



USC Viterbi School of Engineering

Seminar

Ming Hsieh Department of Electrical and Computer Engineering



Data Privacy in the Decentralized Era

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Abstract: Data is today generated on smart devices at the edge, shaping a decentralized data ecosystem comprising multiple data owners (clients) and a service provider (server). Clients interact with the server with their personal data for specific services, while the server performs analysis on the joint dataset. However, the sensitive nature of the involved data, coupled with inherent misalignment of incentives between clients and the server, breeds mutual distrust. Consequently, a key question arises: How to facilitate private data analytics within a decentralized data ecosystem, comprising multiple distrusting parties?

My research shows a way forward by designing systems that offer strong and provable privacy guarantees while preserving complete data functionality. I accomplish this by systematically exploring the synergy between cryptography and differential privacy, exposing their rich interconnections in both theory and practice. In this talk, I will focus on two systems, CryptE and EIFFeL, which enable privacy-preserving query analytics and machine learning, respectively.



Bio: **Amrita Roy Chowdhury** is a CRA/CCC CIFellow at University of California-San Diego, working with Prof. Kamalika Chaudhuri. She graduated with her PhD from University of Wisconsin-Madison and was advised by Prof. Somesh Jha. She completed her Bachelor of Engineering in Computer Science from the Indian Institute of Engineering Science and Technology, Shibpur where she was awarded the President of India Gold Medal. Her work explores the synergy between differential privacy and cryptography through novel algorithms that expose the rich interconnections between the two areas, both in theory and practice. She has been recognized as a Rising Star in EECS in 2020 and 2021, and a Facebook Fellowship finalist, 2021. She has also been selected as a UChicago Rising Star in Data Science, 2021.

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