

# Fabian Spaeh

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## Education .....

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| <b>Ph.D. in Computer Science</b> (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   |                     |
| <b>M.Sc. in Computer and Information Science</b> (VEUK award, GPA 4.0)                     | Apr 2018 – Apr 2020 |
| University of Konstanz   | Konstanz, Germany   |
| <b>B.Sc. in Computer Science</b> (VEUK award for academic excellence, GPA 3.9)             | Oct 2013 – Feb 2018 |
| University of Konstanz   | Konstanz, Germany   |

## Work Experience .....

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| <b>Software Engineer, Machine Learning Modeling</b>                          | Jun 2025 – Present |
| Celonis, Inc.  | New York City, NY  |
| <b>Intern, Machine Learning</b>  | Jun – Aug 2024     |
| Celonis, Inc.  | Palo Alto, CA      |
| <b>Intern, Quantitative Researcher</b>                                       | Jun – Aug 2023     |
| TWT, Mathematics, Computer Graphics & Sustainability Engineering             | Munich, Germany    |
| <b>Intern, Data Science</b>  | Jun – Aug 2020     |
| German Federal Bank (Eurosysten), Division Monetary and Financial Statistics | Frankfurt, Germany |

## Relevant Coursework .....

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| <b>Boston University</b>   |
| Advanced Optimization Algorithms, Advanced Topics in CS Graph Analytics, Taming Big Data |
| <b>University of Konstanz</b>  |
| Methods of Network Analysis, Randomized Algorithms, Mathematics for Data Science         |

## Teaching .....

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| <b>Boston University</b>  |
| Teaching Assistant  |
| – Randomness in Computing, Graduate Class. Fall 2021 and Fall 2022            |
| – Advanced Optimization Algorithms, Graduate Class. Spring 2022 and Fall 2023 |

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| <b>University of Konstanz</b>  |
| 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, and B. Shen, “Query suggestion for retrieval-augmented generation via dynamic in-context learning.” 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.