



BA/SA/MA/Group/Lab:

## Mobile Resource Sharing

Imagine that you are in charge of an emergency operation in a village. As the communication systems have broken down, the only way to reach the next victim is to use the help of locals, who can point in the right direction. What should be the algorithm of the operation, conducted in collaboration with the locals, so that victims are rescued as fast as possible.

The problem described is an instance of the distributed directory problem, a fundamental and a useful primitive for resource sharing in networks. The best algorithm incurs a cost closest to the *optimal offline algorithm* — the one that knows all the request locations in advance and takes the shortest tour through them. Simple and efficient algorithms are known for specific networks, such as trees or complete graphs, however, existing algorithms for general networks are not so good. In this thesis, we will design and analyze a practical and an efficient algorithm for sharing a resource in a network. If you find this interesting, do not hesitate to contact us. We have some ideas that can serve as a starting point, but your ideas are also welcome!



Figure 1: A Mobile Resource

**Requirements:** Interest in graph theory and online algorithms.

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

### Contacts

- Pankaj Khanchandani: [kpankaj@ethz.ch](mailto:kpankaj@ethz.ch), ETZ G60.1
- Pál András Papp: [apapp@ethz.ch](mailto:apapp@ethz.ch), ETZ G60.1