ETTH Eidgenössische Technische Hochschule Zürich Swiss Federal Institute of Technology Zurich





Prof. R. Wattenhofer

Consensus: Fast and Lite

Consensus is the cornerstone of modern blockchain systems, ensuring agreement even when some participants act maliciously. It's no surprise that this fundamental problem has been the focus of over 40 years of academic effort aimed at making protocols both faster and more communication-efficient. Yet, despite decades of progress, all known solutions still face a fundamental tradeoff: they either require sending a large number of messages or suffer from high latency. This project offers you the opportunity to contribute to this ongoing challenge—exploring new directions for breaking or better understanding this tradeoff.

What will you do? Your task will be to design a Consensus algorithm that achieves both low latency and low communication overhead, or to prove that such a tradeoff is fundamentally unavoidable. Working closely with your supervisors, you will explore the relevant literature and investigate the key techniques driving the field.

Why? This project offers a deep dive into the theoretical foundations of modern distributed systems. You'll collaborate with active researchers in the area, and if successful, your work will lead to a publication.



Requirements: This project is a good fit only

for students interested in purely theoretical research, such as formulating theorems and developing rigorous proofs. We expect candidates to have some familiarity with Byzantine Agreement/Consensus protocols; prior coursework in distributed computing—such as a PODC-style class—is a significant advantage.

Interested? Please contact us attaching your transcript and CV.

Contact

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