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
Building *the* next-gen cloud database system

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

Preprints

Mihail Stoian. TSP Escapes the $O(2^n n^2)$ Curse, 2024 | TL;DR First improvement of Bellman's algorithm after 60 years.

Mihail Stoian. Did Fourier Really Meet Möbius? Fast Subset Convolution via FFT, 2024

Mihail Stoian. Sinking an Algorithmic Isthmus: $(1+\varepsilon)$-Approximate Min-Sum Subset Convolution, *In submission*, 2024

Hanwen Liu, **Mihail Stoian**, Alexander van Renen, Andreas Kipf. Corra: Correlation-Aware Column Compression, *In submission*, 2024

Jan Schuchardt, **Mihail Stoian***, Arthur Kosmala*, Stephan Günnemann. Unified Mechanism-Specific Amplification by Subsampling and Group Privacy Amplification, *In submission*, 2024

Mihail Stoian, Richard Milbradt, Christian B. Mendl. On the Optimal Contraction Order of Tree Tensor Networks, and Beyond, *In minor revision*, 2023

Publications

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

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

Mihail Stoian. Concurrent Link-Cut Trees, Student Research Competition, advised by Jana Giceva, *Proceedings of the International Conference on Management of Data, 2022*

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

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

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

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

Invited Talks

What do databases and tensor networks have in common? Universität 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"

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