and Mr. Keathly continued to be a great influence on my education. In camp, he made me into a much better public speaker, and as a grad student he helped me collect data for my research."

"I always had fun with my coworkers and the campers, and it was tremendously satisfying to see a camper get excited about something you taught them.

— Lisa Reynolds

<Student, Faculty Researchers Visit China>



Undergraduate and graduate students, as well as faculty, traveled to China over the summer to learn about or participate in research. Along the way, they visited historical sites and made new connections that could lead to collaborative research opportunities.

Student Field Trip

Six Mechanical and Energy Engineering (MEE) students, (sitting from left to right in the top photo) Jalyn Nickerson, Sara Peña, (standing from left to right with Dr. Yong Tao) Lex Schindler, Troy Eakins, Billy Davis, and John Mora, participated in a two-week field trip to China this summer to learn more about green buildings and renewable energy.

The field trip was part of a lecture/research/project-based summer course that covered the following topics: introduction to sustainable energy, economics of energy generation and conservation systems, wind energy, the capturing of solar energy through biomass, fundamentals of solar radiation, photovoltaics, and solar heating and cooling of buildings.

The China visit included lectures given by invited professors from top Chinese Universities and lab activities at Tongji University, Zhejiang University and UNT's American House in Beijing, which UNT President Smatresk visited last October. Students also had the opportunity to

interact with Chinese students on research projects while staying at the International Center for Bamboo and Rattan in Beijing and at Tongji University. The lectures covered such topics as bamboo and rattan as green building materials, and campus building energy efficiency evaluation and comparison of renewable energy research and practice between the U.S. and China.

"I have learned that there is much more to be considered when building new things or using new technologies," Peña said. "From understanding urban planning or learning how to avoid heat islands, all of it is very applicable in the 'alternative energy world'. There were many ideas/innovations that could be utilized in America's buildings."

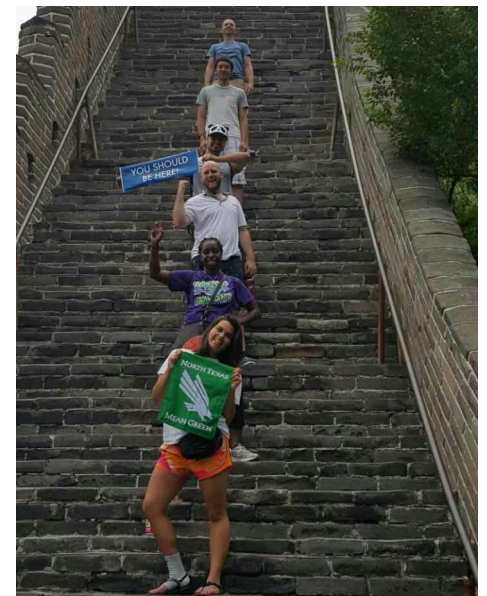
Along with educational activities, the students also were treated to fun activities and sightseeing trips.

The class was co-taught by Dr. Yong X. Tao, Chair of the Department of Mechanical and Energy Engineering, and Dr. Xiaohua Li, MEE Lecturer, who have conducted this study-abroad course since 2012.

According to Tao, who led the field trip, "It is exciting to see a diverse group of MEE students from Texas, a majority of who have never traveled overseas, study and learn a different culture in China. A global experience is cultural capital that students gain. You pick up those intangible skills when you are in a different country."

“ This course has taught me that there are many ways energy can be harvested and used to make life better for people all over the world. By visiting educational places in China, I had a first-hand view of how people there are addressing energy issues and working towards more efficient designs to use less energy and achieve the same results.

– Jalyn Nickerson



NSF East Asia Pacific Summer Institute Fellow

The October-November issue of the American Ceramic Society Bulletin, one of the most popular and widely read magazines in the materials and ceramics community, features an article by Materials Science and Engineering Ph.D. student Jessica Rimsza.

In her article, “Lithium silicate research, baby pandas, and green tea: Strengthening international research through immersion,” Rimsza discusses her international research experience as a National Science Foundation (NSF) East Asia Pacific Summer Institute (EAPSI) Fellow. The fellowship allowed Rimsza to travel to Chengdu in the Sichuan Province of China to work with Xiaotao Zu and Haiyan Xiao at the University of Electronic Science and Technology of China. At the university, Rimsza conducted computational materials science research involving the use of density functional theory simulations to study lithium silicate ceramics.

In the article, Rimsza stated that the EAPSI fellowship gave her another opportunity for international research collaboration, and she looks forward to additional international research in the future. Last summer, support from the NSF International Materials Institute on New Functionality of Glasses enabled Rimsza to conduct research at Pierre-and-Marie-Curie University in Paris.

Rimsza is the American Ceramic Society (ACerS) President’s Council of Students Advisors chair and has contributed other articles to the American Ceramic Society Bulletin.

At UNT, Rimsza works with Dr. Jincheng Du to research the structure and properties of amorphous materials using computational methods. She also is a recipient of the NSF Graduate Research Fellowship.

Advanced Technologies in Construction Workshop

Dr. Cheng Yu of the Engineering Technology Department and Dr. Jaehyung Ju of the Mechanical and Electrical Engineering Department hosted “Advanced Technologies in Construction”, a workshop held on May 23, 2015, at Tsinghua University, a research university located in Beijing, China, and one of the nine members in the elite C9 League of universities.

Fifteen faculty members as well as graduate students from Tsinghua University,



Top photo: Jessica Rimsza at Tiananmen Square in front of the Forbidden City. Bottom photo from left to right: Nan Li, Assistant Professor, Tsinghua University, Xinzheng Lu, Professor, Tsinghua University, Taichong Cheng, Associate Professor, South China University of Technology, Peng Feng, Professor, Deputy Head of Civil Engineering Department, Tsinghua University, Cheng Yu, Doo-Man Kim, Professor, Korea Aerospace University, Jaehyung Ju, and Hongling Guo, Associate Professor, Tsinghua University.

ty, Korea Aerospace University, Southern China University of Technology and the University of North Texas (UNT) participated in the workshop. Tsinghua University has been constantly placed as one of the top two universities in mainland China by most domestic and international rankings. Therefore, the workshop provided the UNT faculty and other participants a great networking opportunity for research collaboration. The seminars included:

- Development of 3D Printing Technology presented by Feng Lin, Professor, Tsinghua University,
- Intelligent Cellular Materials with 3D Printing presented by Jaehyung Ju,
- BIM-integrated Construction Safety Management presented by Hongling

Guo, Associate Professor, Tsinghua University,

- Reliability Assessment of Building Simulation as a Tool for Evaluating Energy Conservation Measures presented by Nan Li, Assistant Professor, Tsinghua University,
- GPU-powered Parallel Computing for Regional Building Seismic Damage Simulation presented by Xinzheng Lu, Professor, Tsinghua University,
- Innovative High-Performance Cold-Formed Steel Shear Walls presented by Cheng Yu, and
- Mechanical behavior 3D Printed Cementitious Powder and FRP Reinforced Approach presented by Peng Feng, Professor, Tsinghua University.

<Competitions & Demonstrations>



A team of Mechanical and Energy Engineering (MEE) students was selected as one of the top three winners from the North American Region (USA and Canada) in the 2015 International Student Safety Technology Design Competition.

This team is among several students and faculty who have been recognized for their research and scholarly pursuits.

Sweden Competition

The MEE Bike Helmet team traveled to Sweden in June 2015 for the final global competition. Team members include from left to right in the above photo with Dr. Cherish Qualls, MEE Lecturer, Holly Gage, Leannah Nichols, Celena Lipscomb, and Travis Beamon.

The competition gives young scholars from Asia-Pacific, Europe, and North America an opportunity to design, build, and demonstrate a cost-effective conceptual scale model of a vehicle safety technology. Teams consisting of university level seniors and/or graduate students, guided by one faculty advisor, submitted a 300-word abstract related to one of 15 global vehicle safety priorities.

The abstracts were reviewed by a panel of safety engineers representing leaders in the field of automotive/vehicle safety in each of the three geographical regions.

During the regional competitions, teams were required to design and build a scale model prototype of a vehicle safety technology. Each team also prepared a report of the design and corresponding presentation. A panel of safety experts evaluated the design and selected the team finalists.

The finalists' prototype devices were on display in the Exhibition Hall at the International Technical Conference on Enhanced Safety of Vehicles in Gothenburg, Sweden.

“ I am grateful for the amazing opportunity to network with engineers and engineering students from all over the world that the Enhanced Safety of Vehicles conference gave us.

– *Celena Lipscomb*

The UNT team's project involved the design of a new type of motorcycle helmet. The goal of the helmet design is to decrease motorcyclist fatalities, and the helmet contains crash detection and airbag systems. The design included a triaxial gyroscope to monitor the orientation of the helmet, an accelerometer to detect sudden changes in velocity, a flex sensor and momentary switch to arm the system, and a microcontroller to manage the sensors and airbag

deployment system. The team also presented the project during Design Day 2015, on April 24.

Symposium on Materials Science & Engineering

The 6th North Texas Inter-University Symposium on Materials Science and Engineering attracted more than 30 students to participate in competition at the University of North Texas (UNT) on April 15, 2015.

The event, which is sponsored by the American Society of Materials (ASM) North Texas Chapter, rotates among three major universities in the DFW area: UNT, the University of Texas at Dallas (UT Dallas), and the University of Texas at Arlington (UT Arlington). The competition consists of oral and poster presenta-



tions by students, and the winners in both categories are recognized at an awards ceremony that evening.

This year's symposium was hosted by UNT, led by Materials Science and Engineering Dr. Jincheng Du and coordinated by graduate student Alyn Grey, who is the current president of the Materials Advantage UNT Chapter. The symposium was previously held at UNT in 2012.

"This traditional event provides an excellent opportunity to showcase the research accomplishments and share ideas for students working in the science and engineering fields related to materials at the institutions in the Dallas - Fort Worth metropolitan area," Du said.

This year's participants were graduate and undergraduate students in the field of materials and related science and engineering backgrounds from universities in the Dallas and Fort Worth metropolitan area such as UT Dallas, UT Arlington, UT Southwestern, and Southern Methodist University.

The presentations were evaluated by judges from both universities and industry. ASM North Texas Chapter President Dr. Arun Kumar attended the event and presented awards to the winners.

The oral presentation winners of this year's symposium were:

1st Prize: Sina Moeendarbari (UT Arlington)

2nd Prize: Xiaonan Lu (UNT)

3rd Prize: Susmitha Sayana (UNT)

4th Prize: Baozhuo Zhang (UNT — standing in bottom photo on the previous page) and Bharat Gwalani (UNT)

The poster presentation winners were:

1st Prize: Aditya Ayyagari (UNT)

2nd Prize: Nandhinee Radha Shanmugam (UT Dallas)

3rd Prize: Minghui Zhang (UT Arlington)

Global City Teams Challenge Expo

UNT Engineering students and faculty traveled to Washington, D.C., to participate in the June 1, 2015, Global City Teams Challenge Expo.

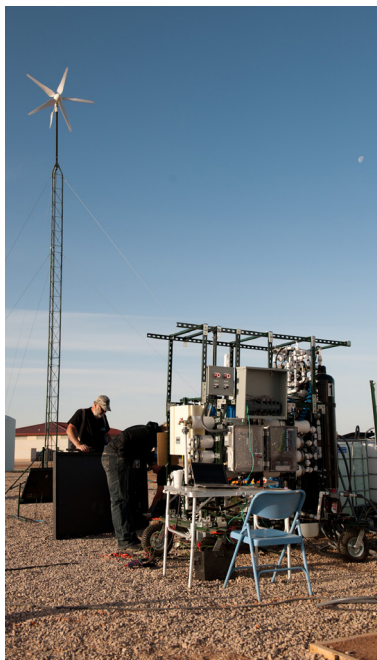
The purpose of the expo, sponsored by US Ignite and the National Institute of Standards and Technology, is to showcase new



"Internet of Things" technologies that are transforming decision making within a smart city / smart community environment in the United States and around the world. The expo had more than 1,300 attendees with representatives from more than 50 cities and more than 10 countries.

Dr. Kamesh Namuduri, an Associate Professor of the Department of Electrical Engineering (EE), is the lead of the team working on the project Integrating an Aerial Base Station with a City's Emergency Communication Grid, which seeks to design an Aerial Base Station that can be integrated with a city's emergency communication system. This project is a collaboration between the City of Denton's Fire Department, Civil Air Patrol of Denton, and researchers from the UNT Departments of Electrical Engineering and Public Administration. Contributors include representatives from MIT Lincoln Laboratory and CyPhy Works.

Two project contributors, Ramanpreet Singh, an EE graduate student (to the left in the above photo), and Michael Thomason, an EE undergraduate student (to the right in the photo), gave a demonstration of the project, and Namuduri gave a presentation during the event.



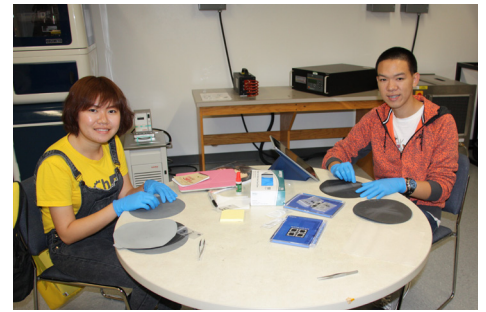
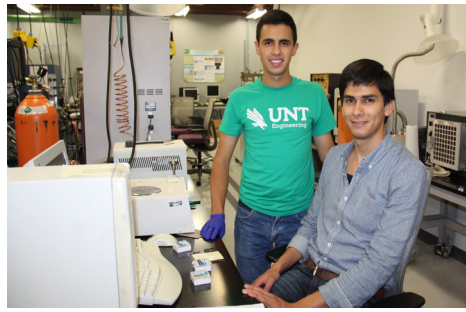
UNT-led team in International Desal Competition's Top 3

An international team of researchers led by Dr. Miguel F. Acevedo, Regents Professor in the Department of Electrical Engineering and researcher of the Institute of Applied Science, was among the top three projects selected by expert judges of the Desal Prize, a world competition focused on finding solutions for the Securing Water for Food program of USAID and other international partners.

The UNT-led project, the GreenDesal team, developed a sustainable off-grid, high-percent recovery desalination system that integrates proven technologies in reverse osmosis, ion exchange, nano-filtration, re-mineralization and disinfection. The system is entirely autonomous powered by hybrid wind-solar technology.

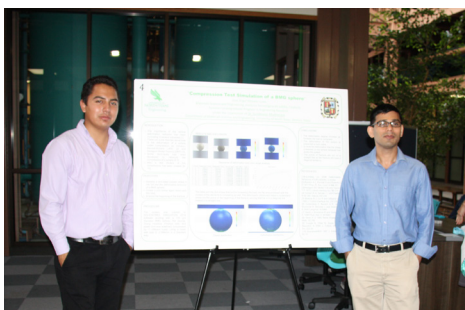
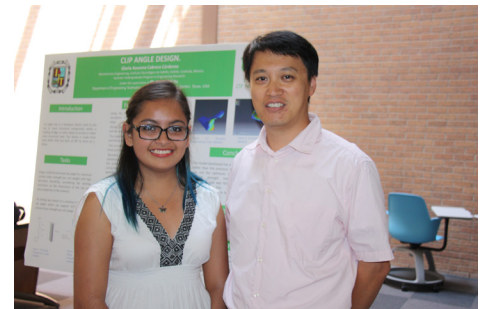
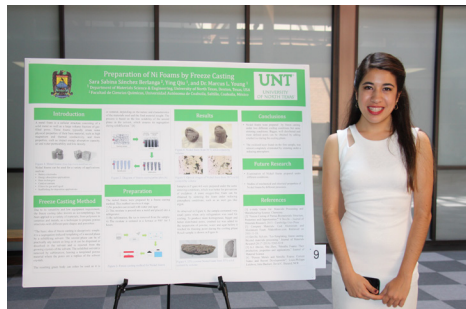
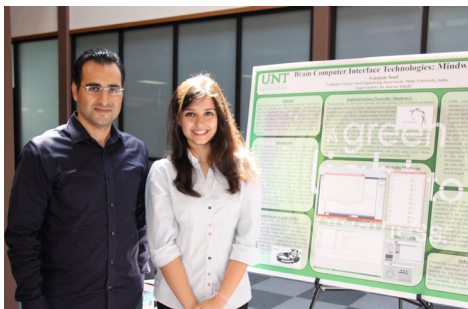
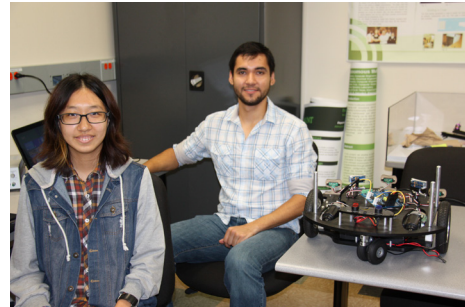
The team is composed of Acevedo and other researchers from Civil and Environmental Engineering of Technion, in Israel, the National Center for Agricultural Research and Extension (NCARE) in Jordan, the Asian Institute of Technology and Management in Nepal and the Department of Civil Engineering at the State University of Ponta Grossa in Brazil. Team members included students from UNT and R.L. Turner High School in Carrollton, Texas. Industry sponsors are Dow Chemical and Texas Pumps.

"Placing among the top three allows us to apply for funds to implement the system in Jordan as a pilot to be tested in a real farm situation in conjunction with our partner NCARE," Acevedo said.



<Summer Undergraduate Research>

Undergraduate students from India, Mexico, and Thailand conducted research with College of Engineering faculty and students through the College's Summer Undergraduate Program in Engineering Research . For more information, visit engineering.unt.edu/international-undergraduates-visit-unt-summer-research.



From the top photo left to right are: Jagrati Valecha, Mody University of Science and Technology; Juan Fernando Rangel Ramirez, Instituto Tecnológico de Saltillo, and Sirahuen Eduardo Ledezma Lara, Instituto Tecnológico de Saltillo; Wanvipa Pipathworapoom, Mahidol University, and Kriengkrai Phongkitkarun, Mahidol University; Patamawadee Leepaisomboon, Chulalongkorn University, and Jorge A. Rodriguez Celis, Instituto Tecnológico de Saltillo; Gunjan Soni, Mody University of Science and Technology, and Hassan Takabi, Department of Computer Science and Engineering; Sara Sabina Sanchez Berlanga, Universidad Autónoma de Coahuila; Gloria Azucena Cabrera Cardenas, Instituto Tecnológico de Saltillo, and Dr. Cheng Yu, Department of Engineering Technology; Jose Angel Morales Luna, Instituto Tecnológico de Saltillo, and Dr. Sundeep Mukherjee, Department of Materials Science and Engineering; Kathryn Beasley, Graduate Recruiter and Retention Coordinator for the College of Engineering, and Pedro Quintanilla de la Pena, Instituto Tecnológico de Saltillo; Beasley and Jonathan David Arreola Sanchez, Instituto Tecnológico de Saltillo.

<Alumni News>

New Chair of Industrial Advisory Board

The College of Engineering is pleased to announce that Lee Palmer (UNT BSIT '90) became the Chair of the College of Engineering's Industrial Advisory Board (IAB) effective Sept. 1, 2015, succeeding Etta Clark (UNT BSCS '81) of Pepsi Corporation. Regarding this announcement, Palmer stated: "I want to thank Etta Clark and all the past and present board members for a great job advancing the College of Engineering for the University of North Texas."

Palmer brings more than 24 years of practical industrial experience to this position and currently is a Senior Vice President responsible for Hitachi Consulting's Products Industry consisting of clients within the Industrial, Energy, Consumer, Metals/Mining, Software, and Chemicals segments.

Palmer is adept at maintaining long-standing client relationships, is well versed in global account management, and has deep experience in strategy, information technology, intelligence/analytics, supply chains, and the customer experience. The boards he sits on include Aviation Week's Workforce Transformation Board and the National Defense Industry Association (NDIA).

Two Faculty Members, Alumnus Receive Patent

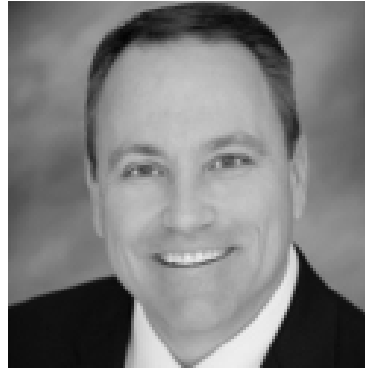
Two University of North Texas (UNT) engineering researchers and an alumnus were awarded a U.S. patent for their work on advancing the design of mixed-signal integrated circuits, which are used in cell phones and other portable technologies.

Dr. Saraju Mohanty (to the left in the photo) and Dr. Elias Kougianos (to the right), both with the UNT College of Engineering, as well as Dr. Geng Zheng (in the center), who received his Ph.D. in Computer Science and Engineering from UNT, are the co-inventors of an "Intelligent metamodel integrated Verilog-AMS for fast and accurate analog block design exploration."

Mixed-signal integrated circuits (mixed-signal ICs) are integrated circuits that have both analog circuits and digital circuits on a single semiconductor die. "Mixed-signal circuits and systems are heavily used in applications like smart mobile phones that we use every moment in our day-to-day life," Mohanty said. For example, they are often used for converting analog signals to digital signals.

Mixed-signal ICs are more difficult to design than analog-only or digital-only integrated circuits. The gap between abstraction levels in analog design is a major obstacle for advancing, implementing and verifying analog and mixed-signal integrated circuit design. "Based on my industrial experience, I can say that full-blown simulation of a mixed-signal circuit at the physical design level is a matter of weeks, and our invention reduces it to a matter of a few hours," Kougianos said.

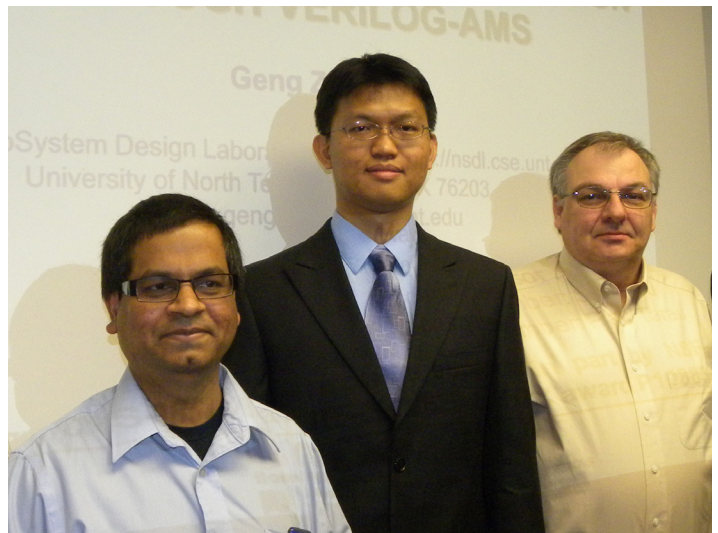
To achieve high performance and high yield, mixed-signal system components or analog blocks must be optimized at both system and circuit levels. For a top-down design approach, which previously did not exist for analog or mixed-signal designs, this



"I am excited about this upcoming opportunity and look forward to working with the Dean and the board members in representing the College of Engineering."
— Lee Palmer

Palmer has been raising awareness for alternative energy solutions and remains active with his community. He mentors and supports high schools with Solar Energy programs and is active in STEM (science, technology, engineering and math) advancement with the State of Texas.

He enjoys collecting '60s and '70s muscle cars, mountain biking, golfing, and volunteering his time with CASA, the American Heart Association and the Boys and Girls Clubs of Dallas. He regularly volunteers in the schools of his children, Zach (13) and Maddie (11).

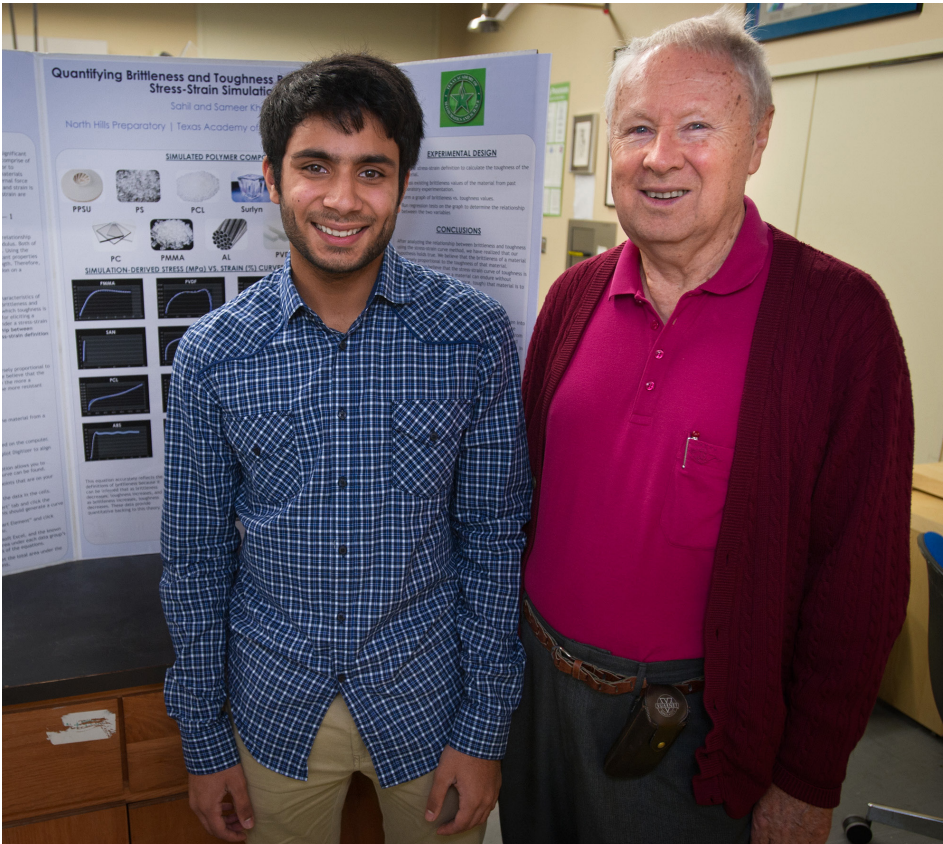


process starts with designing and optimizing the system with block or component models at high levels of abstraction.

The specifications for each block that lead to the best system performance are then obtained. Each sub-block is then designed and optimized toward these specifications. Generating an accurate model requires a significant effort, but it is a one-time job. However, some important characteristics of the blocks are ignored at the existing high-level simulations, which makes the resulting sub-block specifications less reliable and less accurate.

Mohanty, Kougianos, and Zheng developed a method for modeling a circuit that includes storing a plurality of design variable ranges for a circuit component in a non-transient electronic data memory. For more information, visit engineering.unt.edu/researchers-awarded-patent-method-innovate-mixed-signal-integrated-circuit-design.

<Study Confirms Assumption about Brittleness of Materials>



Researchers and professionals in the materials science field have only assumed that as a material becomes more brittle, it also becomes less tough. University of North Texas researchers have confirmed that assumption and presented their work at the 23rd annual World Forum on Advanced Materials in Lincoln, Neb., in May.

UNT Regents Professor in the Department of Materials Science and Engineering Witold Brostow (to the right in the photo), working with Texas Academy of Mathematics and Science student Sameer Khoja (to the left in the photo), compared stress values and brittleness values of various materials and plotted that data to determine that as a material becomes more brittle, it also becomes less tough.

“Making experiments is the basis of progress, and without data we could not test theories,” Brostow said. “Sameer’s work is precisely testing a theory.”

Read about this project and other UNT Engineering research at <http://engineering.unt.edu/category/news-classification/research-news>.