

Bachelor's Thesis

# Learning IP Addresses based on Graph Structure

Designing IP-address schemes is a crucial task in networking. Forwarding of data packets is performed based on IP addresses based on lookup tables. However, table space is limited. IP addresses are thus required to efficiently encode node location in the graph to reduce the number of table entries. Recent trends in networking to include machine learning in the match action pipeline of switches further increase the need for predictable addresses.

The goal of this thesis is to investigate whether IP address prefixes can be learned for topologies based on bernoulli embeddings of graph nodes. The performance of the code is evaluated based on classification performance. Further, the student should investigate the required size of codes to enable reliable forwarding.

## Prerequisites

- Machine Learning
- Python
- Tensorflow
- Networking

## Advisors

Patrick Kalmbach