Mihail Stoian

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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, *Submitted*, 2024

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

Jan Schuchardt, **Mihail Stoian**[*], Arthur Kosmala[*], Stephan Günnemann. Group Privacy Amplification and Unified Amplification by Subsampling for Rényi Differential Privacy, *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