

Akaash R. Parthasarathy

(470) 871-9690 | akaashrp@gmail.com | linkedin.com/in/akaashrp | akaashrp.github.io | github.com/akaashrp

EDUCATION

Georgia Institute of Technology

Expected Graduation: May 2025

Bachelor of Science in Computer Science

GPA: 4.0/4.0

- **Relevant Coursework:** HW/SW Co-Design for Machine Learning, Systems for Machine Learning, High-Performance Computing, Operating Systems, Advanced Computer Organization, Graduate Deep Learning, Computer Systems and Networks, Honors Design and Analysis of Algorithms, Honors Discrete Math

WORK EXPERIENCE

Incoming Software Engineering Intern

Jun 2025

Millennium Management

Software Development Engineering Intern

May 2024 – Aug 2024

Amazon

- Designed secure micro-frontend for inspecting and refreshing employee data caches using TypeScript and AWS CDK
- Implemented access control using AWS IAM and secured website via web app firewalls and client-side encryption
- Migrated over 90% of legacy users and achieved a 10-fold reduction in average turnaround time for customers

Machine Learning Engineering Intern

May 2023 – Jul 2023

EXL Service

- Collaborated with Xtrakt.AI team to build domain-agnostic document processing solutions using PyTorch and AWS
- Researched and benchmarked 20+ multimodal models for key information extraction from medical and insurance documents and achieved 95% F1 score using LayoutLMv3
- Implemented training and inference pipelines for custom model creation and integrated with front-end platform
- Applied few-shot learning to document image classification and custom NER for accurate data-constrained inference

Software Engineering Intern

Sep 2022 – Mar 2023

M2IOT Solutions (Industrial IoT Startup)

- Developed Python application for real-time PDF report generation from machine-collected data using PyFPDF
- Improved efficiency, executable size, and readability of 10000+ line Python codebase through QThread multithreading
- Engineered cross-platform alternative to Qt Designer for customizable creation of Qt Widgets using PyQt

RESEARCH EXPERIENCE

Undergraduate Researcher

May 2023 – Present

Fung Group, Georgia Tech School of Computational Science & Engineering (Prof. Victor Fung)

- Developing explainable models for materials applications and contributing to open-source MatDeepLearn package
- Devised novel derivative-based pre-training method to enhance graph neural network (GNN) performance on materials property inference tasks and improved over baseline by up to 25.1%
- Implemented sequential model-based optimization and improved model performance on materials datasets by 93%
- Building distributed GNN training framework on Frontier supercomputer using PyTorch FSDP and DeepSpeed ZeRO

Undergraduate Researcher

Jan 2023 – May 2024

Laboratory for Intelligent Decision and Autonomous Robots (Profs. Ye Zhao and Seth Hutchinson)

- Investigated implicit neural scene representation for SLAM systems and safe navigation planning for quadrupeds
- Leveraged Mask R-CNN for object instance segmentation and mask generation in 3D indoor space reconstructions
- Adapted vectorized mapping for NeRF-SLAM to 50 multi-instance object classes via geometric prior aggregation
- Implemented deep reinforcement learning algorithm for decentralized multi-robot collision avoidance in unpredictable environments and benchmarked performance against gap-based planners using ROS, STDR, and Stage

PROJECTS

Vasuki: Minimizing Makespan for Offline LLM Batch Inference | *PyTorch, Vidur, CUDA, C++, Python*

- Designing system for offline LLM batch inference using bin packing, task reordering, and speculative decoding
- Implemented KV-cache offloading to CPU, yielding up to 96% reduction in memory usage for decode iterations

Multi-Level Layer-Wise Quantization for CNNs | *PyTorch Edge, TensorFlow Lite, Quant, QKeras, ONNX*

- Formulating novel heuristic to estimate layer importance and exploring multi-level quantization (3+ levels) for CNNs

PUBLICATIONS

AR Parthasarathy, V Fung. Scalable and Explainable Foundation Graph Neural Networks for Materials Property Inference Tasks. *In Preparation*.

AR Parthasarathy*, KA Sohrab*, LL Shi*, S Cheekati*. Vasuki: Minimizing Makespan for Offline LLM Batch Inference. *In Preparation*.

AR Parthasarathy*, A Bhatti*, A Gandhi*, AS Palasamudram*. A Position-Aware Heuristic for Multi-Level Mixed-Precision Quantization of Convolutional Neural Networks. *In Preparation*.

S Jia, **AR Parthasarathy**, R Feng, G Cong, C Zhang, V Fung. Derivative-based Pre-training of Graph Neural Networks for Materials Property Predictions. *Digital Discovery*.

AR Parthasarathy. Analysis of the Trust and Resilience of Consumer and Industrial Internet of Things (IoT) Systems in the Indian Context. *Cyber Security and Digital Forensics: Proceedings of ICCSDF 2021*.

AWARDS

President's Undergraduate Research Award Fall 2024
Georgia Tech College of Computing

Faculty Honors Fall 2022, Spring 2023, Fall 2023, Spring 2024
Georgia Tech College of Computing

Dean's List Fall 2022, Spring 2023, Fall 2023, Spring 2024
Georgia Tech College of Computing

Third Place in Web3 ATL Hackathon Predict-ETH Challenge Nov 2022
404 DAO / Ocean Protocol

All-India Rank 3 (ISC Board Examinations) Jul 2022
Council For The Indian School Certificate Examinations

TEACHING EXPERIENCE

Teaching Assistant: Design and Analysis of Algorithms (CS 3510) Aug 2024 – Present
Georgia Tech College of Computing

- Collaborating with course instructor to design assignments and providing constructive feedback during grading
- Conducting weekly office hours open to 500+ students and fostering an inclusive and collaborative environment

COMMUNITY INVOLVEMENT

Marketing Team Member Jan 2023 – Present
HexLabs

- Strategically engaged with professors and university communities to increase participation in HexLabs' events
- Planned and executed HackGT, coordinating logistics and participant experiences for 1500+ hackers around the world

Operations Team Member Aug 2023 – May 2024
India Club at Georgia Tech

- Coordinated logistics for events including Garba, Diwali, and Holi for 1000+ members of the Georgia Tech community

SKILLS

Languages: Python, Java, C++, C, TypeScript (React, Node.js), SQL, C#, MATLAB, Bash, Smithy

DevOps/Cloud: Git, Docker, AWS, Microsoft Azure, Google Cloud, REST APIs, Jira

Frameworks/Libraries: OpenCV, NumPy, pandas, scikit-learn, TensorFlow, PyTorch, Matplotlib, ROS, CUDA, MPI

Hardware/Infrastructure: OLCF Frontier, NERSC Perlmutter, Raspberry Pi, Arduino, Industrial Control Systems

*Equal contribution