Education

2020-Present Ph.D. in Computer Science, Stanford University, Stanford, CA.

Advised by Alex Aiken and Fredrik Kjolstad

2015–2019 BS in Computer Science, Carnegie Mellon University, Pittsburgh, PA.

Advised by Umut Acar

Dean's List, University and SCS College Honors

Experience

2022 Research Intern, NVIDIA, Santa Clara, CA.

Developed legate.sparse, a distributed and accelerated drop-in replacement for scipy.sparse.

2019-2020 Software Engineer, Cockroach Labs, New York, NY.

- o Improved stability and performance of CockroachDB's distributed SQL engine and schema management infrastructure.
- Contributed to development of a variety of large features in CockroachDB including ENUM types, User Defined Schemas, and Online Primary Key Changes.
- 2018 Software Engineering Intern, Uber Advanced Technologies Group, San Francisco, CA.
 - o Developed infrastructure for a migration from an internal data center to AWS.
 - o Implemented a file access system within AWS for integration with existing data center services.
 - o Dramatically enhanced scalability of batch compute jobs processing internal data.
- 2017 **Software Engineering Intern**, Facebook, Menlo Park, CA.
 - o Developed system to perform disruptive upgrades on network switches.
 - o Added packet subscription service for network switch agent debugging and maintenance.

Selected Research Projects

- 2022 legate.sparse with Michael Bauer, Wonchan Lee, Manolis Papadakis, Melih Elibol, Michael Garland
 Developing legate.sparse a distributed and GPU-accelerated drop-in replacement for scipy.sparse, enabling supercomputer scale performance from high-level Python code.
- 2021-2022 **Compiling Tensor Computations to Supercomputers** *with Fred Kjolstad, Alex Aiken* Developed DISTAL, a compiler for sparse and dense tensor algebra that targets distributed systems.
 - 2020 **Automated Mapping of Computation and Data** *with Alexandra Henzinger, Thiago Teixeira, Alex Aiken* Developed system to automatically discover strategies for mapping computation and data onto different processors and memories in a heterogenous system.
- 2018-2019 **Disentanglement** with Sam Westrick, Umut Acar

Designed efficient memory management systems for the memory access patterns of fork-join parallel programs.

Teaching

- 2021-2022 **Teaching Assistant** Stanford CS242 Programming Languages
- 2017-2018 Head Teaching Assistant CMU 15210 Parallel Algorithms and Data Structures
 - 2016 **Teaching Assistant** *CMU 15150* Functional Programming
- 2018-2020 **Diderot**

Developed and maintained a new course management platform, now used by 1500 students daily at CMU.

Publications

- SC 2022 SpDISTAL: Compiling Sparse Distributed Tensor Computations Rohan Yadav, Alex Aiken, Fredrik Kjolstad
- PLDI 2022 DISTAL: The Distributed Tensor Algebra Compiler Rohan Yadav, Alex Aiken, Fredrik Kjolstad
 - OOPLSA Compilation of Sparse Array Programming Models Rawn Henry, Olivia Hsu, Rohan Yadav, Stephen Chou,
 - 2021 Kunle Olukotun, Saman Amarasinghe, Fredrik Kjolstad
- POPL 2020 **Disentanglement in Race-Free Nested Parallel Programs** Sam Westrick, Rohan Yadav, Matthew Fluet, Umut A. Acar

Undergraduate Disentanglement, Theory and Practice Rohan Yadav

Thesis

Talks

Legate Sparse: Distributed and Accelerated Sparse Computing in Python

o Stanford HPC-Al Advisory Council, February 2023

SpDISTAL: Compiling Sparse Distributed Tensor Computations

- o Legion Retreat, December 2022
- o AHA Affiliates Retreat, December 2022
- o SC 2022, November 2022
- o Stanford Software Research Lunch, April 2022

DISTAL: The Distributed Tensor Algebra Compiler

- o Google Research, November 2022 (Invited)
- o PLDI 2022, June 2022
- o Vienna University of Technology, April 2022 (Invited)
- o Stanford Agile Hardware Project Group Meeting, Jan 2022
- o Cerebras Systems, Dec 2021 (Invited)
- o Oxford Tensor Computations Seminar, Nov 2021
- o Stanford Software Research Lunch, Nov 2021

On the Automated Mapping of Computation and Data Onto Heterogenous Machines

- o Stanford Software Research Lunch, Feb 2021
- o Legion Developer Meeting, Jan 2021

A Parallel Algorithm for Subgraph Isomorphism

o SPAA 2019, Jun 2019

Disentanglement, Theory and Practice

o CMU Meeting of the Minds, May 2019

Awards

- o NVIDIA Graduate Fellowship (2023-2024)
- o NSF Graduate Research Fellowship (2020 2023)
- o CRA Outstanding Undergraduate Researcher Nominee (2019)
- o Carnegie Mellon Senior Leadership Recognition (2019)
- o Presidential Scholar Semifinalist (2015)