# Mihail Stoian

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## Education

**University of Technology Nuremberg** — Nov. 2023-present
*PhD in Database Systems* — *Nuremberg, Germany*
Advisor: Andreas Kipf
Topic: Robust Query Processing

**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*
Quantum Algorithms group

## Awards

**SIGMOD Honorable Mention (Best Paper Runner-Up)** 2025
*DPconv: Super-Polynomially Faster Join Ordering*

**EDBT Best Demonstration Award** 2025
*Virtual: Compresing Data Lake Files*

**BTW Best Paper Award** 2025
*Optimizing Linearized Join Enumeration by Adapting to the Query Structure*

**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

## Research Projects

**NVIDIA Research** July 2022-Sept. 2023
*Student Research Project* *Remote*
Einsum optimization on GPU
Advisors: Jean Kossaifi, 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

## 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

## Language Skills

**Romanian**: Native
**English, German**: C2
**French**: C1
**Ancient Greek**: B1
**Modern Greek**: A2

## Invited Talks

*DPconv: Super-Polynomially Faster Join Ordering.* Gray Systems Lab, Microsoft, January 2025 (remote)

*Virtual: Compressing World's Parquet Files.* TUMuchData @TUM, January 2025

*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

## Publications

DPconv: Super-Polynomially Faster Join Ordering
**Mihail Stoian**, Andreas Kipf
*SIGMOD 2025*

Virtual: Compressing Data Lake Files
**Mihail Stoian**, Alexander van Renen, Jan Kobiolka, Ping-Lin Kuo, Andreas Zimmerer, Josif Grabocka, Andreas Kipf
*EDBT 2025*

Optimizing Linearized Join Enumeration by Adapting to the Query Structure
Altan Birler, **Mihail Stoian**, Thomas Neumann
*BTW 2025*

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@NeurIPS), 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 @VLDB), 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*