



## Distributed Graph Problems with Malicious Actors

Have you ever wondered how systems like blockchains manage to stay secure even when some participants try to cheat? Or how torrents let users share files efficiently across a global network? These are real-world examples of distributed systems in action, and our project is about understanding and advancing the *theoretical foundations* that make such systems possible.

**Why Join?** This project offers the opportunity to delve deeply into the theoretical principles of distributed computing, equipping you with a solid understanding of key concepts and techniques in the field. If you enjoy solving problems, designing algorithms, and thinking deeply about complex systems, this is the project for you. Success in this project could even lead to a research paper, with you as a co-author on the publication.

**What You'll Be Working On?** This project focuses on designing and analyzing algorithms for distributed systems where computers must collaborate without centralized control. You'll explore questions like how a network can reach agreement when some participants act unpredictably, or how to solve problems efficiently when each computer has only partial knowledge of the network. You will deal with challenges such as handling failures, addressing malicious behavior, and ensuring effective local communication and decision-making. The work involves abstract reasoning and rigorous algorithm design to uncover the fundamental limits and possibilities of distributed collaboration.

**Requirements:** Motivation and interest in theory are required. Basic knowledge in Distributed Systems/Principles of Distributed Computing/Decentralized Finance is a huge plus. Being able to work independently and coming up with your own ideas is highly appreciated.

**Interested? Please contact us for more details!**

### Contact

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