

Dr. Matthias Rost

LEADER · SOFTWARE ENGINEER · OPTIMIZATION EXPERT

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Qualifications Summary

I am an avid software engineer, a growing software engineering leader, and an award-winning researcher. My passions is optimization. Having a real-world impact is what drives me.

- 3+ years of successfully managing teams, recently across continents and in a startup environment.
- 10+ years of cloud optimization research experience with 20+ peer-reviewed publications
- 15+ years of software development experience (Golang, Python, Java, C/C++, SQL)

Professional Experience

Tech Lead Manager Streaming Platform OBSERVE, INC. 08/2024 - present

My team of 6 now owns a substantial part of our backend, namely our hand-crafted data processing platform and the scheduling service, processing more than 100M Snowflake queries and more than 2 PB per day.

Tech Lead Manager Resource Optimization OBSERVE, INC. 12/2023 - 07/2024

As hands-on TLM I managed and contributed to several key projects: further reducing latency across our services, delivering important product features such as a new pricing model, and improving our margin by over 30%.

Staff / Principal Software Engineer OBSERVE, INC. 09/2021 - 11/2023

- Rewrote scheduling service to reduce Snowflake costs (up to 50%) and tail queueing latency (up to 100x).
- Architected and delivered a complex cost control feature for background transformation costs within 6 months. This feature encompasses online usage predictions, novel graph algorithms, and a custom control logic.
- Built out a small team of 3 engineers over 2023 as tech lead (hiring, onboarding, code reviews).

Senior Cloud Optimization Developer GLOBAL CLOUD SERVICES, SAP SE 01/2020 - 08/2021

- As founding member of the Innovation Office I researched scalable cloud optimization algorithms to reduce TCO.
- Within 9 months, I developed an end-to-end prototype comprising data gathering and cleaning, optimization, and result analysis. Given my results, SAP's board accepted our business case and staffed the team with 30 FTEs.

Postdoctoral Researcher TECHNISCHE UNIVERSITÄT BERLIN (FG IMA) 04/2019 - 01/2020

Supervised student working on online strategies for wide-area analytics by replicating data to minimize traffic.

Optimization Consultant CYCLEVER GMBH 03/2018 - 06/2018

Implemented optimization models for business validation of piggy-backing and exchanging parcels on the fly.

Research and Teaching Assistant TECHNISCHE UNIVERSITÄT BERLIN (FG INET) 01/2014 - 03/2019

- Successful completion of 10+ research projects with 20+ publications on various cloud resource problems.
- Solved decade-long research challenge by developing first approximations for embedding virtual networks.
- Led a team of up to 5 student workers to develop an *algorithmic framework* [📄](#) for approximation algorithms.

Student Research Assistant TECHNISCHE UNIVERSITÄT BERLIN (FG INET) 11/2011 - 12/2013

Design and analysis of algorithms for multicast and aggregation trees and the offline scheduling of networks.

Student Tutor / Teaching Assignments FREIE UNIVERSITÄT BERLIN 04/2009 - 09/2010

Computer Architecture ('09, '10, '11), OSes and Computer Networks ('09), and Non-sequential Programming ('10).

Student Software Developer IVU TRAFFIC TECHNOLOGIES AG, BERLIN 08/2007 - 02/2009

Implemented features for IVU.fleet.data using C/C++ and PL/SQL for the management of core data.

Education

Ph.D. in Computer Science (Dr. rer. nat.)	TECHNISCHE UNIVERSITÄT BERLIN	01/2014 - 03/2019
Thesis:	Virtual Network Embeddings: Theoretical Foundations and Provably Good Algorithms ↗	
Committee:	Rolf Niedermeier · Thomas Zinner · Stefan Schmid · Anja Feldmann · Harald Räcke	
Defense:	March 25, 2019	
Grade:	SUMMA CUM LAUDE (WITH DISTINCTION)	
Master of Science in Computer Science	TECHNISCHE UNIVERSITÄT BERLIN	04/2011 - 01/2014
Thesis:	Optimal Virtualized In-Network Processing with Applications to Aggregation and Multicast ↗	
Advisors:	Anja Feldmann · Andreas Bley · Stefan Schmid	
Final mark:	1.3 (VERY GOOD)	
Study of Mathematics (undergraduate level)	FREIE UNIVERSITÄT BERLIN	10/2010 - 09/2013
Study of Computer Science (graduate level)	FREIE UNIVERSITÄT BERLIN	10/2009 - 09/2010
Bachelor of Science in Computer Science	FREIE UNIVERSITÄT BERLIN	10/2006 - 09/2009
Thesis:	Modeling and Solving Evacuation Problems using Network Flows (translated)	
Advisors:	Günther Rote · Martin Skutella	
Final mark:	1.2 (VERY GOOD)	

Awards and Grants

2x Quarterly Values Award	OBSERVE, INC.	Q4/2022, Q3/2024
Best PhD Thesis Prize	COMMUNICATION AND DISTRIBUTED SYSTEMS GROUP (KuVS)	05/2020
Best Paper Award	IFIP NETWORKING CONFERENCE 2018	05/2018
Hackathon Winner	GTM ³ HACKATHON @ OPERATIONS RESEARCH 2017	09/2017
Software Campus Grant	GERMAN FEDERAL MINISTRY OF EDUCATION AND RESEARCH	03/2016
Best Master Thesis Prize	COMMUNICATION AND DISTRIBUTED SYSTEMS GROUP (KuVS)	03/2015
Scholarship	GERMAN ACADEMIC SCHOLARSHIP FOUNDATION	10/2009 - 3/2013

Management Trainings by the Software Campus

Conflicts in Leadership Positions	DEUTSCHE POST AG	11/2016
Moderation for Professionals: Mastering Complex and Tough Situations	DATEV EG	11/2016
New as Executive - Basics for Tomorrow's Executive	HOLTZBRINCK PUBLISHING	09/2016
Projectmanagement Basics using the PMI-Standard	SCHEER HOLDING	04/2016
Intercultural Awareness	SAP SE	04/2016
Business meets Technology: Business Understanding for Engineers and Non-Economists	SIEMENS AG	03/2016

Extracurricular Activities

Amnesty International Deutschland e.V.	10/2007 - present
I was particularly active from 2007 to 2011 and mainly volunteered at Freie Universität Berlin's group and was the group's spokesperson, led the organization of lecture series and of the first Jugend@Amnesty event in Germany.	
German Academic Scholarship Foundation	10/2009 - 03/2013
I participated in excursions and a two-week course on field-programmable integrated circuits (FPGAs).	