Mihail Stoian

Email: mihail.stoian@utn.de
URL: stoianmihail.github.io

Education

University of Technology Nuremberg — Nov. 2023-present
PhD in Database Systems — *Nuremberg, Germany*
Advisor: Andreas Kipf
Topic: Foundation models for query optimization

Technical University of Munich — Oct. 2021-Aug. 2023
M.Sc. Elite Software Engineering — *Munich, Germany*
Passed with Honors (1.5/1.0)
Thesis: *Optimizing Linearized Dynamic Programming*
Supervisor: Thomas Neumann

Technical University of Munich — Oct. 2021-May 2023
M.Sc. Informatics — *Munich, Germany*
Passed with High Distinction (1.2/1.0)
Thesis: *On the Optimal Linear Contraction Order of Tree Tensor Networks, and Beyond*
Supervisor: Christian Mendl

Technical University of Munich — Oct. 2018-July 2021
B.Sc. Informatics — *Munich, Germany*
Passed with High Distinction (1.2/1.0)
Thesis: *An Efficient Implementation of Polynomial-Time Join Ordering*
Supervisor: Thomas Neumann

Work Experience

Applied Scientist Intern — July 2023–Oct. 2023
Amazon Redshift — *Munich, Germany*
Learned Systems Group

Student Research Assistant — Mar. 2019–Sept. 2023
TUM, Chair for Database Systems — *Munich, Germany*
`Umbra: A Flash-Based Database System with In-Memory Performance`
Implementing, improving, and testing the functionality

Student Research Assistant — Jan. 2023–Sept. 2023
TUM, Chair for Data Analytics and Machine Learning — *Munich, Germany*
Graph Learning with Differential Privacy

Research Assistant Intern — Aug. 2022–Oct. 2022
Oracle Labs — *Zurich, Switzerland*
`Graph-in-DB` team

Quantum Software Engineer Intern — Mar. 2021–May 2021
Infineon Technologies — *Munich, Germany*
Solving NP-hard supply chain problems via Quantum Annealing

Research Projects

NVIDIA Research July 2022-Sept. 2023
Student Research Project *Remote*
Einsum optimization on GPU
Advisor: Jean Kossaifi | Supervisor: Anima Anandkumar

TUM, Visual Computing & Artificial Intelligence Lab Apr. 2022-Aug. 2022
Practical Course *Munich, Germany*
Outcome: Twofold improvement over DCP, the deep learning approach for iterative closest point (ICP)
Advisor: Matthias Niessner

Publications

Lightweight Correlation-Aware Table Compression
Mihail Stoian, Alexander van Renen, Jan Kobiolka, Ping-Lin Kuo, Josif Grabocka, Andreas Kipf
3rd Table Representation Learning Workshop (TRL), 2024

Unified Mechanism-Specific Amplification by Subsampling and Group Privacy Amplification
Jan Schuchardt, **Mihail Stoian***, Arthur Kosmala*, Stephan Günnemann
37th Conference on Neural Information Processing Systems (NeurIPS), 2024

On the Optimal Contraction Order of Tree Tensor Networks, and Beyond
Mihail Stoian, Richard Milbradt, Christian B. Mendl
SIAM Journal on Scientific Computing, 2024

Approximate Min-Sum Subset Convolution
Mihail Stoian
22nd International Workshop on Approximation and Online Algorithms (WAOA), 2024

DataLoom: Simplifying Data Loading with LLMs
Alexander van Renen, **Mihail Stoian**, Andreas Kipf
Proceedings of the VLDB Endowment, Vol. 17, 2024

Corra: Correlation-Aware Column Compression
Hanwen Liu, **Mihail Stoian**, Alexander van Renen, Andreas Kipf
2nd Workshop on Cloud Databases (CloudDB), 2024

Fast Joint Shapley Values
Mihail Stoian
Student Research Competition, Companion of the International Conference on Management of Data, 2023

Faster FFT-based Wildcard Pattern Matching
Mihail Stoian
Student Research Competition, Companion of the International Conference on Management of Data, 2023

Concurrent Link-Cut Trees
Mihail Stoian
Student Research Competition, Proceedings of the International Conference on Management of Data, 2022

PLEX: Towards Practical Learned Indexing
Mihail Stoian, Andreas Kipf, Ryan Marcus, Tim Kraska
3rd International Workshop on Applied AI for Database Systems and Applications (AIDB), 2021

Benchmarking Learned Indexes
Andreas Kipf, Ryan Marcus, Alexander van Renen, **Mihail Stoian**, Sanchit Misra, Alfons Kemper, Thomas Neumann, Tim Kraska
Proceedings of the VLDB Endowment, Volume 14, 2021

RadixSpline: A Single-Pass Learned Index
Andreas Kipf, Ryan Marcus, Alexander van Renen, **Mihail Stoian**, Alfons Kemper, Tim Kraska, Thomas Neumann
3rd International Workshop on Exploiting AI Techniques for Data Management (aiDM), 2020

SOSD: A Benchmark for Learned Indexes
Andreas Kipf, Ryan Marcus, Alexander van Renen, **Mihail Stoian**, Alfons Kemper, Tim Kraska, Thomas Neumann
NeurIPS Workshop on Machine Learning for Systems, 2019

Invited Talks

What Selinger Forgot to Tell You About Query Optimization Systems Group, TU Darmstadt, June 2024 (remote)

What do databases and tensor networks have in common? University of Jena, August 2023

Interdisciplinary Projects

INSIGHT Mar. 2022-Oct. 2022

Chair of Functional Materials (Prof. Peter Müller-Buschbaum) *Munich, Germany*

Improved the performance of INSIGHT, the package used by the chair for X-ray measurements
Published in Journal of Applied Crystallography.

PushQuantum Apr. 2021-Aug. 2021

IQM Quantum Computers *Munich, Germany*

Organiq-Q: Quantum simulations for OLED properties (pitch)

Programming Competitions

SIGMOD Programming Contest Feb. 2022-Apr. 2022

ACM SIGMOD *Munich, Germany*

We implemented a blocking system for Entity Resolution
Ranking: 6th place, Team: HyTUM

Technical Skills

Languages: {
`"expert"` : { `C/C++`, `Python`, `SQL`, `Assembler` }
`"advanced"` : { `Java`, `Isabelle`, `HTML/CSS/JS` }
}
Frameworks: PyTorch, Spark

Awards

SIGMOD Student Travel Award 2023

Proposal: "Bridging the Gap Between Computational Fields"

Bronze Medal 2014

National Mathematics Olympiad, Romania

Scholarships

Deutschlandstipendium Apr. 2022-Mar. 2023

Allianz SE *Munich, Germany*

Scholarship awarded by the Ludwig Maximilian University of Munich

Language Skills

Romanian: Native
English, German: C2
French: C1
Greek: A2