# 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.