Presents

Marina Blanton, University of Notre Dame

General-Purpose Secure Computation and Outsourcing

The desire to compute on sensitive data without revealing it has led to several decades of research in the area of secure multi-party computation. Today, cloud computing serves as a major motivation for the development of secure data processing techniques suitable for use in outsourced environments for computing with private or sensitive data. Despite much attention, most of the available techniques focused on a rather narrow arithmetic domain. In this talk, we describe our work on other types of computation and algorithms suitable for secure computation and outsourcing with the goal of enabling secure and efficient distributed implementation of a general-purpose program. This, in particular, includes a compiler that transforms a program written in C, with variables to be protected marked as private, into its secure distributed implementation suitable for execution in the cloud.

Bio: Marina Blanton is an assistant professor in the Department of Computer Science and Engineering at the University of Notre Dame. She received her MS in EECS from Ohio University in 2002, MS in CS from Purdue University in 2004, and PhD in CS from Purdue University in 2007. Dr. Blanton's research interests are centrally in information security, privacy, and applied cryptography. Recent projects span areas such as secure computation and outsourcing, integrity of outsourced computation and storage, private biometric and genomic computation, and privacy-preserving systems for medical and social networks. Dr. Blanton has over 60 refereed publications and has served on technical program committees of top conferences and journal editorial boards. She received multiple awards for her research including the 2013 AFOSR Young Investigator Award and the 2015 ACM CCS Test of Time Award. Her research is supported by the NSF, AFOSR, and AFRL.

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