

# Fabian Spaeh

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## Education .....

**Ph.D. in Computer Science** (GPA 3.9) Sep 2020 – May 2025  
Boston University, Advised by Prof. Alina Ene Boston, MA

- Thesis “Efficient Algorithms for Online Resource Allocation and Submodular Maximization”
- NSF Travel Grant in 2024
- Teaching Fellow Excellence Award in 2022
- Dean’s Fellowship in spring 2021

**M.Sc. in Computer and Information Science** (VEUK award, GPA 4.0) Apr 2018 – Apr 2020  
University of Konstanz Konstanz, Germany  
**B.Sc. in Computer Science** (VEUK award for academic excellence, GPA 3.9) Oct 2013 – Feb 2018  
University of Konstanz Konstanz, Germany

## Work Experience .....

**Software Engineer, Machine Learning Modeling** Jun 2025 – Present  
Celonis, Inc. New York City, NY

**Intern, Machine Learning** Jun – Aug 2024  
Celonis, Inc. Palo Alto, CA

**Intern, Quantitative Researcher** Jun – Aug 2023  
TWT, Mathematics, Computer Graphics & Sustainability Engineering Munich, Germany

**Intern, Data Science** Jun – Aug 2020  
German Federal Bank (Eurosysteem), Division Monetary and Financial Statistics Frankfurt, Germany

## Relevant Coursework .....

**Boston University**  
Advanced Optimization Algorithms, Advanced Topics in CS Graph Analytics, Taming Big Data

**University of Konstanz**  
Methods of Network Analysis, Randomized Algorithms, Mathematics for Data Science

## Teaching .....

**Boston University**  
Teaching Assistant

- Randomness in Computing, Graduate Class. Fall 2021 and Fall 2022
- Advanced Optimization Algorithms, Graduate Class. Spring 2022 and Fall 2023

**University of Konstanz**  
Lab Instructor for Analysis and Linear Algebra, Discrete Mathematics and Logic, and Programming Course 2

## Technical Skills .....

Proficient in Python (PyTorch, scikit-learn, SciPy), mathematical programming (GLPK, Gurobi, cvxpy), C#, C++, Java, JavaScript, SQL, and Haskell.

## Publications and Manuscripts .....

- [1] T. Haris, F. Spaeh, S. Dragazis, and C. Tsourakakis, “Estimating hitting times locally at scale.” NeurIPS 2025.
- [2] F. Spaeh and A. Miyauchi, “An asymptotically optimal approximation algorithm for multiobjective submodular maximization at scale.” ICML 2025.
- [3] F. Spaeh, T. Chen, C.-H. Chiang, B. Shen, and C. Yu, “Query suggestion for retrieval-augmented generation via dynamic few-shot learning at celonis.” In submission.
- [4] D. Ristache, F. Spaeh, and C. Tsourakakis, “Countering election sway: Strategic algorithms in friedkin-johnsen dynamics.” In submission.
- [5] D. Ristache, F. Spaeh, and C. Tsourakakis, “Wiser than the wisest of crowds: The Asch effect and polarization revisited.” ECML PKDD 2024.
- [6] F. Spaeh, K. Sotiropoulos, and C. Tsourakakis, “ULTRA-MC: A unified approach to learning mixtures of markov chains via hitting times.” In submission.
- [7] F. Spaeh and C. Tsourakakis, “Markovletics: Methods and a novel application for learning continuous-time markov chain mixtures.” WWW 2024.
- [8] F. Spaeh, A. Ene, and H. L. Nguyen, “Online and streaming algorithms for constrained k-submodular maximization.” AAAI 2025.
- [9] F. Spaeh and A. Ene, “Online ad allocation with predictions.” NeurIPS 2023.
- [10] F. Spaeh and C. Tsourakakis, “Learning mixtures of markov chains with quality guarantees.” WWW 2023.
- [11] F. Spaeh and S. Kosub, “Global evaluation for decision tree learning.” arXiv, 2022.
- [12] T. Hepp, F. Spaeh, A. Schönhals, P. Ehret, and B. Gipp, “Exploring potentials and challenges of blockchain-based public key infrastructures.” IEEE INFOCOM Workshops, 2019.