Greetings From CSE Chair

Dear CSE Students,

I hope you had a successful Fall 2018 in the UNT Department of Computer Science and Engineering. I would like to start by welcoming Aaron Dohanich as our new newsletter editor. Aaron joined our department in October, replacing Genene Murphy who retired after 15 years in Spring. Due to the late addition of Aaron, this is the single newsletter for this Fall but we will resume our normal schedule in Spring. Other news for Fall is that CSE Professor Yan Huang has been serving as Interim Dean following the departure of Dean Costas Tsatsoulis at the end of summer. Our new Dean, Professor Hanchen Huang, will join us on January 1. Dr. Sanjukta Bhowmick joined our faculty in Fall as a Research Associate Professor. In Spring, Dr. Joseph Helsing will join our faculty as a Lecturer. This will bring our department up to 33 faculty, over 1,100 undergraduate students, almost 200 M.S. students, and over 100 Ph.D. students. We will be hiring 3 additional faculty during the Spring to join us in Fall 2019. Lastly, congratulations to Dr. Renee Bryce on being promoted to Professor, and to Drs. Robin Pottathuparambil and Mark Thompson on being promoted to Senior Lecturer.

Congratulations to all our Summer and Fall 2018 graduates! We graduated 13 Computer Engineering majors, 58 Computer Science majors, and 10 Information Technology majors, 5 M.S. students in Computer Engineering, 18 M. S. students in Computer Science, and 13 Ph. D. students, for a total of 117 new CSE alumni.

In addition to our classes on the UNT Campus at Discovery Park, from Spring we will be offering our Bachelor of Arts in Information Technology and Bachelor of Science in Computer Science degrees at the Collin Higher Education Center in McKinney. This will serve our students who live and work in the northeastern part of the metropolitan area.

We had many events this semester, including having 29 of our students attend the Grace Hopper Celebration of Women in Computing, 7 of our students attend the Richard Tapia Celebration of Diversity in Computing, and 2 of our students attend the Southwest Electrical and Computer Engineering Department Heads Association Meeting. I invite you to get involved in the activities in our CSE Department. Check this newsletter and our website to find out what is happening. Please LIKE our CSE Facebook page to get all the latest news. Have a great winter break!

Barrett Bryant
Professor and Chair
Faculty News

Dr. Hassan Takabi Awarded $1 Million in Grants for Cybersecurity Research

Earlier this Fall, Dr. Hassan Takabi was awarded two grants from the National Science Foundation totaling over $1M in research funds. The first grant, worth $515,974, will go towards developing computer defense systems that inhibit access to malicious intruders using false pathways, fake files, and tracing programs to track the points of origin of the attacks. The second grant, worth $499,581, will be used at UNT for instructional methods helping to merge the study of data science and analytics with cybersecurity.

In addition to his two grants, Dr. Takabi also attended the annual Privacy Enhancing Technologies Symposium (PETS) where he presented the paper: Privacy-preserving Machine Learning as a Service. He will also be serving as Chair of the IEEE Security and Privacy Workshops (SPW) 2019.

Dr. Krishna Kavi PI on NSF Grant worth $300,000

Dr. Krishna Kavi is the PI on a recent NSF grant for $300,000 titled, “Development of ESPRIT - Emerging Systems’ Performance and energy evaluation Instruments and Testbench”. Drs. Hui Zhao and Song Fu are Co-PIs on this project. In addition to NSF funding, the team received $126,000 from UNT as cost-share. It is generally believed that future computing nodes will rely on heterogeneous processing and memory systems as well as networking technologies. In this changing environment, identifying the "best" or most suitable computing system for a given application requires the cumbersome task of evaluating the application's performance on as many design alternatives as possible. However, if applications can be classified into groups based on their similarities along a wide variety of performance characteristics, it will then be possible to identify a computing system that is best suited for a specific class of applications. The proposed ESPRIT (Emerging Systems’ Performance and energy evaluation Instruments and Testbench) can be used for this purpose.

New Faculty Member

Please join me in welcoming Dr. Sanjukta Bhowmick to our UNT Computer Science and Engineering family! She joins as a Research Associate Professor from the University of Nebraska Omaha Department of Computer Science. We’re very excited to have her here and to be working with her. Her work focuses on modeling large-scale, dynamic and inexact data as networks and analyzing these networks to study problems arising in disciplines such as bioinformatics, software engineering and computational epidemiology. Her research involves different aspects of data analysis including developing scalable, resource-efficient algorithms for updating dynamic data, uncertainty quantification on noisy data, and predicting behavior of time-varying data. This Fall she taught CSCE 4110 Algorithm Analysis.
New College of Engineering Dean
The University of North Texas appointed Hanchen Huang as its new Dean of the College of Engineering. Huang’s appointment will begin Jan. 1, 2019 and will be overseeing research, outreach, and curriculum. Prior to his appointment, Huang served as the Donald W. Smith Professor and the Department Chair of Mechanical and Industrial Engineering at Northeastern University. To learn more, please the UNT News article about him.

Student News
Visit to SWECEDHA Meeting
Ph. D. students Shuwen Liang and Laavanya Rachakonda accompanied Dr. Bryant to the Southwest Electrical and Computer Engineering Department Heads Association meeting at Texas Tech University in October. The students presented their research work as part of an initiative to encourage more women to pursue faculty positions in ECE.
Grace Hopper Celebration of Women in Computing

In late September, Dr. Bryant and 29 of our women students attended the annual Grace Hopper Celebration in Houston, TX. Grace Hopper is one of the world’s largest gatherings of women technologists and their goal is to connect, inspire, and guide women in computing, and organizations that view technology innovation as a strategic imperative. This effort was largely funded by the BRAID Initiative which UNT belongs to, although Munazza Ali received a travel award from Qualcomm. Ph. D. students Corina Florescu and Shraddha Piparia presented posters at the conference.

Left to right (Back row): Carissa Barrett, AnneMarie Sabatini, Corina Florescu, Zahra Sarabi, Abigail Rivera, Olivia Haynes, Vanessa Loza Ponce, Maral Azizi, Shraddha Piparia, Dr. Barrett Bryant, Laavanya Rachakonda, Angel Shrestha, Kaitlyn Lefleur, Desere Crawford, Miranda Bigby, Zhinan Qiao, Zhaochen Gu.

(Front row): Sarah Richards, Yessenia Ramos, Haili Wang, Perrin Kern, Nicole Russo, Obianuju Okafor, Munazza Ali, Eunice Santos, Shiva Ebrahimi, Chalet Shelton
Richard Tapia Celebration of Diversity in Computing
Several of our students along with Dr. Bryant had the opportunity to fly out to Orlando, FL this past September to attend the Richard Tapia Conference, where the goal is to acknowledge, promote, and celebrate diversity in computing. There they spent just over 3 days networking, listening to keynote speakers, and learning about the role of diversity with respect to STEM innovation. In addition to this, Jacob Murillo, one of the few selected to go to the conference, was able to network with Qualcomm, who offered to fly him out to their headquarters for a tour and interview, but was also offered an internship with J.P. Morgan here in Dallas. UNT CSE was a Bronze Sponsor of the conference.

4th Annual IEEE Smart Cities Conference
Ph. D. students Md Abu Sayeed and Ibrahim Olokodana were able to venture over to Kansas City, MO for the 4th Annual IEEE Smart Cities conference where they each presented a paper. This year’s theme to the conference was “A Systems Approach for Smarter Communities”, where Md Abu and Ibrahim were able to collaborate with scholars, citizens, policymakers, administrators, infrastructure operators, industry representatives, economists, sociologists, and academicians on how to make our cities “smarter” and more efficient.
Pictured Md Abu Sayeed, Dr. Saraju Mohanty and Ibrahim Olokodana

**AACE E-Learn 2018**

Ph.D. student Fernando Mosquera had the opportunity to attend this year’s Association for the Advancement of Computing in Education E-Learn 2018 Conference. Here he presented RESL: A Web Browser Based Remote Embedded System Laboratory. In addition to his fabulous presentation, Fernando was also able to visit the many sights of Las Vegas with pit stops in “Venice”, “Egypt”, and even “the Roman Empire”!
Trip to London, Abu Dhabi, and Beijing

Ph.D. student Zongze Li was able to travel to London in June where both and Dr. Krishna Kavi both traveled to Exeter, UK to give presentations at HPCC (20th International Conference on High Performance Computing and Communications) Not only did Zongze have an opportunity to explore Exeter and parts of London, he then traveled to Abu Dhabi, and finally to Beijing, where he was also able to do some sightseeing.
19th Annual Wireless and Microwave Technology Conference (WAMICON 2018)
In April 2018, Ph. D. student Robin Chataut traveled to Clearwater, FL to attend WAMICON 2018 where he presented a paper written by both him and Dr. Robert Akl, “Efficient and Low Complex Uplink Detection for 5G Massive MIMO Systems”.

The International Conference of Supercomputing
Zhi (George) Qiao along with Dr. Song Fu and three other PhD students from UNT were able to attend the International Conference for High Performance Computing, Storage, and Analysis in November, where George’s poster, “Exploring Declustered RAID in ZFS to improve Storage System Reliability” was chosen to be presented. This conference is a top-tier conference that attracts over 12,000 researchers, vendors, and attendees annually from the supercomputing field around the world. Of the many universities in Texas, George was one of few selected to present his work at this conference. Also in attendance was UNT Alumnus, Dr. Qiang Guan, who was a scientist at Los Alamos National Laboratory and is now an Assistant Professor at Kent State University.
Dissertation and Thesis Defenses

We had a number of students that successfully defended their dissertation or thesis this semester and can’t begin to express how proud we are of each of them!

Charles Shelor

Defended his PhD dissertation titled: Coarse Grain Reconfigurable Logic Implementation of Hybrid Dataflow Yields Very High Energy Efficiency for Processing in Memory of Streaming Applications. His major professor was Dr. Krishna Kavi and committee members were Dr. Barrett Bryant, Dr. Song Fu, and Dr. Ron Cytron.

Natalie Parde

Defended her PhD dissertation titled: Reading with Robots: A Platform to Promote Cognitive Exercise through Discussions of Creative Metaphor in Books. Her major professor was Dr. Rodney Nielsen and committee members were Dr. Eduardo Blanco, Dr. Wei Jin, and Dr. Thomas Parsons.
Jagannadh Vempati

Defended his PhD dissertation titled: A Control-Theoretic Approach for Resilient Network Services. His major professor was Dr. Ram Dantu and committee members were Dr. Robert Akl, Dr. Janice Hauge, and Dr. Mark Thompson.

Quentin Mayo

Defended his PhD dissertation titled: Detection of Generalizable Clone Security Coding Bugs Using Graphs and Learning Algorithms. His major professor was Dr. Renee Bryce with co-major professor Dr. Ram Dantu. Other committee members were Dr. Suliman Hawamdeh, Dr. Mark Thompson, and Dr. Dan Kim.
Pushpa Polumuru

Defended her thesis titled: Networking of UAVs Using 802.11 for Formation Control. Her major professor was Dr. Bill Buckles and her committee members were Dr. Namuduri Kamesh and Dr. Pradhumma Shrestha.

Patrick Kamongi

Defended his dissertation titled: Ontology-based Security Threat Assessment and Mitigation for Cloud Systems. His major professor was Dr. Krishna Kavi and committee members were Dr. Hassan Takabi, Dr. Mahadevan Gomathisankaran, and Dr. Song Fu.
Defended his thesis titled: Towards a Unilateral Sensing System for Detecting Person to Person Contacts. His major professor was Dr. Armin Mikler and committee members were Dr. Robin Pottathuparambil and Dr. Xuan Guo.

Defended her dissertation titled: Improving Software Quality Through Syntax and Semantics Verification of Requirement Models. Her major professor was Dr. Barrett Bryant and co-advisor was Dr. Hyunsook Do. Other committee members were Dr. Renee Bryce and Dr. Jeff Gray.
Wenbin Ouyang

Defended his dissertation titled: On-Loom Fabric Defect Inspecting and Activation Layer Embedded Convolutional Neural Network. His major professor was Dr. Xiaohui Yuan and co-major professor was Dr. Bugao Xu. His committee members were Dr. Robert Renka and Dr. Eduardo Blanco.

Marko Scrbak

Defended his dissertation titled: Methodical Evaluation of Processing-in-Memory Technologies. His major professor was Dr. Krishna Kavi and committee members were Dr. Hui Zhao, Dr. Song Fu, and Dr. Nuwan Jayasena.
Nirosha Dinayadura

Defended her dissertation titled: An Efficient Approach for Dengue Mitigation - A Computational Framework. Her major professor was Dr. Armin Mikler and committee members were Dr. Song Fu, Dr. Chetan Tiwari, and Dr. Renee Bryce.
Lab News

CSRL Lab

In addition to receiving his substantial NSF grant and presenting in Exeter, UK, Dr. Kavi, who runs the Computer Systems and Research Lab (CSRL), attended the Cyber-Physical Systems (CPS) workshop organized by the University of North Carolina at Charlotte on June 26-27th where he presented his research on Ontologies for CPS systems. As well, a number of his students had quite the accomplishments, such as papers being accepted or published:

“3D-DRAM performance for different OpenMP scheduling techniques in multicore systems” by Shashank Adavally and Krishna Kavi.
“Reconfigurable Dataflow Graphs for Processing-In-Memory” by Charles Shelor and Krishna Kavi.

Patrick Kamongi and Rohith Yanambaka also visited the Cybersecurity group at the National Institute for Science and Technology (NIST) in June where they presented cybersecurity research conducted by the CSRL team and discussed possible collaborations with the NIST. Afterwards, Patrick was offered a post-doctoral researcher position at the NIST and will be joining them at the end of this year.

HiLT Lab

Dr. Nielsen, who runs the Human Intelligence and Language Technologies (HiLT) Lab, sat on an expert panel for the Army Research Laboratory regarding Self Improving Systems, Design Recommendations for Intelligent Tutoring Systems. The panel convened in Nashville, Tennessee, July 30 through August 1, 2018. In addition to this, a number of his students were published this most recent academic year (2017-2018):

“Automatically Generating Questions about Novel Metaphors in Literature” by Natalie Parde and Rodney Nielsen.
“Less is More: With 280-character limit, Twitter Provides a Valuable Source for Detecting Self-reported Flu Cases” by Sultanah Alshammari and Rodney Nielsen.
“Classifying educational questions based on the expected characteristics of answers” by Andreea Godea and Rodney Nielsen.
“Mining Possessions: Existence, Type and Temporal Anchors” by Dhivya Chinnappa and Eduardo Blanco.
“Detecting Sarcasm is Extremely Easy ;-)” by Natalie Parde and Rodney Nielsen.
“Annotating If the Authors of a Tweet are Located at the Locations They Tweet About” by Vivek Reddy Doudagiri, Alakananda Vempala and Eduardo Blanco.
“Annotating Educational Questions for Student Response Analysis” by Andreea Godea, Dralia Tulley-Patton, Stephanie Barbee and Rodney Nielsen.
“Annotating Reflections for Health Behavior Change Therapy” by Nishitha Guntakandla and Rodney Nielsen.
“Annotating Temporally-Anchored Spatial Knowledge by Leveraging Syntactic Dependencies” by Alakananda Vempala and Eduardo Blanco.
“Proposition Entailment in Educational Applications using Deep Neural Networks” by Florin Bulgarov and Rodney Nielsen.
“Reading with Robots: Towards a Human-Robot Book Discussion System for Elderly Adults” by Natalie Parde.
“Finding Patterns in Noisy Crowds: Regression-based Annotation Aggregation for Crowdsourced Data” by Natalie Parde and Rodney Nielsen.
“Automated Identification of Component State Transition Model Elements from Requirements” by Kaushik Madala, Danielle Gaither, Rodney Nielsen and Hyunsook Do.

**INSPIRE Lab**

Dr. Takabi, who runs the Information Security and Privacy: Interdisciplinary Research and Education (INSPIRE) Lab, and his students have been quite busy this past year. Not only did he receive grants totaling over $1M from the NSF, he also attended the annual Privacy Enhancing Technologies Symposium (PETS) to present the paper "Privacy-preserving Machine Learning as a Service", and will be serving as the chair IEEE Security and Privacy Workshops (SPW) in 2019 as well as presenting a tutorial on "Adversarial Machine Learning" at the upcoming Annual Computer Security Applications Conference (ACSAC) 2018 with Robert Podschwadt.

As well, his lab completed another successful year of GenCyber summer camps with more than 100 students from local middle schools and high schools attending.

**RISE Lab**

Dr. Barrett Bryant visited Cyprus November 4-8th as a Steering Committee Member for the ACM Symposium on Applied Computing (SAC) which will be held there in April. He also gave a talk on domain-specific languages at Eastern Mediterranean University (EMU). RISE (Research Innovations in Software Engineering) lab member, Obianuju Okafor, joined UNT from EMU, where Dr. Bryant’s 5th Ph. D. student is a faculty member.
Alumni Activities

Fall Career Fair
This October, our Fall Career Fair took place and it was a welcoming sight to see that many of the represented booths at the fair had returning alumni at them, such as Pepsi Co.

Trip to Los Angeles
Sudhira Badugu, who graduated in May 2018, went out to Los Angeles this past July for an interview and was nice enough to share some pictures of her trip. She loved getting to go to the beach and catch up with old friends while she was there.
Two of our graduate students, Natalie Parde and Andreea Godea, had the opportunity to travel to Miyazaki, Japan this past May and presented their papers, "A Corpus of Metaphor Novelty Scores for Syntactically-Related Word Pairs" (Natalie Parde and Rodney D. Nielsen) and "Annotating Educational Questions for Student Response Analysis" (Andreea Godea and Rodney D. Nielsen) along with others in the HiLT lab’s papers, “Annotating Temporally-Anchored Spatial Knowledge by Leveraging Syntactic Dependencies” (Alakananda Vempala and Eduardo Blanco), “Annotating if the Authors of a Tweet are Located at the Locations They Tweet About” (Vivek Reddy Doudagiri, Alakananda Vempala, and Eduardo Blanco), and “Annotating Reflections for Health Behavior Change Therapy” (Nishitha Guntakandla and Rodney D. Nielsen)