SHRIRAM CHANDRAN

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EDUCATION

ETH Zürich since Nov. 2025
Doctor of Sciences Computer Science Zürich, Switzerland

- Doctoral student at the Scalable Parallel Computing Laboratory.

ETH Zürich Sep. 2022 – Sep. 2025
Master of Science ETH in Computer Science Zürich, Switzerland

- Focus: Secure & Reliable Systems and Theoretical Computer Science.
- Thesis: HO-GDB: Grade 6/6

Indian Institute of Technology Madras Jul. 2018 – Jun. 2022
B. Tech. Computer Science and Engineering Chennai, India

- GPA: 9.04/10
- Thesis: Program Analysis - StarPlat DSL: Grade 9/10

PATENTS AND PUBLICATIONS

[1] A. Kumar*†, N. LS, **S. Chandran**, H. DJ, G. Sanjay, K. S. K. Reddy, N. Behera, and R. Nasre, Code generation and optimization for different targets for a graph dsl, Oct. 2025. [Online]. Available: http://dx.doi.org/10.22541/au.175987810.03504550/v1.

[2] M. Besta*†, **S. Chandran**, R. Gerstenberger, M. Lindner, M. Chrapek, S. H. Martschat, T. Ghandi, P. Iff, H. Niewiadomski, P. Nyczyk, J. Müller, and T. Hoefler, Psychologically enhanced ai agents, 2025. arXiv: 2509.04343 [cs.AI]. [Online]. Available: https://arxiv.org/abs/2509.04343.

[3] M. Besta*†, **S. Chandran***†, J. Cudak, P. Iff, M. Copik, R. Gerstenberger, T. Szydlo, J. Müller, and T. Hoefler, Higher-order graph databases, 2025. arXiv: 2506.19661 [cs.DB]. [Online]. Available: https://arxiv.org/abs/2506.19661.

[4] M. Kabić*†, **S. Chandran**, and G. Alonso, Maximus: A modular accelerated query engine for data analytics on heterogeneous systems, New York, NY, USA, Jun. 2025. DOI: 10.1145/3725324. [Online]. Available: https://doi.org/10.1145/3725324.

[5] R. Nasre, A. Kumar, E. Rajadurai, N. Behera, R. P. Muniasamy, S. Mohammed, S. Nitish, J. Khatri, N. S, **S. Chandran**, M. Venkatakrishna, and R. Lalwani, System and method for automatic parallel code generation for graph algorithms for multiple target architectures, Indian Patent 432922, Granted, Nov. 2022.

EXPERIENCE

Master Thesis with SPCL Oct. 2024 - Apr. 2025
HO-GDB: A Unified Framework for Integrating Higher-Order Structures into Graph Databases ETH Zürich

- Designed algorithms to project higher-order graphs as plain graphs, performance models and proofs of correctness.
- Reasoned about analytical and transactional integrity for higher-order OLTP and OLAP queries.
- Implemented our analysis in HO-GDB, a higher-order graph database with CRUD capabilities.
- Benchmarked HO-GDB across higher-order graph workloads on different datasets and demonstrated scalability.

Practical Work with Systems Group Oct. 2023 – July. 2024
GPU-Acceleration of the Maximus Database Engine ETH Zürich

- Implemented GPU support to Maximus, a distributed, scalable and heterogeneous database engine.
- Designed Arrow-compatible data structures to store databases on GPUs for GPU processing on various architectures.
- Integrated GPU-accelerated operators with the existing Maximus interfaces.
- Benchmarked Maximus-GPU on the complete TPC-H query set and demonstrated massive performance gains.

Bachelor Project with Prof. Rupesh Nasre
Jan. 2022 – Jun. 2022

Program Analysis - StarPlat DSL
IIT Madras

- Implemented compiler level optimizations for StarPlat, a graph processing DSL.
- Analyzed and implemented multiple optimizations for the DSL compiler using AST-level analyses.
- Conducted successful testing of the implemented optimizations on multiple large graphs across different algorithms.
- Produced positive performance gains for generated code.

Undergraduate Research with Prof. Raghavendra Rao
Aug. 2021 – Nov. 2021

Stability Analysis
IIT Madras

- Conducted a comprehensive literature review of previous research on stability of instances for various popular algorithms, in particular Bilu-Linial stability amongst other definitions.
- Analyzed stable instances of Christofides' algorithm under various stability conditions.
- Identified improved approximation bounds for stable instances of metric TSP.
- Developed new approximation algorithms for the vertex cover problem for almost-stable instances in random graphs.

Software Engineering Internship
May 2021 – Jul. 2021

Rubrik
Bangalore, India

- Developed a statistics system with the Blobstore team for analyzing backup metadata job performance.
- Designed a functional model for storing job statistics within their respective databases.
- Enabled access to histograms and statistical data to aid in debugging and data analytics.
- Validated the model on live clusters, demonstrating seamless integration with the main codebase.

Software Engineering Internship
Nov. 2020 – Jan. 2021

Godot Media
Bangalore, India

- Designed and constructed an automatic plagiarism checker to search text against documents on the internet.
- Implemented heuristics and parallelization to increase accuracy and reduce algorithm latency.
- Developed a graphical UI to accept data from a user and display results with highlighted matching text.
- Achieved highly accurate plagiarism detection on articles of up to 2000 words in just a few seconds.

SKILLS

Programming: (Proficient) C/C++, Python, Scala, Haskell, MPI/CUDA, (Competent) OCaml, Java, C#, RISC-V, x86, SQL, Cypher
Frameworks/Tools: Javascript, Django, HTML / CSS, LaTeX, Git, Coq

SCHOLASTIC ACHIEVEMENTS

JEE: All India Rank 74 in JEE (Advanced) 2018, All India Rank 221 in JEE (Main) 2018
Olympiads: Placed in the top 36 students in India in the 2018 Indian National Physics, Chemistry, and Astronomy Olympiads
KVPY: Two-time Indian Government KVPY fellow (All India Rank 72 in 2016, 68 in 2017)