

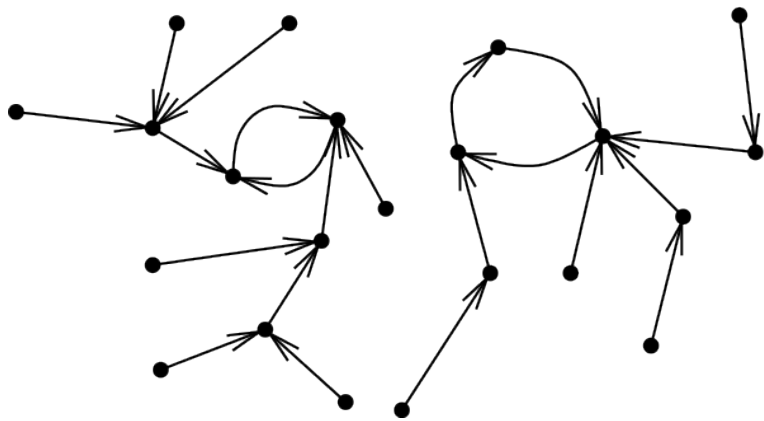


## Graph Algorithms for Dynamic Directories

Imagine that a single mobile resource is to be shared among the nodes of a network. The nodes can request the shared resource concurrently and at different times. Our task is to design a protocol to satisfy all the requests, as quickly as possible.

The problem also has numerous applications other than using it to coordinate access to a shared resource. For example, one can use the service to globally order transactions as in a blockchain, where a transaction request can be issued by an arbitrary node at an arbitrary time.

Two classic protocols to solve this problem are the Arrow and Ivy protocols. They are simple and require little computing power and storage. However, they do not always work well for arbitrary network topologies. Other state-of-the-art protocols that perform well on general networks require costly global initialization and local storage that is proportional to the size of the network.



The goal of this thesis is to devise and analyze protocols that maintain Arrow and Ivy's simplicity while being competitive with the state-of-the-art on a large family of graphs.

**Requirements:** Ability to work independently and interest in conducting new research. Solid algorithmic and mathematical background (emphasis on writing proofs). Depending on the extent of the project, coding skills are a plus. We will have weekly meetings to discuss open questions and determine the next steps

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

### Contacts

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