

CV :// Ali Utkan Şahin

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Research Interests

- Distributed systems, fault-tolerance, cryptography, security.

Education

- **Koç University, Istanbul – Turkey.** (September 2017 – ongoing, expected graduation: June 2021)
BSc, Computer Engineering.
Current GPA: 3.88/4.0
- **Nanyang Technological University, Singapore.** (August 2019 – December 2019)
Exchange student, Computer Engineering.
- **American Robert College, Istanbul – Turkey.** (2012 – 2017)
High school diploma

Research Experience

- **Fog to Fog Federation, Koç University & National Chiao Tung University.** (March 2020 – ongoing)
Working on the fog to fog federation problem, where a user needs to authenticate itself to a foreign fog service with an authentication server residing at the home fog. Initially, I have surveyed the authentication protocols used in fog networks. Currently, I am designing message flows and implementing the solution.
- **Byzantine Fault Tolerant Routing on Skip-Graphs, Koç University.** (July 2020 – ongoing)
Recently started collaborating on a project where we aim to provide Byzantine fault tolerant routing on skip-graphs. Our protocol will also provide resilience against Sybil & churn attacks.
- **Authenticated Lookups on Skip-Graphs, Koç University.** (August 2019 – July 2020)
Studied digital signatures and implemented an identity-based threshold digital signature scheme from a reference paper. Realized the first ever implementation of a protocol that aims to provide fault-detection against routing attacks over skip-graphs. Deployed my implementation on AWS and took various measurements.
- **Consensus Simulation, Koç University.** (March 2019 – July 2019)
Studied consensus and skip-graphs. Performed crucial bug fixes on SkipSim, a scalable skip-graph simulator. Implemented the consensus layer (i.e. Proof-of-Validation) of LightChain blockchain architecture on SkipSim. Took various measurements that relate to the safety, liveness and replica availability that is provided by the protocol.
- **Hypergeometric Distributions Over Skip Lists, Koç University.** (November 2018 – March 2019)
Studied skip-lists and related algorithms. Studied churn and its modeling as a Weibull distribution. Implemented a lightweight skip-list simulator that supports churn and replication. Conducted hypergeometric experiments and took various measurements regarding the security, liveness and replica availability under churn.

Conference Demos / Presentations

- **A Proof-of-Concept Implementation of Guard Secure Routing Protocol**
Sanaz Taheri, Ali Utkan Şahin, Yahya Hassanzadeh, Öznur Özkasap
IEEE Symposium on Secure and Reliable Distributed Systems. (September 2020, to be presented)
- **The Skip-Graph Middleware Implementation**
Yahya Hassanzadeh, Nazir Nayal, Shadi Hamdan, Ali Utkan Şahin, Öznur Özkasap, Alptekin Küpçü
IEEE Symposium on Secure and Reliable Distributed Systems. (September 2020)
- **SkipSim: Scalable Skip-Graph Simulator**
Yahya Hassanzadeh, Ali Utkan Şahin, Öznur Özkasap, Alptekin Küpçü
IEEE International Conference on Blockchain. (May 2020)

Work Experience

- **Intern (Remote), DapperLabs, Vancouver – Canada.** (July 2019 – November 2019)
Worked on gossip protocols, their implementation and evaluation on a simulated environment that I have developed. The simulator is currently being used internally by the company.

Awards / Honors

- **DFINITY 2019 Scholarship, DFINITY, Zürich – Switzerland** (2019)
Received scholarship in the context of 2019 DFINITY Scholarship Program at the undergraduate level in which proposals are selected on their contribution to the goal of a public decentralized cloud.
- **Vehbi Koç Scholar, Koç University, Istanbul – Turkey.**
Awarded in Fall 2017, Spring 2018, Fall 2018 for maintaining 3.5+ SPA.