

# Introduction

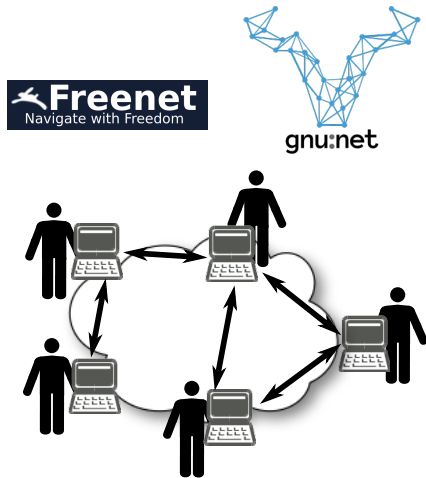
- Martin Byrenheid
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  - Mobile and distributed systems
  - IT-Security
  - System- and software engineering
- Research assistant since 2015
  - Security and privacy in distributed systems

# What to expect / learn

- **Scalable and privacy-preserving P2P networks**
  - Familiarity with P2P networking concepts
  - Building and reading code of network applications
  - Programming in C/C++
  - Working with Linux, make and Git
  
- **Secure implementation of network protocols**
  - Literature research
  - Systematization of existing solutions
  - Programming in Python and Ada

# Sybil-resistant and scalable routing in F2F networks

- Master Thesis / FPA / Großer Beleg
- **Motivation:**
  - Friend-to-Friend networks
  - Attack-resistant and scalable routing
  - Dynamic networks
  - Sybil attack
- **Your task:**
  - Adopt X-Vine for landmark-based routing
  - Implement solution in C/C++
  - Compare own solution with U-Sphere



# Measuring IPFS

- Bachelor Thesis / FPA / Großer Beleg
- **Motivation:**
  - Peer-to-Peer-based file storage
  - Seems to be gaining in popularity
- **Your task:**
  - Learn about the design IPFS
  - Instrument IPFS source code
  - Perform measurement study



# IPFS

# Formal specification of binary formats

- Bachelor Thesis / INF-D-960 / Großer Beleg
- **Motivation:**
  - Generating secure parsers for binary data
  - Verifiable specification of binary data formats
- **Your task:**
  - Analyse popular existing packet formats
  - Identify required specification constructs
  - Extend existing specification framework

