Ashwath Vaithinathan Aravindan

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GitHub: Mystic-Slice | **LinkedIn:** linkedin.com/in/ashwath-va | **Website:** mystic-slice.github.io

Education

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

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

Skills

Deep Learning: TensorFlow & Keras, PyTorch, Scikit-learn, Numpy, Scipy, Pandas, Matplotlib, Pillow, OpenCV
Web/App Development: React.js, Next.js, Redux, Redux-Saga, GraphQL, Flask, Langchain, Qdrant, Firebase (Firestore, Auth, Cloud Storage), Sqlite3, Qt(C++), Electron.js
Hardware: Sony Spresense MCU, ESP32, Arduino Uno, SHT-25, HC-SR04
Languages: Python, C++, TypeScript, Go, C, Rust

Experience

Research Intern **Jan 2024-Jul 2024**
CREB, Universitat Politècnica de Catalunya | **Project** **Remote**
- Implemented a synthetic data generator and conducted a comparative study on the effectiveness of CNNs & ViTs with attention mechanisms in identifying and localizing Retinopathy of Prematurity (RoP), guided by Dr. Raul Benitez.

Research Intern **Aug 2023-Jun 2024**
Amrita x Sony - SSUP **Coimbatore, India**
- Devised a control system for efficient low-cost food drying in a solar polyhouse using cyber-physical modelling and simulation, resulting in a 10 - 15% improvement in drying efficiency with an exhaust fan as the only actuator.

Open-source Developer **Jun 2022-Jun 2024**
Helmholtz Analytics Toolkit (Heat) | **Project** **Remote**
- Developed the new sparse module for Heat - a distributed tensor framework for HPC systems with 50k+ downloads.
- DCSR_matrix and DCSC_matrix display about 76% improvement in performance in place of dense matrices.

Software Engineering Intern **May 2023-Jul 2023**
Intuit **Bangalore, India**
- Contributed to the revamp of ItsDeductible - a product of Intuit for tracking charitable donations with over 200k users.
- Constructed an intuitive web experience on a micro-frontend architecture with caching, logging, and analytics.

Open-source Developer **May 2021-Aug 2021**
MuseScore - Google Summer of Code'21 | **Project** **Remote**
- Designed the 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.

Publications

- 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
- 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

SmartVidIndex | Project **Jul 2024-Present**
- Built an intelligent video index that can answer user queries and retrieve relevant snippets from a video collection.

Course Binder | Project **Feb 2023-Jun 2023**
- Developed a digital course file for faculty to maintain records of courses taught with features namely messaging, tasks, notifications and analytical dashboard to better assist coordination among faculty.

Leadership & Achievements

- Intuit's Spotlight recognition - for exemplary performance during the summer internship.
- FOSS Lead, GDSC - guided students and organized seminars on development of open-source software.
- Reach an all-time highest rating of 1645 (Expert) on Codeforces and 1903 on Codechef.
- 3x Regionalist in the ICPC and placed 231^{st} in Round G and 314^{th} in Round H (of 10k+ globally) in Google Kickstart.
- Head of Student Council, Atal Tinkering Lab - conducted workshops for students in exploring science & electronics.
- Best Outgoing Student Award - Batch of 2020, SBOA Matric. & Higher Secondary School.