Computer Science Seminar

Balancing Privacy and Social Media

Katrina Ward, Missouri S&T

April 22, 2019
10:00 - 10:50 am
209 Computer Science Building



With the pervasive use of mobile devices, social media, home assistants, and smart devices, the idea of individual privacy is fading. More than ever, the public is giving up personal information in order to take advantage of what is now considered every day conveniences and ignoring the consequences. Even seemingly harmless information is making headlines for its unauthorized use, such as that seen with Cambridge Analytica. Among this data is user trajectory data which can be described as a user's location information over a time period. This data is generated whenever users access their devices to record their location, query the location of a point of interest, query directions to get to a location, request services to come to their location, and many other applications. This data could be used by a malicious adversary to track a user's movements, location, daily patterns, and learn details personal to the user. While the best course of action would be to hide this information entirely, this data can be used for many beneficial purposes as well. Emergency vehicles could be more efficiently routed based on trajectory patterns, businesses could make intelligent marketing or building decisions, and users themselves could benefit by taking advantage of more conveniences. There are several challenges to publishing this data while also preserving user privacy. For example, while location data has good utility, users expect their data to be private. For real world applications, users generate many terabytes of data every day. To process this volume of data for later use and anonymize it in order to hide individual user identities we need to develop efficient algorithms to change the processing time for anonymization from days to a matter of minutes or hours. We cannot focus just on location data, however. Social media has a great many uses, one of which being the sharing of images. Privacy cannot stop with location, but must reach to other data as well. We address the issue of image privacy in this work, as often images can be even more sensitive than location.

Bio: In May 2014, Katrina received her B.S. in Computer Science from Missouri University of Science and Technology, with a focus in Data Mining and Computer Security. She began her research during her undergraduate studies. Immediately following graduation, she began her Ph.D at the same institution, also in Computer Science with the same focus. During her time as a student, she has worked as a graduate teaching and research assistant within her department, a software developer at Brewer Science to automate chemical mixing equipment, and she formally accepted a position at Sandia National Laboratories immediately following her graduation. Katrina had a very strong focus in helping her department and participated in many events and activities to promote STEM fields at local schools. She was an active member of ACM and ACM-W and has worked closely with the University's diversity office to provide engaging activities for potential future students.

MISSOURI S&T