

The University of Chicago Computer Science Department

PRESENTS:

“A client-centric approach to transactional data-processing systems”



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Abstract:

Modern applications must collect and store massive amounts of data. Cloud storage offers these applications simplicity: the abstraction of a failure-free, perfectly scalable black-box. While appealing, offloading data to the cloud is not without challenges. Cloud storage systems often favour weaker levels of isolation and consistency. These weaker guarantees introduce behaviours that, without care, can break application logic. Offloading data to an untrusted third party like the cloud also raises questions of security and privacy.

This talk summarizes my efforts to improve the performance, the semantics and the security of transactional cloud storage systems. It centers around a simple idea: defining consistency guarantees from the perspective of the applications that observe these guarantees, rather than from the perspective of the systems that implement them. I will discuss how this new perspective brings forth several benefits. First, it offers simpler and cleaner definitions of weak isolation and consistency guarantees. Second, it enables more scalable implementations of existing guarantees like causal consistency. Finally, I will discuss its applications to security: our client-centric perspective allows us to add obliviousness guarantees to transactional cloud storage systems.

Bio:

Natacha Crooks is a PhD candidate at the University of Texas at Austin and a visiting student at Cornell University. Her research interests are in distributed systems, distributed computing and databases. She is the recipient of a Google Doctoral Fellowship in Distributed Computing and a Microsoft Research Women Fellowship.

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