TEXAS TECH UNIVERSITY
Department *of* Computer Science™

Fall 2013 Texas Tech University - Edward E. Whitacre Jr. College of Engineering

# *Computer Science Alumni Newsletter*

## Message from the Chair

Hewett

Another year has flown by quickly while our department has continued its commitment to strive for high research productivity and quality education.

This newsletter brings you greetings and exciting news from our department to your home; from many accomplishments, scholarly activities and awards of our students and faculty to the Master of Software Engineering (M.S.S.E.) program that has been returned to be fully administered by our department. This has resulted in a renewal of our M.S.S.E. program including an additional course that offers research project experiences in real-world industry to students who seek careers as software engineers or want to pursue advanced degrees.

Preparation for accreditation of our undergraduate program is well underway with a plan for a visit team by ABET (Accreditation Board for Engineering and Technology) in May 2014. As part of our preparation, we hope to receive more feedback from our alumni in the near future. If you received our request, please take a moment to send your feedback to us.

Thanks to our external advisory board (EAB) for its continuing support in establishing the Computer Science Academy, which we now have for the first time in the history of the department. The first 11 academy members are being recognized for their career accomplishments and their contributions to the community. Together with EAB and the Computer Science Academy, we plan to have our first fund raising event in Dallas this year. I hope many of you will be able to attend. Please stay tuned for more details. As always, we would like to hear from you.

Rattikorn Hewett, Ph.D.
Professor and Chair

## Parker Selected for Internship at ORNL

Parker

Tara Parker, an undergraduate student, recently interned at Oak Ridge National Lab (ORNL), where she joined Dr. Arvind Ramanathan's research team in big data analytics for bio-surveillance. She implemented noise reduction and visualization techniques for twitter messages. As a result, Parker has co-authored two peer-reviewed papers.

By examining co-references that are related to diseases, health issues, and symptoms, one can reveal emerging threats to public health. Mentored by Dr. Rattikorn Hewett, Parker continues working with Drs. Ramanathan and Hewett applying novel analytic approaches for bio-surveillance. "It is exciting to bring back my experiences to Texas Tech and continue my research in big data analytics," says Parker.

2013 Summer Workshop on Cyber Security Participants

## Department Hosts Summer Workshop on Cyber Security for Community College Faculty

The Department of Computer Science hosted the first Summer Workshop on Cyber Security in August 2013.

The project was supported by a grant awarded by the National Science Foundation to Drs. Akbar Siami-Namin, an assistant professor, and Rattikorn Hewett, department chair and professor.

The objective of the workshop was to promote cyber-security research, practice, and education in Texas and introduce an educational model to be employed across the nation. Six major cyber security related areas were discussed and presented to the participants including: computer forensics, information and data security, network security, software security, and smart grid security.

Faculty from the Texas Tech Department of Computer Science (Drs. Akbar Siami-Namin and Rattikorn Hewett), Angelo State University (Drs. James Phelps and Fred Wilson), and University of California at Riverside (Dr. Hamed Mohsenian-Rad) presented material to the participants.

The organizers of this workshop recruited participants from community colleges from across Texas. The workshop enjoyed having participants from Southwest Texas Junior College, Texas Southern University, Abilene Christian University, Texas State Technical College, Angelo State University, Amarillo College, Texas State Technical College, El Paso Community College, McMurry University, and South Plains College.

The second summer workshop is scheduled for August 2014 on the Texas Tech campus with participants from across the state of Texas.

# Student News

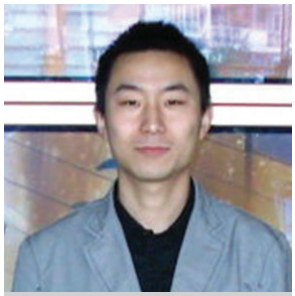
## Texas Tech Team Recognized for Exemplary Spirit at Student Cluster Competition


DISCL Group (L-R) Chao Chen, Dr. Yong Chen, Brad Crysler, Yin Lu, Shane Tarleton, Becky Scheers, Teo Hall, Morgan Cook, Ryan J. Merritt, Taylor Denison, Dr. James Abbott

Texas Tech undergraduate students, under the supervision of Yong Chen, an assistant professor of computer science and director of the Data-Intensive Scalable Computing Laboratory (DISCL) at Texas Tech, were selected as one of the finalist teams to compete in the Student Cluster Competition (SCC) at the 2012 ACM/IEEE International High Performance Computing, Networking, Storage, and Analysis Conference. The conference, also known as the SC12, the Supercomputing Conference, was held in November 2012.

At the competition, the team received special recognition for Exemplary Spirit. Team members were Bradley Crysler, Taylor Denison, Teo D. Hall, Ryan J. Merritt, Shane H. Tarleton, and Nicholas Zaragoza.

## Zhang Wins Paper of Excellence Award at ICDL



Zhang

Shiqi Zhang, a graduate computer science student, won a Paper of Excellence award at the Institute of Electrical and Electronics Engineers (IEEE) International Conference on Development and Learning and Epigenetic Robotics (ICDL) in November 2012, in San Diego, Calif.

His paper was titled "ASP+POMDP: Integrating Non-monotonic Logical Reasoning and Probabilistic Planning on Robots." The authors were Shiqi Zhang, Dr. Mohan Sridharan, and Forrest Sheng Bao.

The ultimate goal of his research is to enable widespread deployment of mobile robots that can interact and collaborate with humans in complex real-world domains.

Video of an experimental trial with the robot is available on YouTube at http://youtu.be/FIsg2X2tIEA

## Holman Receives Scholarships for Conference and Best Student Paper Award

Holman

Daniel Holman, a graduate computer science student, received two competitive scholarships to present a research paper at the International Joint Conference on Artificial Intelligence (IJCAI) in Beijing, China in August 2013, a premier conference on artificial intelligence. Holman received an National Science Foundation scholarship for the conference and the associated doctoral consortium, as well as the IJCAI travel grant.

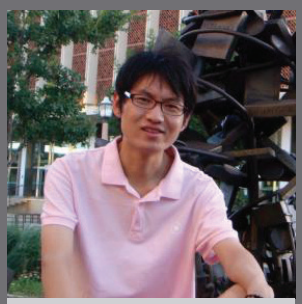
He presented a paper titled "Estimating Reference Evapotranspiration for Irrigation Scheduling in the Texas High Plains" with Dr. Mohan Sridharan, Prasanna Gowda, Dana Porter, Thomas Marek, Terry Howell and Jerry Moorhead.

In October 2012, Holman won a Best Graduate Student Paper award in the symposium session titled "Remote Sensing of Evapotranspiration Community," at the American Society of Agronomy: ASA, CSSA and SSSA International Annual Meeting that was held in Cincinnati, Ohio.

The paper was titled "Gaussian Processes-based Predictive Models to Estimate Reference ET from Alternative Meteorological Data Sources for Irrigation Scheduling."

The authors were Daniel Holman, Dr. Mohan Sridharan, Prasanna Gowda, Dana Porter, Thomas Marek, Terry Howell and Jerry Moorhead.

## Xue to Present Paper at ACM ESEM



Xue

Doctoral candidate Xiaozhen Xue received a student travel grant from the National Science Foundation to attend the Association for Computing Machinery (ACM) International Symposium on Empirical Software Engineering and Metrics (ESEM). ESEM is the premier venue in empirical software engineering and will be held in Baltimore, Maryland, in October.

Xue will present a paper co-authored with his advisor Dr. Akbar Siami-Namin, an assistant professor, at the symposium entitled "How Significant is the Effect of Fault Interactions on Coverage-based Fault Localizations?"

# Faculty News

## Lim Participates in Air Force Summer Faculty Fellow Program


Lim

Dr. Sunho Lim, an assistant professor, was selected as a faculty fellow for the 2013 Air Force Summer Faculty Fellow Program (AF SFFP), sponsored by the Air Force Office of Scientific Research (AFOSR).

He worked in the cyber operation branch under information directorate of the Air Force Research Laboratory in Rome, New York. Because of the U.S. government sequestration and budget cuts, only 10 faculty members from across the nation were awarded fellowships at the Rome laboratory this year.

Lim investigated an interesting but challenging research theme, detecting denial-of-service (DoS) attacks in energy harvesting wireless sensor Networks (WSNs).

The DoS attacks primarily target service availability by disrupting routing protocols or interfering on-going communications, rather than by subverting the service itself. In particular, WSNs are vulnerable to the DoS attacks because of their lack of centralized coordination, physical protection, and security requirements in network protocols. Inherent resource constraints also hinder WSNs from deploying conventional encryption schemes and secure routing protocols.

He primarily focuses on the counter selective forwarding attacks to efficiently detect the malicious nodes' misbehavior and seamlessly deliver sensory data in energy harvesting WSNs. As sensory data become sensitive and require secure delivery, the demand on the counter DoS attacks is rapidly increasing.

"This was a great experience to work with top-class researchers and engineers in the laboratory," says Lim. "Discussing with cutting-edge visiting professors and speakers in diverse research areas is another opportunity to identify the research with problems that are currently important and urgent."

Lim was a guest editor of a special issue on "Dependability and Security for Wireless Ad hoc and Senor Networks and Their Applications" in the International Journal of Distributed Sensor Networks, and has served on the program committee of renowned conferences.

He is leading the T2WISTOR: Texas Tech Wireless Mobile Networking Laboratory, where diverse research themes including wireless mobile networks, green networking, mobile data management, and mobile software are actively investigated.

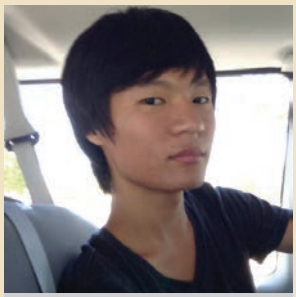
## Sridharan Receives ~$1M ONR Grant for Research in Human-Robot Teams


Sridharan

Dr. Mohan Sridharan, an assistant professor, received an approximately $1M grant from the Office of Naval Research titled "Knowledge Representation and Reasoning for Collaboration in Ad hoc Human-Robot Teams."

The research is a collaboration with Dr. Peter Stone from The University of Texas at Austin and will continue through July 2016.

## Hewett and Siami-Namin Mentor Clark Scholars Student from California


Zhang

During the summer of 2013, Drs. Rattikorn Hewett, department chair and professor, and Akbar Siami-Namin, an assistant professor, mentored a student in The Clark Scholars Program at Texas Tech, Kevin Zhang, who is a high school senior from Los Angeles, Calif.

Kevin focused on customizing Internet Web browsers and implemented a plug-in library for the Firefox Web browser for cyber security purposes. When asked about his experience at Texas Tech this summer, Kevin stated "The research experience at Texas Tech was amazing; I learned a lot both about the process of research and about computer science, thanks to Dr. Hewett and Dr. Namin."

## Computer Science Faculty Receive "Most Influential Faculty Member" Recognitions

At the college's twice-yearly Honors Convocation, faculty members are recognized for influential contributions in the classroom and in student advising. Faculty members are nominated by current students for this honor.

The following computer science faculty members were recognized as a "Most Influential Professor" in the 2012-2013 academic year.

### December 2012

- Dr. Nelson Rushton
- Dr. Akbar Siami-Namin

### May 2013

- Dr. Eunseog Youn
- Dr. Yuanlin Zhang

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# STEM Outreach

## Catch the Engineering Bug

Dr. Mohan Sridharan, an assistant professor, participated in the "Catch the Engineering Bug" STEM outreach event for middle school girls in the fall of 2012. This event gave the girls an opportunity to learn about and interact with robots.

## Keeping in Touch

The Texas Tech Department of Computer Science would like to know what is happening in your professional life. Visit the following website to update your information or let us know about your accomplishments:
**www.coe.ttu.edu/info**

# Alumni News

## Dr. Ben Calloni

Calloni

Dr. Ben Calloni was named a Distinguished Engineer by the Whitacre College of Engineering in 2013. Calloni received a bachelor of science in industrial engineering from Purdue University, a master of arts in Christian ministries from Wayland Baptist University, and a master of science and a Ph.D. in computer science from Texas Tech University.

Calloni is a Lockheed Martin Corporate Fellow, an honor given to only one percent of the corporation's 60,000 technical employees worldwide. He is a former member of the Whitacre College of Engineering Dean's Council, where he held the offices of secretary-treasurer, vice president, and president. He is also a founding member of the Computer Science External Advisory Board, serving as its first president. He previously served as a lecturer for the Texas Tech Department of Computer Science while he was a doctoral student.

He is an American Institute of Aeronautics and Astronautics Associate Fellow, a member of both the Computer Systems and Software Systems Technical Committees, and a Texas Professional Engineer in software engineering. He has received multiple awards from Lockheed-Martin, as well as Outstanding Academic Instructor for the United States Air Force, serving from 1973-1985, and at Texas Tech, where he served as a faculty lecturer from 1989-1997. He also received, among others, the USAF Commendation Medal, Achievement Medal, and an Outstanding Unit Citation. Calloni flew the F-4 Phantom in the Southeast Asia conflict.