ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Distributed Computing

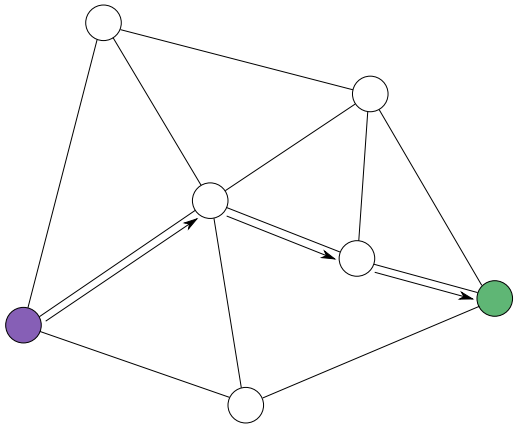
Prof. R. Wattenhofer

Group Project / Semester Thesis:

Routing in a Peer-To-Peer Overlay Network

Transactions in the Bitcoin network are slow. It can take up to a few hours before a transaction is finally executed, which prevents the usage in everyday life. One promising solution are overlay networks. People can construct so called payment channels with a partner, which allow them to do instant transactions. However those channels are expensive to construct, so one wants to have just a few of them and use them many times. When many people have at least a few channels, this gives a fairly well connected graph. Combined with an atomic forwarding protocol, this can be used to send instant Bitcoin transactions to anyone in the world.

With a larger payment network new problems appear. One has to find a route from the sender of a payment to the receiver. Existing solutions use large hubs, which conflicts with the idea of a decentralized payment system. In this project you will try to construct an algorithm to find a route through a large homogeneous graph. All connections of the graph are known and the nodes can cooperate in various ways by exchanging messages over the Internet.



No knowledge about Bitcoin is required, as this problem is a general networking problem.

Requirements: Interest in theoretical problems and graphs

Interested? Please contact us for more details!

Contacts

- Conrad Burchert: bconrad@ethz.ch, ETZ G96