Welcome to our first newsletter for this academic year! I have recently arrived from National Science Foundation and Georgia State University, and I am often asked what brought you here. I point to the solid research program that has been established by our brilliant Computer Science (CS) faculty. The annual research expenditures from external grants in the department average $4M to $5M. For a department with only 21 tenure track/tenured (TT/T) faculty, this is unmatched! I also see a tremendous potential of becoming a top-tier graduate and undergraduate program, given the new ambitious goals at UTSA backed up by significant resources and multipronged initiatives. Browse through the newsletter and you will see what I am talking about! The CS department is well-known for its cybersecurity programs. Looking ahead, it will play a significant role in shaping the newly formed School of Data Science and National Security Collaboration Center, a combined $100M initiative.

We have had phenomenal growth in students. This fall we have 1500+ undergraduate CS majors along with 77 PhD and 90 master’s students. Students are responding to the workforce demands, which is a great news for San Antonio and the region. For best student outcomes, however, we need to significantly bring down the student-to-faculty ratio to national average while we continue excelling in our research programs. Therefore, we need to rapidly grow the faculty ranks in the coming years. Good news is that we are hiring for a number of TT/T faculty positions. To attract highly talented faculty and students, we need help of our alumni and friends in academia, industry, government, and in the region to help spread the word about our great work. Visit us often! Help us with your wisdom, donations, and connections for student internships, jobs, and research grants, as well as for establishing PhD fellowships and endowed professorships.

Email me at sushil.prasad@utsa.edu to start a conversation!

Dr. Sushil K. Prasad
Chair, Department of Computer Science
The UTSA Department of Computer Science welcomes a new addition to the department this Fall 2019 semester. Dr. Sushil K. Prasad, former Professor of Computer Science at Georgia State University (GSU) and Program Director for the Office of Advanced Cyberinfrastructure in CISE at the National Science Foundation, has joined UTSA as its new Department Chair. Prasad acquired his doctoral degree in Computer Science from the University of Central Florida (Orlando) in 1990, his masters in Computer Science from Washington State in 1986, and his Bachelors of Technology with Honors in Computer Science and Engineering from the Indian Institute of Technology, Kharagpur, in 1985.

Prasad has been honored as an ACM Distinguished Scientist in Fall 2013 for his research on parallel data structures and applications. He was the elected chair of IEEE Technical Committee on Parallel Processing for two terms (2007-11), and received his highest honors in 2012 - IEEE TCPP Outstanding Service Award. Currently, he is leading the NSF/IEEE-TCPP curriculum initiative on parallel and distributed computing, in coordination with ACM/IEEE CS 2013 curriculum taskforce, with a vision to ensure that all computer science and engineering graduates are well-prepared in parallelism through their core courses in this era of multi- and many-cores desktops and handhelds.

Prasad led the Distributed and Mobile Systems (DiMoS) Lab at Georgia State University and has conducted research in parallel and distributed computing, resulting in over 140 refereed publications, several patent applications, and about $3M in external research funds as principal investigator and over $6M overall (NSF/NIH/ERA). His current research interests include Parallel, Distributed, and Data Intensive Computing and Software Systems. Specifically, this includes data intensive computation over spatiotemporal datasets, parallel data structures and algorithms, middleware and collaborative applications for heterogeneous mobile devices, P2P Systems, distributed algorithms over sensor networks, parallel discrete event simulation, web-based distributed and collaborative computing and Workflows.

Over the past few years, his group has explored data intensive computation on Geospatial datasets over cloud, multicore, and GPU, leading to a parallel GIS system for overlay computation over polygonal data on each of these platforms (using Azure API, MPI, Hadoop, and CUDA), and a parallelized R-tree over GPUs - these are all firsts.

Prasad officially started his tenure as department chair in August 2019.

On August 26, Assistant Professor of Computer Science, Dr. Wei Wang, and his PhD student, Sen He, received the ACM SIGSOFT Distinguished Paper Award for their work on cloud performance testing. This award is given to their paper entitled “A Statistics-based Performance Testing Methodology for Cloud Applications.”

ACM SIGSOFT Distinguished Paper Award is a prestigious research award in the field of Software Engineering. Every year, out of thousands of Software Engineering papers around the world, only about 20 papers receive this award.

In their paper, Wang and He presented the world’s first performance testing technique for obtaining accurate performance measurements in the cloud. Although cloud computing has been widely adopted nowadays, its business model is based on server sharing, where multiple users’ applications are running simultaneously on one physical server. This sharing of physical servers allows cloud service providers to make high profits while still offering low-price computing resources to their users. However, this sharing also causes applications running on the cloud to contend for hardware resources and experience high performance fluctuation. The high fluctuation, in turn, makes it difficult to determine the actual performance of the cloud, which is critical to the efficient deployment of new applications in the cloud.

To combat the unpredictability of cloud systems, Wang and his research team extensively adopted the advances from modern statistics, including bootstrap and likelihood theory. With these statistics techniques, Wang’s team developed an easy-to-use, yet reliable, performance testing methodology to obtain accurate performance data on the cloud.

For more information on Dr. Wang’s research and his Large-scale System Optimization Research (LASOR) Laboratory, visit http://www.cs.utsa.edu/~wwang/
The following ten students were awarded doctoral degrees from the UTSA Department of Computer Science in 2019.

Joy Rahman (April 2019)
Building QoS-Aware Cloud Services.
Supervising Professor—Dr. Palden Lama

Ridwan Rashid Noel (May 2019)
Improving Cloud Storage Performance with Adaptive Resource Management. Supervising Professor—Dr. Palden Lama

Mitra Bokaei Hosseini (May 2019)
Information Retrieval and Semantic Inference from Natural Language Privacy Policies. Supervising Professor—Dr. Jianwei Niu

Sam Silvestro (May 2019)
Dissertation Title: “Detecting and Preventing Common Memory Vulnerabilities in Production Software.”
Supervising Professor—Dr. Tongping Liu

Hongyu Liu (May 2019)
Dissertation Title: “Improving Software Reliability Via Record and Replay.” Supervising Professor—Dr. Tongping Liu

Richard Garcia Lebron (July 2019)
Dissertation Title: “A Framework for Characterizing Cyber Attack Reconnaissance Behaviors.” Supervising Professor—Dr. Shouhuai Xu

Sajad Khorsandroo (July 2019)
Dissertation Title: “Securing Software Defined Network Infrastructure in Cloud Data Centers.” Supervising Professor—Dr. Ali Tosun

Tanvir Irfan Chowdhury (July 2019)
Dissertation Title: “Virtual Reality Disability Simulation: A Tool to Reduce Implicit Bias Towards Persons with Disabilities and a Motivation to Create Simulation.”
Supervising Professor—Dr. John Quarles

David Holland (August 2019)
Dissertation Title: “Containerizing Database Queries.” Supervising Professor—Dr. Weining Zhang

Imtiaz Muhammad Arafat (August 2019)
Dissertation Title: “Cybersickness in Persons with Multiple Sclerosis.”
Supervising Professor—Dr. John Quarles

On August 23rd, the Computer Science department hosted a welcome luncheon for new and current doctoral students to kick off the new year. Several students were recognized for outstanding excellence in research, teaching, and leadership. Photographed above is Dr. Jianwei Niu (left) and Dr. Sushil Prasad (middle) presenting Foyzul Hassan his award for outstanding excellence in research. Other students that were recognized at the ceremony include Sam Silvestro, Maanak Gupta, Hamidreza Moradi, Michael Geyer, David Patrick, and Lee Boyd.
NEW FACULTY AND STAFF JOIN UTSA COMPUTER SCIENCE DEPARTMENT

Starting Fall 2019, the department has gained two tenure-track (TT) assistant professors, four non-tenure track (NTT) faculty - two assistant professor of practice and two lecturers - and two staff members. Both tenured-track assistant professors are female, and growing their ranks is a priority for the department.

Dr. Amanda Fernandez has joined Computer Science as a tenured track Assistant Professor under the UTSA AI Cluster Hire. She was previously an Assistant Professor in Practice for UTSA CS since 2017. Fernandez leads the UTSA Vision and Artificial Intelligence Lab, which constructs deep theoretical models with inherent self-intent, considering adversarial examples and cybersecurity approaches and applying these models to breadth of real-world examples.

Dr. Sam Silvestro has joined joining Computer Science as an Assistant Professor in Practice. Silvestro acquired his Bachelor of Science in Computer Science and his Ph.D. in Computer Science from The University of Texas at San Antonio in 2002 and 2019 respectively. His research interests are systems programming, secure memory allocation, and parallel systems.

Dr. Mimi Xie has joined Computer Science as a tenured track Assistant Professor.

Xie acquired her Bachelor of Engineering and Masters of Science in Computer Science from Chongqing University in 2010 and 2013 respectively. She recently acquired her Ph.D. in Electrical and Computer Engineering from the University of Pittsburgh in 2019. Her research interests are self-powered IoT devices, software and hardware co-design of embedded systems, security and reliability of emerging memory technologies, and design and optimization of computer architecture.

Dr. Imtiaz Arafat has joined Computer Science as a Lecturer III.

Arafat acquired his Bachelors in Computer Science and Information Technology from Islamic University of Technology in 2007 and recently earned his Ph.D. in Computer Science at The University of Texas at San Antonio in 2019. His research areas of interest are virtual reality, human-computer interaction, and cybersickness.

Dr. Kevin Desai has joined Computer Science as an Assistant Professor in Practice.

Desai acquired his Bachelor of Technology in Computer Science and Engineering from Nirma University in 2013 and both his M.S. and Ph.D. in Computer Science from The University of Texas at Dallas in 2015 and 2019 respectively. His research interests are multimedia systems, 3D computer vision, virtual and augmented reality, computer graphics, deep learning and machine learning, and serious games.

Dr. Tanvir Chowdhury has joined Computer Science as a Lecturer III.

Chowdhury acquired his Bachelor of Science in Computer Science from Bangladesh University of Engineering and Technology in 2011 and both his M.S. Science and Ph.D. in Computer Science from The University of Texas at San Antonio in 2018 and 2019 respectively. His research interests are virtual/augmented reality, computer graphics, 3D games, and human-computer interaction.

Brandon Davis has joined the Computer Science staff as a Systems Administrator.

Davis previously worked as the Graduate Business Program Coordinator for the College of Business at The University of Texas at San Antonio. Davis will be responsible for providing professional technical analysis and support of software systems that support the Department of Computer Science.

John Meriwether has joined the Computer Science staff as a Student Development Specialist II.

Meriwether previously worked as a Senior Student Manager for Texas A&M University Corpus Christi. Meriwether will be responsible for providing support for undergraduate students in the Department of Computer Science, including handling student registrations, processing approval paperwork, preparing special reports, and working closely with advising.

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For the latest department news updates, visit our website at cs.utsa.edu

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LinkedIn Group linkedin.com/ groups/5061256
UTSA has become the first four-year public university in Texas designated as an Adobe Creative Campus, joining schools like Berkeley and Penn State.

The new Adobe Creative Campus Program recognizes, facilitates, and supports communities to drive innovation and serve as an example for other academic leaders.

UTSA provides Adobe Creative Cloud tools to all faculty, staff and students at no additional charge. This suite of products gives UTSA faculty, staff, and students access to industry-leading creation tools for graphic design, video editing, and web development such as Photoshop, Illustrator, XD, Premiere Pro, Spark, and more. The School of Data Science will provide students an additional benefit from the suite's capabilities for data visualization, 3-D models and more.

All faculty, staff, and students can use Adobe applications on university-owned computers. Not all university owned computers will have the device license installed on them. Only computers that are in labs or classrooms will have the device license.

All OIT owned labs and classrooms are in the process of having this software installed. To have software installed in a departmental lab or classroom, please contact your ITA or open a ticket with OITConnect at oitconnect@utsa.edu.
**CS DEPARTMENT RECENT GRANTS AND AWARD FUNDS**

**ITESM: Detection and Visualization of DDoS Attacks on Software-Defined Networks**

**Sponsor:** UTSA VPR Office  
**Amount:** $80,000  
**Start Date:** 2019-08-01  
**End Date:** 2020-07-31  
**PI:** Rajendra Boppana (Professor)  
**Co-PI:** Palden Lama (Assistant Professor)

**Abstract Overview:** The project investigates the vulnerabilities of network communication protocols and resource bottlenecks of network architecture and hardware, which are exploited by DDoS attacks. These results will be helpful in designing new DDoS attacks (cyber offense), techniques to detect them accurately using machine learning (ML), algorithmic, and statistical methods (cyber defense), and techniques to mitigate them with appropriate protocol enhancements and architectural support (cyber defense). Another major focus of the project is to develop a visualization tool to present attack status and relevant network data to include cybersecurity experts in the loop.

**CAREER: Software Environment Analysis and Configuration for DevOps Practice**

**Sponsor:** National Science Foundation  
**Amount:** $492,358  
**Start Date:** 2019-09-01  
**End Date:** 2024-08-31  
**PI:** Xiaoyin Wang (Associate Professor)

**Abstract Overview:** The vision of the PI's proposal is that, build / deployment scripts and various involved configuration files should be statically checked for semantic errors. Just like compilers can check source code for undefined code elements, type errors, mismatches between method invocations and signatures, the static checker of configuration scripts should also be able to inform developers about missing configuration values, non-existing files, conflict between configuration values, etc. Furthermore, when errors are detected, it is desirable to have tool support that validates the error by triggering it at runtime, and recommends potential solutions of the detected error. The broader scientific problem behind our proposed work is how to precisely and completely infer the system environment assumption and effect of a software project's build and deployment.

**PACT: Panoply Adapted for Cybersecurity Training**

**Sponsor:** US National Security Agency  
**Amount:** $149,824  
**Start Date:** 2019-09-01  
**End Date:** 2020-08-31  
**PI:** Rajendra Boppana (Professor)  
**Co-PI:** Gregory White (Professor and Director of Center for Infrastructure Assurance and Security (CIAS))  
**Co-PI:** Keith Harrison (Lecturer I and Assistant Director of CIAS)  
**Co-PI:** Dwayne Williams (Associate Director of CIAS)

**Abstract Overview:** The University of Texas at San Antonio (UTSA) proposes the development of a flexible laboratory for hands-on learning of cybersecurity concepts to undergraduate and associate degree students using a versatile Panoply game engine we developed and used to organize more than a dozen Panoply competitions yearly for the last 10 years.

**CONNECT- the CONsortium on Nuclear sECurity Technologies**

**Sponsor:** US Department of Energy  
**Amount:** $2,999,995  
**Start Date:** 2019-09-01  
**End Date:** 2022-08-31  
**PI:** Amanda Fernandez (Assistant Professor)  
**Co-PI:** Kelly Nash (Associate Professor of Physics and Astronomy)  
**Co-PI:** Elizabeth Wood (Assistant Professor of Physics and Astronomy)  
**Co-PI:** Harry Millwater (Professor of Mechanical Engineering)  
**Co-PI:** Miltiadis Alamaniotis (Professor of Electrical Engineering)

**Abstract Overview:** Through the synergy and leveraging of resources and expertise at three minority serving institutions and two world class national laboratories, we will educate scientists and engineers from three minority serving institutions in the underlying science of nuclear nonproliferation and security; to be the pre-eminent center of research innovation that advances technology solutions in nuclear security in the following three areas: Fuel cycle materials, nuclear forensics signatures and advanced characterization, and enabling computational and data analytic techniques.

**CNS Core: Small: Robust Performance Guarantee of Containerized Microservices in the Cloud**

**Sponsor:** National Science Foundation  
**Amount:** $243,940  
**Start Date:** 2019-10-01  
**End Date:** 2022-09-30  
**PI:** Palden Lama (Assistant Professor)  

**Abstract Overview:** This project will (1) develop an adaptive performance modeling technique based on probabilistic machine learning to predict the end-to-end tail latency of microservice workflows in the presence of its complex interplay with cloud-induced performance variability, inter-service performance dependencies and changing system dynamics. (2) It will design and develop a robust resource scaling system that aims to manage the end-to-end tail latency of microservice workflows in a resource efficient manner by explicitly incorporating predictive uncertainty into the resource allocation problem to ensure system robustness.

**CS4SA-HS: Developing a collaborative of secondary computer science teachers to increase Latinx participation in CS**

**Sponsor:** National Science Foundation  
**Amount:** $999,556  
**Start Date:** 2019-09-01  
**End Date:** 2022-08-31  
**PI:** Amanda Fernandez (Assistant Professor)  
**PI:** Timothy Yuen (Associate Professor of Interdisciplinary Learning)  
**Co-PI:** Maria Arreguin Anderson (Associate Professor of Interdisciplinary Learning)  
**Co-PI:** Crystal Kalinec-Craig (Assistant Professor of Interdisciplinary Learning)  
**Co-PI:** Priya Prasad (Assistant Professor of Math)  
**Co-PI:** Emily Bonner (Associate Professor of Interdisciplinary Learning)

**Abstract Overview:** The purpose of the proposed projects is to design and implement a rigorous teacher professional development program (CS4SA-HS) that grows a qualified high school computer science teacher workforce in Texas. CS4SA-HS targets non-CS high school teachers and prepares them to become high CS teachers in linguistically and culturally diverse learner populations.
The Center for Infrastructure Assurance and Security (CIAS) received, for its sixth consecutive year, a Continuing Training Grant (CTG) from the Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA).

The grant program develops and delivers innovative, national-level training programs that play an important role in the implementation of the National Preparedness System by supporting the building, sustainment and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation.

Ms. Natalie Sjelin and Dr. Gregory White are co-PIs on the grant for $1.5 million. The grant was submitted on behalf of the National Cybersecurity Preparedness Consortium (NCPC) which is a five-university consortium consisting of UTSA, Texas A&M Engineering Extension Service, The University of Arkansas System’s Criminal Justice Institute, The University of Memphis, and Norwich University. The consortium utilizes the Community Cyber Security Maturity Model (CCSMM), a model created by the CIAS, to organize its training goals. The training is designed to prepare state, local, tribal, and territorial governments on cybersecurity issues and methods to address them. The NCPC has already produced a number of courses, both online and in-place, that are offered for free to qualified entities.

For more information on CIAS, visit http://cias.utsa.edu/

In preparation for the 2020 PMF Application, the PMF Program Office has scheduled a number of informational webinars for prospective students and applicants for its upcoming PMF Class of 2020 application cycle.

On Monday, September 30, 2019 from 2:00-3:00pm (Eastern Time), the PMF program office will have a session scheduled that will focus on applicants with backgrounds in Cybersecurity and Information Technology.

The informational webinars will provide a general overview of the PMF Program, details about the 2020 application cycle, and, if time permits, allow for any questions. Please note that several of the webinars have a specific focus related to strategic recruitment goals, but all will cover the basics of the program and are open to all majors.

The informational webinars scheduled are:

- **Wednesday, September 18, 2019**, from 4:30-5:30pm (Eastern Time) - This session is open to all disciplines
- **Wednesday, September 25, 2019**, from 1:00-2:00pm (Eastern Time) - This session is open to all disciplines, and will be co-hosted by The Lab at OPM with a specific focus on Design
- **Wednesday, September 25, 2019**, from 3:00-4:00pm (Eastern Time) - This session is open to all disciplines, and will have a specific focus on Scientific, Technical, Engineering, and Mathematics (STEM) fields
- **Friday, September 27, 2019** from 2:00-3:00pm (Eastern Time) - This session is open to all disciplines
- **Monday, September 30, 2019** from 2:00-3:00pm (Eastern Time) - This session is open to all disciplines, and will have a specific focus on Cybersecurity and Information Technology
- **Wednesday, October 2, 2019** from 4:00-5:00pm (Eastern Time) - This session is open to all disciplines, and will have a specific focus on diversity and inclusion

For more information on the above webinars, including the Adobe Connect link and call-in details, please visit: https://www.pmf.gov/news-events/2020-pmf-application-informational-webinars
CS Student Organizations

Association for Computing Machinery (ACM) student chapter is organized to serve students for academic, professional, and social purposes at UTSA. ACM’s activities include engaging students in stimulating computing activities, connecting students with leaders in the computing field, encouraging the pursuit of career opportunities, and mentoring students for academic and professional success.

Contact council@acmutsa.org for more information.

Association for Computing Machinery Women’s Chapter (ACM-W) is an all-inclusive organization focused on tailoring its activities towards women and minorities. ACM-W aims to create an engaging academic, professional, and social network for women and minorities in technology. ACM-W’s purpose is to connect students with leaders and encourage them to pursue career opportunities in computing fields and to mentor for academic and professional success.

Contact acmw.utsa@gmail.com for more information.

ACM International Collegiate Programming Contest (ACM-ICPC) competes in a world-wide programming contest where thousands of 3-person teams compete by solving anywhere from 8 to 12 algorithmic problems of varying difficulty, from easy to extremely hard.

Contact council@acmutsa.org for more information.

Computer Security Association (CSA) seeks to facilitate a welcoming, Cyber Security learning community that helps UTSA students grow through the sharing of their experiences and skills with peers. It provides members with cyber security training, resources, lectures, guest speakers, ‘security wargames’, and professional events to prepare UTSA’s best Cyber minds for the real world. The organization also acts as the primary sponsor and organizer for UTSA's Cyber Security Competition Teams, which expose students to Cyber Security experiences in a variety of interesting environments.

Contact utsacyber@gmail.com for more information.

Computer Science Graduate Student Association (CSGSA) organizes events to encourage research activities, networking opportunities, facilitate recruitment, host speakers, and provide a knowledge sharing environment in the department of computer science.

Contact lee.l.boyd@gmail.com for more information.

UTSA has more than 330 student organizations on campus, giving its students have plenty of opportunities to connect with one another.

Computer Science (CS) has many student organizations organized and run by computer science students to create a network of community amongst their fellow CS peers.

One of the best ways to get connected with other students and stay in-the-know of upcoming events and activities is to join one or more of the CS clubs available for students.

These organizations host various events throughout the year, including but not limited to hackathon competitions, capture the flag cyber competitions, industry panels from invited speakers, volunteer opportunities, career prep, hands-on tech workshops, studying sessions, mentoring circles, networking events, and fun socials on and off-campus.
UPCOMING CIAS COMPETITIONS FOR STUDENTS FALL 2019

Nov 1-2, 2019
Follow on Twitter @h1vest0rm
Registration is currently open and closes Oct 17 at 11:59 PM Central time. This virtual competition is free and open to teams of 2 to 4 students.

Hivestorm is a collegiate-focused cyber defense competition. Teams compete by securing provided Windows and Linux based virtual machines – removing malware and other infections, correcting misconfigurations, mitigating vulnerabilities, disabling vulnerable services, and so on. Teams accumulate points for addressing each scored issue and must race against the clock to accumulate as many points as they can before time expires.
For more information and how to sign up to participate, visit http://www.hivestorm.org/

October 5, 2019
As a Swiss-style tournament, the CTD event functions as a non-eliminating tournament with a set number of rounds of competition. Competitors meet one-to-one in each round and are paired using a set of rules designed to ensure that each competitor plays opponents with a similar overall score, but not the same opponent more than once. The winner is the competitor with the highest cumulative points earned in all rounds. All competitors play in each round unless there is an odd number of players.

Registration is $5 per player; each player receives a tournament t-shirt, CTD game mat and card deck with booster pack (A $54 Value!). Lunch is also provided, or players may bring their own lunch.
For more information and how to sign up to participate, visit http://cias.utsa.edu/ctd_tournament.php
# Upcoming CS Events for Fall 2019

**Fall Into Your Major**
Fri Oct 9th, 10:00am-2:00pm – HEB Ballroom (SU 1.106)

**Digital Defense Meet & Greet with CS**
Thur Oct 10th, 2:00pm-3:00pm – NPB 3.108-A

**Texas Cyber Summit Job Fair**
Thur Oct 10th, 11:00am-3:00pm – Grand Hyatt San Antonio
600 E. Market Street, San Antonio, TX 78205

**CS Posters and Cookies Fall Open House**
Fri Nov 1st, 3:00pm-5:00pm, CS Department – NPB 2nd Floor

**AI Summit**
Mon Nov 11th, 8:00am-5:00pm, HEB Ballroom (SU 1.106)