# Nandeeka D Nayak

**Professional Website**: https://nandeeka.github.io/
**University Address**: 201 N Goodwin Ave, Urbana, IL 61801 · ndnayak2@illinois.edu

## GRADUATE EDUCATION

University of Illinois, Urbana-Champaign — Expected May 2026
Computer Science, Ph.D.
GPA: 4.0

**Relevant Coursework**
Spring 2023: Manycore Parallel Algorithms
Completed: Languages and Compilers for Edge Computing, Applied Parallel Programming, Parallel Computer Architectures, Advanced Compiler Construction, Computer Systems Organization, Advanced Computer Security
Audited: Numerical Analysis

## UNDERGRADUATE EDUCATION

Harvey Mudd College, Claremont, CA — May 2020
Computer Science, B.S.
GPA: 3.96

**Relevant Coursework**
Computer Science Clinic, Algorithms, Compiler Design, Programming Languages, Artificial Intelligence, Operating Systems, Software Development, Computer Security, Computability and Logic, Computer Systems, Data Structures/Program Development, Quantum Information, Advanced Computational Biology, Discrete Mathematics, Linear Algebra, Differential Equations, Multivariable Calculus
Audited: Stanford's Convolutional Neural Networks for Visual Recognition

## HIGH SCHOOL EDUCATION

Henry M. Gunn High School, Palo Alto, CA — Jun 2016
High School Diploma
GPA: 4.0; Weighted GPA: 4.49

## PUBLICATIONS

**Nandeeka Nayak**, Toluwanimi O. Odemuyiwa, Shubham Ugare, Christopher W. Fletcher, Michael Pellauer, and Joel S. Emer. *TeAAL: A Declarative Framework for Modeling Sparse Tensor Accelerators*. 2023. arXiv: 2304.07931 [cs.AR].

Jose Rodrigo Sanchez Vicarte, Pradyumna Shome, **Nandeeka Nayak**, Caroline Trippel, Adam Morrison, David Kohlbrenner, and Christopher W. Fletcher. "Opening Pandora's Box: A Systematic Study of New Ways Microarchitecture Can Leak Private Data". In: *2021 ACM/IEEE 48th Annual International Symposium on Computer Architecture (ISCA)*. 2021, pp. 347–360. DOI: 10.1109/ISCA52012.2021.00035.

**Nandeeka Nayak**, Makoto Nara, Timmy Gambin, Zoë Wood, and Christopher M. Clark. "Machine Learning Techniques for AUV Side-Scan Sonar Data Feature Extraction as Applied to Intelligent Search for Underwater Archaeological Sites". In: *Field and Service Robotics*. Ed. by Genya Ishigami and Kazuya Yoshida. Singapore: Springer Singapore, 2021, pp. 219–233. ISBN: 978-981-15-9460-1.

## AWARDS AND ACHIEVEMENTS

SURGE Fellowship — 2020-2025
Computer Science Departmental Honors (Harvey Mudd College) — 2020
Graduate with High Distinction (Harvey Mudd College) — 2020

NSF Graduate Research Fellowship Program Honorable Mention 2020
Wing and Ellen Tam Award for Excellence in Software Development 2019
Harvey Mudd Merit Scholarship 2016-2020
National Merit Scholarship Finalist 2016
NCWIT Award for Aspirations in Computing Certificate of Distinction Winner 2016
NCWIT Award for Aspirations in Computing National Runner-Up and Affiliate Award Winner 2015
Girl Scout Gold Award Recipient 2015

## POSITIONS

**Research Intern**, NVIDIA, Westford, MA May 2022 - Aug 2022

- Worked with domain experts in machine learning, tensor methods, and quantum circuit simulation to understand their workloads
- Designed a novel resource allocation heuristic for workloads with fused kernels
- Achieved a $> 25\times$ speedup over standard fully connected layers neural network using hardware-aware tensor decomposition

**Member of Technical Staff Intern**, Qumulo, Seattle, WA May 2020 - Jul 2020

- Designed and implemented the infrastructure to support flow controlling on the length of the write-ahead log (WAL) in Qumulo's distributed file system
- Investigated the root cause of both performance issues observed internally and those experienced by customers
- Rewrote parts of the block system in Rust and integrated it with the existing C code base

**Machine Learning Intern**, Miso Robotics, Pasadena, CA May 2019 - Aug 2019

- Performed semantic segmentation using convolutional neural networks on images of pizzas to describe the specific locations of toppings, the crust, and background
- Used the generated masks to localize the pizza in real space as well as describe how it could be improved
- Helped to implement a ROS node to pass the information to the robot and perform localization and error correction

**Researcher**, Lab for Autonomous and Intelligent Robotics, Harvey Mudd College Nov 2017 - May 2020

- Planned missions to survey new regions of the sea floor using the OceanServer IVER3 AUV
- Used data augmentation and convolutional neural networks with OpenCV and Tensorflow to automatically identify shipwrecks from side scan sonar images
- Wrote a paper on a new automatic target recognition pipeline and presented it at Field and Service Robotics (FSR) 2019

**Teaching Assistant**, Edhesive, New York, NY Aug 2016 - May 2020

- Tutored students from hundreds of schools in 47 states and 11 countries online in Introduction to Computer Science and AP Computer Science Principles
- Explained specific concepts to students, help debug code, and provide technical support
- Helped with curriculum development including proof-reading exams, rewriting test questions, and creating solution manuals

**Identity and Access Management Intern**, Visa, Foster City, CA May 2017 - Aug 2017

- Configured ForgeRock's OpenAM to manage access to a web application
- Used new authentication mechanisms, like OATH and PIV, to demonstrate strong second-factor authentication
- Built a web application with AngularJS on the front-end and Java on the back-end

**Creator and Organizer**, Programming Camps, San Jose, CA (goo.gl/0ZDTbE) Feb 2014 - Jul 2016

- Organized 5 free, weeklong programming camps for underrepresented students
- Designed the curriculum in MIT App Inventor and led a group of over 100 volunteers to teach it

- Earned the Girl Scout Gold Award

**Programming Director and Member**, Space Cookies, Mountain View, CA Aug 2012 - Jul 2016
- Participated in FIRST Robotics Competition in the fabrication and programming teams for 4 years
- Served on the leadership team for 2 years
- Redesigned the team's programming teaching curriculum and tripled the size of the programming team

**Teaching Assistant**, AP Computer Science, Gunn High School, Palo Alto, CA August 2015 - June 2016
- Worked with students who needed extra support
- Helped develop the next year's curriculum by writing a potential final project

**SERVICE**
**Organizer**: Women in Architecture Coffee Hour (Jan 2022 - present), Middle School Programming Camps (see above) (Feb 2014 - Jul 2016)
**Volunteer**: Visit Day Grad Ambassador (Mar 2022, Mar 2023), Grad Welcome Event Volunteer (Sep 2022), iPromise Mentor (August 2020 - May 2021)