

FSU CS Newsletter

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Chair's Message

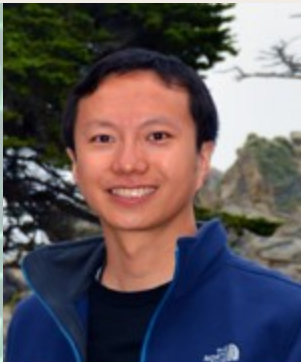
The Computer Science Department has gone through another exciting year. Our new major FSU Teach/Computer Science, which is a joint work between Computer Science and FSU Teach, will start in Spring 2019. The department received a record amount of external research funding this year (\$3.5M) and also had a record year in research expenditure (\$3.7M). We continue to hire new faculty members, and our faculty and students continue to win honors and awards. I hope that you read the enclosed articles to learn more about the department and encourage you to explore the department through our new website and to visit us in person if you have the opportunity to do so.

- Xin Yuan, Chair, FSU Comp. Sci.

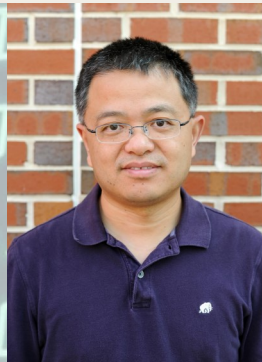


2018 Faculty Promotions in the Department of Computer Science

The Department extends its congratulations to Dr. Zhao, Dr. Wang, and Miss Melina Myers on their promotions.



Congratulations to **Dr. Peixiang Zhao** on his promotion to associate professor with tenure, effective Fall 2018. Dr. Zhao got his Ph.D. in Computer Science from the University of Illinois at Urbana-Champaign (UIUC) in 2012. He got his M.S. and B.S. degrees from Computer Science at Peking University (PKU) in 2004 and 2001, respectively. He joined our department as an assistant professor in 2012. His research interest centers around data and network science, database systems, data mining, and data-intensive computation and analytics. His research has been recognized and funded in part by the Air Force Office of Scientific Research (AFOSR) Young Investigator Award (2018), NSF, Danfoss Turbocor, and FSU.



Congratulations to **Dr. Zhi Wang** on his promotion to associate professor with tenure, effective Fall 2018. Dr. Wang received his Ph.D in computer science from North Carolina State University in 2012, and his M.S and B.S from Xi'an Jiaotong University in 2002 and 1999, respectively. He joined our department as an assistant professor in 2012. His research interest focuses on systems security. Dr. Wang has published 27 papers in the areas of systems and security, including all the top four security conferences (i.e., IEEE S&P, ACM CCS, USENIX Security, and NDSS) and top systems conferences, such as USENIX ATC and EuroSys. Dr. Wang is a recipient of the NSF CAREER award (2015).



Congratulations to **Melina Myers** on her promotion to the rank of Teaching Faculty II, effective in Fall 2018. Melina earned her Bachelor's degree in Computational Biology and Masters Degree in Information Security from FSU. She began teaching in the same department in late 2013. Since joining the CS Faculty, Melina has taught a number of courses including COP3014, COP3353, COP3363, COP3502, CGS3416, and CGS2100. Throughout her first five years teaching, Mrs. Myers was nominated every year for the FSU Undergraduate Teaching award, and won the university wide honor in 2017. She was also the recipient of the 2018 Phi Beta Kappa Excellence in Teaching Award, which is given to one teacher at FSU each year.

Dr. Hoang Awarded \$174k Grant From NSF



FSU Computer Science **Prof. Viet Tung Hoang** recently received a grant from the National Science Foundation (NSF) in the amount of \$174,469, for his project “CRII: SaTC: Towards Stronger and Verified Security for Real-World Cryptography”. Today, many real-world cryptographic schemes are based on the provable-security paradigm, certifying their security via some proofs. However, in several important settings, existing proofs for the in-use constructions

give weak security bounds, even to the extent that these results are not meaningful. Even worse, practitioners may introduce seemingly harmless optimizations into a secure scheme, only to find out later that they undermine the security. In this project, Prof. Hoang aims to partially address these issues from several fronts: (1) improving security guarantees of important applications, (2) weeding out insecure optimizations of real-world protocols by giving attacks, and (3) developing tools for automatic verification of cryptographic proofs.

Computer Science Dept. Welcomes Dr. Xifeng Gao



Dr. Xifeng Gao joined the Department of Computer Science at FSU in Fall 2018 as an Assistant Professor. He received his Ph.D. degree in 2016 and won the best Ph.D. dissertation award from the Department of Computer Science at the University of Houston. Dr. Gao has wide research interests that are related to geometry processing, such as Computer Graphics, Visualization, Multimedia Processing, Medical Imaging, Information Forensics, and Digital

Fabrication. His research works have been published in several leading Journals, e.g., ACM TOG, ACM TOMM, CGF, and IEEE TVCG. More details about his research can be found on his homepage: <https://gaoxifeng.github.io/>. He is looking for talented students interested in geometry processing.

Dr. Jiawei Zhang awarded NSF grant in Mining Network Structured Data

Learning and mining of network structured data have been one of the most popular yet challenging research problems studied in recent years. For example, how can we succinctly describe or summarize the characteristics of a person in a social network based on his network connections or how do we determine that two persons play similar roles in a social network? This project will study the problem of how to find a simple, yet effective representation for each network node, which can capture its characteristics or role in the network based on its connections. This is referred to as the network embedding problem. As an effective tool to transform network data into classic feature-vector representations, network embedding aims at mapping the network data into a low-dimensional feature space, i.e., with a small number of features for each network node. This project focuses on developing a general network embedding framework, and investigating its extension to application-oriented, multi-network and dynamic-network scenarios. This project will help support female and minority students to participate in academic research about network embedding. New network analytic tools will be delivered, which are to be adopted in a new data mining curriculum delivered for both undergraduate and graduate students at UIC and FSU.



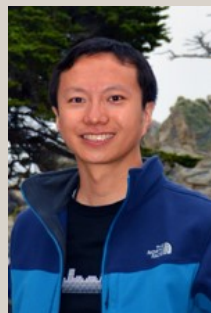
CS Department Awarded Large Allocation of FSU Technology Fee

Our department was awarded a \$100K Technology Fee to upgrade:

- (1) *Majors Lab computers*
- (2) *department network firewall*
- (3) *DHCP services*
- (4) *Imaging server for computer labs.*

The proposals were selected by the Student Technology Fee Advisory Committee, and approved by the IT Governance Council. The awards will significantly enhance the department's instructional technology resources for students and faculty.

Dr. Zhao Awarded \$450k Research Grant by Air Force



Prof. Peixiang Zhao has been awarded a \$450,000, three-year grant from the U.S. Air Force Office of Scientific Research (AFOSR)'s Young Investigator Research Program (YIP). Peixiang is one of 45 scientists and engineers to share some \$19.9 million in grants from this year's AFOSR YIP program. The program is open to researchers in the U.S. who have received a Ph.D. or equivalent degree in the last five years and demonstrate “exceptional ability and promise for conducting basic research.” Peixiang's proposal was titled “Graphs at Your Fingertips: Managing and Summarizing Big Graphs.” In this project,

Peixiang will work with his students to design and develop scalable graph management and summarization solutions that can simplify real-world graphs of extreme scale, heterogeneity, and dynamics into concise, structure-enriched, and quality-preserving summaries with the goal of enabling efficient, cost-effective, scalable, and interactive management and computation for big graphs.

Intel Awards Grant to FSU CS in Computer Vision

Intel Corporation recently awarded a 6-month grant for \$25,074 to **Prof. Shayok Chakraborty**. The objective of this project, titled “Active Learning for Computer Vision”, is to develop a semester-long curriculum on the emerging topic of active learning for computer vision applications. The rapid escalation of technology and the widespread emergence of modern technological equipment have resulted in the generation of large amounts of digital data (in the form of images, videos and text) in the modern era. This has expanded the possibilities of solving real-world problems using computational learning frameworks. However, annotating the data with class labels, to induce a machine learning model, is an expensive process in terms of time, labor and human expertise. This has set the stage for research in the field of active learning. Active learning algorithms automatically identify the salient and exemplar samples from large amounts of unlabeled data. This tremendously reduces human annotation effort, as only a few samples, which are identified by the algorithm, need to be labeled manually. Further, since the model gets trained on the most informative samples from the data population, it has better generalization capability than a standard passive learner. This project will produce a comprehensive survey of the existing work on active learning for vision applications, which can be used to educate students and next generation machine learning researchers in industry and academia on this important research challenge.



Professor Shayok Chakraborty

FSU Cybersecurity Club Ranks Among the Top in Recent Competitions



Over the month of October, students from the Florida State University Cybersecurity Club traveled to three on-site competitions where they ranked among the top competitors. Students were presented with the opportunity to participate in the Raymond James Capture the Flag (CTF), in which our team won 2nd place and were awarded a trophy and \$5,000. Additionally, students traveled to two distinct events, Capture the Flag and Social Engineering, at CSI CyberSEED. In the Social Engineering competition, the FSU team had an amazing 1st place finish, taking home \$10,000. Furthermore, the group of students who competed in the Capture the Flag competition finished in 4th place. On October 14th, five students studying Cybersecurity including Mitch Schmidt, Shawn Stone, Douglas Hennenfent, Nathan Nye, and Brandon Everhart traveled to St. Petersburg, Florida to compete in the Raymond James CTF. They were accompanied by a faculty advisor, Dr. Mike Burmester from the FSU Computer Science department. The competition was both sponsored by and held at Raymond James in an effort to promote cybersecurity talent in students from universities nationwide in the areas of IT and Computer Science. The teams competed over one day, working on challenges that tested their skills in a variety of areas including reverse engineering, malware decoding and analysis, forensics, packet captures, steganography, and web exploitation. The event also featured some interactive team building exercises such as lockpicking, Lego building, and drone racing to earn additional points. “Capture the Flag competitions are a great opportunity for Cybersecurity students to learn new techniques and test their skills. In most cases, it is illegal to attack real life cybersecurity problems, so CTFs give us a safe, legal alternative,” stated Mitch Schmidt, President of the FSU Cybersecurity Club and Cybersecurity graduate student. The team from Florida State University, n0l3ptr (pronounced ‘nole-pointer’), finished in 2nd place and were awarded \$5,000.

Students from Florida State University also had the opportunity to compete against teams from around the nation in two competitions at CSI CyberSEED at the University of Connecticut (UCONN) from October 19th to October 20th. Douglas Hennenfent, Becky Powell, Johann Thairu, and Charisa Powell formed the Social Engineering team. In addition, Mitch Schmidt, Shawn Stone, Ian Michaels, and Nathan Nye competed in the Capture the Flag competition. In the Social Engineering competition, participants were challenged to use their skills of social engineering to infiltrate a fictitious medical company. In order to attain points, the competitors had to work as a team to complete a variety of activities developed by UCONN, such as recovering passwords and participating in fabricated interviews to gather information. Over the two-day competition, Florida State University’s team, n0l3ptr, rose to win 1st place, collecting \$10,000 in prize money.

Designed by Cisco, the Capture the Flag competition revolved around the securing and attacking of IOT devices. Over the duration of two days, the FSU team worked to solve challenges in network analytics and forensics, cryptography, steganography, radio transmission security and exploitation, IOT security, and software analytics. The four Cybersecurity students from Florida State University finished in 4th place and were presented with Super Nintendo.

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