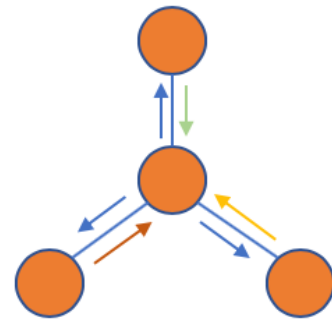




## Topics in Graph Neural Networks

Reinforcement learning is a fascinating field of machine learning where agents learn to navigate complex environments to solve complex tasks. One branch that we find very interesting is that of multiple agents that learn to interact with each other through competition or collaboration — or both. For example we looked at training agents for Jass or Tichu.

In this thesis, we want to take a more basic approach and investigate basic game theoretic problems. How does reinforcement learning want to solve classics such as the prisoner's dilemma, stag hunt, .... In particular, we want to look at the volunteer's dilemma, where multiple agents could solve a problem, but every agent benefits from onboarding all other agents for the solution as well. We discuss this in the context of financial networks and bailing out default banks.



**Requirements:** Strong motivation, knowledge in deep learning, or a solid background in machine learning. Experience with Python and TensorFlow or PyTorch is an advantage as well as knowledge in reinforcement learning and game theory.

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

### Contact

- Pál András Papp: [apapp@ethz.ch](mailto:apapp@ethz.ch), ETZ G60.1
- Lukas Faber: [lfaber@ethz.ch](mailto:lfaber@ethz.ch), ETZ G60.1
- Béni Egressy: [begressy@ethz.ch](mailto:begressy@ethz.ch), ETZ G94