Tim Baer

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tim-baer
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Education

BS | Computer Science & Math
University of Illinois | May 2022
Urbana-Champaign, IL

- CS GPA: 3.80
- Cumulative GPA: 3.70

Coursework

Algorithms & Numerics
Parallel Numerical Algorithms
Tensor Computations
Randomized Algorithms
Approximation Algorithms
Algorithms
Introduction to Algorithms
Numerical Analysis
Data Structures

Systems
Parallel Programming
Communication Networks*
System Programming
Computer Architecture

Math
Abstract Linear Algebra (Honors)
Probability & Statistics
Introduction to Combinatorics*
Elementary Real Analysis
Differential Equations
Fundamental Mathematics (Honors)

Technical Skills

Languages
Advanced
C++
C
Python

Intermediate
Java
Javascript

General
Software
Docker • Kubernetes
MPI • OpenMP • CUDA
Jenkins • SonarQube • Jacoco
Git • LaTeX • Maven

Libraries
Numpy • Scipy • Boost
Tensorflow • Horovod • BytePS
Ray • NCCL • Cyclops

* Spring 2022

Experience

C3.ai | Software Engineering Intern (Machine Learning), Platform
Jun 2021 - Aug 2021 | Redwood City, CA

- Researched open-source distributed deep learning frameworks & designed end-to-end integrations with the platform.
- Developed a transpiler for Python code generation to avoid serialization of large arrays across languages, improving performance up to 4000x.
- Presented hour-long talks on internship work & undergraduate research.
- Selected for a filmed 1:1 intern testimonial interview published to C3.ai's website.

Laboratory for Parallel Numerical Algorithms | Research Assistant
Aug 2019 - Current | Urbana-Champaign, IL

- Currently researching parallel/distributed approximate SSSP.
- Designed & implemented a parallel/distributed MSF algorithm that outperforms the state of the art.
- Developed a communication-efficient multilinear kernel to optimize a common type of graph update.
- Presented multiple invited talks with a theme of graph & tensor algorithms.

IBM | Software Engineering Intern (Backend), Db2z Tools
Jun 2020 - Dec 2020 | Virtual

- Integrated static/dynamic code analysis into CI pipeline to detect security issues.
- Automated API & unit tests to improve code coverage by 85%.
- Developed a new internal documentation tool.

Software Design Studio | Course Assistant
Aug 2019 - May 2020 | Urbana-Champaign, IL

- Moderated weekly code review sessions focusing on best practices.
- Graded & provided constructive feedback on C++/Java assignments.
- Interviewed new hire candidates.

Publications

Parallel Minimum Spanning Forest Computation using Sparse Matrix Kernels
Tim Baer, Raghavendra Kanakagiri, and Edgar Solomonik
Accepted to SIAM PP 2022.

Selected Awards

CRA Outstanding Undergraduate Researcher Award
Honorable Mention
This award program recognizes undergraduate students in North American colleges and universities who show outstanding research potential in an area of computing research.

Franz Hohn and J.P. Nash Scholarship
Awarded to one undergraduate in recognition of outstanding scholarship and promise in applied mathematics, computational science, or scientific computing.

James Scholar
Selection is based upon academic achievement as well as diversity of identity, geography, and major/area of study.