Ashwath V A

[Ashwath Vaithinathan Aravindan]

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EDUCATION

University of Southern California   Aug 2024 — May 2026 (expected)
Master of Science in Computer Science (Artificial Intelligence)

Amrita Vishwa Vidyapeetham   Oct 2020 — Jun 2024
Bachelor of Technology in Computer Science and Engineering   *GPA:* 9.57/10 (Dept. 1st/421)

EXPERIENCE

Research Intern | CREB, Universitat Politècnica de Catalunya   Jan 2024 — Jul 2024
- Built a synthetic data generator and conducted a comparative study on the effectiveness of CNNs, ViTs and their attention mechanisms in identifying and localizing Retinopathy of Prematurity (RoP), guided by Dr. Raul Benitez.
- **Tech Stack:** TensorFlow & Keras, skan, Python

Research Intern | Amrita x Sony - SSUP   Aug 2023 — Jun 2024
- Built a control system for efficient low-cost food drying in a solar polyhouse using cyber-physical modelling and simulation which achieved a 10 - 15% improvement in drying efficiency using only an exhaust fan as the actuator.
- **Hardware:** Sony Spresense MCU, ESP32, Arduino Uno, SHT-25, HC-SR04

Software Engineering Intern | Intuit   May — Jul 2023
- Worked on revamp of ItsDeductible - a product of Intuit for tracking charitable donations used by over 200k users.
- Built an intuitive web experience on a micro-frontend architecture with caching, logging, and analytics.
- **Tech Stack:** React.js, Redux, Redux-Saga, Apollo GraphQL, TypeScript

Open-source Developer | Helmholtz Analytics Toolkit (Heat)   Jun 2022 — present
- Designed the new sparse module for Heat - a distributed tensor framework for HPC systems with 50k+ downloads.
- Implemented the sparse matrix classes - DCSR_matrix and DCSC_matrix. Currently working on sparse matmul.
- **Tech Stack:** PyTorch, MPI, Python

Open-source Developer | MuseScore - Google Summer of Code'21   May — Aug 2021
- Developed Chord Symbol Style Editor for MuseScore in collaboration with other developers.
- Reduced the need for custom XML files by almost 80%, improving accessibility to less technically inclined musicians.
- **Tech Stack:** Qt library, C++, QML

PUBLICATIONS

1. Ashwath, V. A., Sikha, O. K., & Benitez, R. (2023). TS-CNN: a three-tier self-interpretable CNN for multi-region medical image classification. IEEE access. | Paper | Code

2. Ashwath, V. A., Ayyagari, A. S., Deebakkarthi, C. R., & Arun, R. A. (2023, August). Building of Computationally Effective Deep Learning Models using Attention-Guided Knowledge Distillation. In 2023 12th International Conference on Advanced Computing (ICoAC) (pp. 1-8). IEEE. | Paper | Code

PROJECTS

Course Binder | Github   Feb — Jun 2023
- Developed a digital course file for faculty to maintain records of courses taught with features like messaging, tasks, notifications and analytical dashboard to better assist coordination among faculty.
- **Tech Stack:** Next.js, React.js, Firebase (Firestore, Auth, Cloud Storage)

SpeedyTax | Github   Nov 2021 — Jan 2022
- Built a desktop application for filing tax returns, aided by tax consultants.
- Interactions with the database are completely asynchronous, making the app highly responsive.
- **Tech Stack:** React, Electron, Sqlite3, TypeScript

LEADERSHIP & ACHIEVEMENTS

- Intuit's Spotlight recognition - for exemplary performance during the summer internship.
- FOSS Lead, GDSC - guided students and organized seminars on the development of open-source software.
- Placed 231st in Round G and 314th in Round H (of 10k+ globally) in Google Kickstart.
- 3x Regionalist in the International Collegiate Programming Contest (ICPC).
- Achieved a 99.5^{th} percentile score in the Joint Entrance Examination taken by more than 1 million candidates.
- Student Head, Atal Tinkering Lab - Led the student council responsible for the management and outreach of the lab. Conducted workshops and mentored students in exploring science, electronics, robotics, etc.
- Flight Cadet, NCC - Participated in awareness campaigns and volunteered to clean rural areas.
- Best Outgoing Student Award - Batch of 2020, SBOA Matric. & Higher Secondary School.