ETH
Eidgenössische Technische Hochschule Zürich
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Distributed Computing

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Simulating Conditions of P2P Networks

Blockchain-based distributed systems—such as Bitcoin and Ethereum—are now a major part of the global financial infrastructure, and have been proposed to serve as the basis for other services like domain registries and medical records. A blockchain is, at its core, a mechanism for storing state and performing computation across a network of machines without any centralized trust. These systems run atop a global peer-to-peer (P2P) network over the Internet responsible for disseminating network messages including blockchain data and information on network participants.

The structure and operation of these P2P networks directly impact the security and usability of these systems. Traditionally, these networks have operated as permissionless (anyone can join), unstructured (with little to no rules on who should connect to each other) networks. As such, the topology of these networks is difficult to predict and purposefully prohibitively expensive or invasive to measure (e.g., determining whether connections exist between nodes). The purpose of this thesis is to determine what factors (node behaviors) impact the structure of these types of networks.

Candidate Profile: An ideal candidate for this project is interested in simulating conditions of real-world networks, reading literature on related research, as well as some amount of theoretical formulations. We will have weekly meetings to discuss open questions and the next steps.

Interested? Please contact us for more details!

Contact

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