

## AJAY VIKRAM PERIASAMI

Email: [ajayvikramp@gmail.com](mailto:ajayvikramp@gmail.com); Mobile: +1(919) 641-7168; Github: [ajay-vikram](https://github.com/ajay-vikram); Portfolio: [ajayvikram](https://ajayvikram.com)

### EDUCATION

#### Duke University | Durham, North Carolina

Aug 2025 - Present

Master of Science in Computer Science (Artificial Intelligence / Machine Learning specialization)

Relevant coursework: Introduction to Deep Learning, Theory & Algorithms of Machine Learning, Building Intelligent Agents

#### National Institute of Technology Karnataka (NITK) | Surathkal, Mangaluru, India

Dec 2020 - Apr 2024

Bachelor of Technology, Computer Science and Engineering, GPA: 9.46 [Ranked 4/130]

Relevant coursework: Machine Learning, Deep Learning, Digital Image Processing

### RESEARCH EXPERIENCE

#### Graduate Research Assistant | Duke Institute for Brain Sciences | Duke University

Sept 2025 - Present

- Working on Deep Learning techniques for Functional Magnetic Resonance Imaging (fMRI) analysis.

#### Machine Learning Research Intern | Indian Institute of Science (IISc) | Bengaluru

May 2024 - July 2025

- Developed an asynchronous satellite tracking algorithm using event-based clustering, optimized for real-time inference on ARM Cortex-A72 and Cortex-M7 processors.
- Terarized CNNs from 32-bit to 2-bit for Human Activity Recognition on Radar data, achieving 16x memory compression with only a 0.5% accuracy drop.
- Participated and ranked 5th in the IEEE BioCAS 2024 Grand Challenge: Trained, efficient LSTM models for neural decoding in non-human primate motor control.
- Explored the potential of State Space Models like S4, LMU, and Mamba, training them on diverse real-world datasets for gesture, speech emotion, and human activity recognition, and quantized the model to 8-bit.
- Technologies used: Python, C, PyTorch, Metavision SDK.

### WORK EXPERIENCE

#### Machine Learning Intern | Lamarr | Remote

Mar 2024 - Apr 2024

- Developed a Draft Bot that fetches relevant legal document templates based on user prompts, auto-generates placeholders for customization, and allows downloads in Word and PDF formats.
- Performed backend fixes for integrating Table Transformer and TrOCR into the existing codebase.
- Fine-tuned the Qwen1.5-14B model for a custom dataset, optimizing model performance for specific tasks.
- Developed a SalesGPT agent for automating timed email communication with users and promoting services.
- Technologies used: Python, LangChain, Llama Factory.

#### Software Intern | Qualcomm | Hyderabad

May 2023 - July 2023

- Developed and optimized a memory analysis tool, resulting in 85% faster processing and 75% memory savings.
- Improvements made include automation of the entire pipeline, faster loading, cloud-based deployment, enhanced UI, authentication, user notification, and load balancing.
- Simplified the user process to just provide a changelist ID and receive memory analysis notifications via email.
- Enhanced UI with memory graphs, memory organization in a tree layout, filtering, and sorting for better interpretability.
- Automated the pipeline with Jenkins, deployed using Docker + Kubernetes with authentication and load balancing.
- The tool was widely adopted across teams and led to a full-time offer based on performance.
- Technologies used: Python, Vite, React, Node, MongoDB, Jenkins, Docker, Kubernetes.

### RESEARCH PROJECTS

#### Autonomous Driving on CARLA | Python, PyTorch, CARLA [Team: 3, Role: Lead]

Oct 2023 - Mar 2024

- Developed ViTFuser, an efficient model for self-driving on the CARLA simulator, improving the base model.
- Achieved a 26% increase in driving score by integrating stage-wise fusion between CNN backbones and ViT transformers for feature extraction, with a Feature Pyramid Neck (FPN) component for improved object detection.
- Achieved a 67% reduction in memory usage compared to the baseline model.

#### Breast Cancer Detection in Mammograms | Python, TensorFlow [Team: 2]

Sept 2023 - Dec 2023

- Collaborated with a Ph.D. student to detect breast cancer and predict BI-RADS scores from digital mammograms.
- Explored CNN and transformer-based approaches, focusing on patch-wise ROI training and detection.
- Improved model accuracy from 65% to 75% by leveraging transformer-based architectures.

#### Credit Card-Based Market Segmentation | Python, PySpark, Tensorflow [Team: 2, Role: Lead]

Aug 2023 - Dec 2023

- Developed an end-to-end clustering solution for financial data to segment credit card users by behavior.
- Utilized Apache Spark for scalable data processing, reducing computation time on large datasets.
- Enabled detailed customer profiling for targeted marketing through interpretable cluster analysis.

#### Social Engineering and Fake News Ontology | Python, Onto4All [Team: 2, Role: Lead]

Feb 2023 - April 2023

- Designed a domain ontology to detect social engineering attacks via fake news.
- Developed key taxonomies, relationships, and rules to identify misinformation patterns.
- Created a structured framework for automated detection and online security solutions.

## ACADEMIC PROJECTS

**Furniture Trial App** | Flutter, ARCore [Team: 2, Role: Lead]

Sept 2022 - Dec 2022

- Developed an Augmented Reality-based app to visualize furniture in live environments.
- Designed using a Model Driven Architecture (MDA) consisting of the Computation-Independent, Platform-Independent, and Platform-Specific models.

**Indian Judiciary Management System** | HTML, CSS, JavaScript, PHP, MySQL [Team: 3, Role: Lead]

Feb - May 2022

- Developed a website to digitalize judiciary activity routines with features such as filing/scheduling cases, appointing judges, finding/requesting lawyers, and adding/modifying/deleting laws.

**Operating System Simulator** | HTML, CSS, JavaScript [Team: 10]

Mar 2022 - May 2022

- Developed a website to visualize operating system concepts.
- Developed a simulator for page replacement algorithms, such as FIFO, Optimal, LRU, MRU, and Random.

**Stuck At Faults Simulator** | HTML, CSS, JavaScript [Team: 5]

Sept 2021 - Dec 2021

- Developed a website hosting a virtual lab to detect faults in logic gates.
- Created simulators demonstrating SA0 and SA1 faults in NAND and NOR logic gates.

## PERSONAL PROJECTS

**Handwritten Digit Predictor App** | Flutter, TensorFlow Lite, Python

Oct 2023 - Nov 2023

- Developed a mobile app for handwritten digit recognition, supporting image upload, and interactive on-screen drawing.

**YouTube Assistant** | Python, LangChain

Mar 2024 - Apr 2024

- Developed a tool to transcribe YouTube videos and answer video-related questions.
- Implemented a summarization feature for quick content review and enhanced video navigation.

## TECHNICAL SKILLS

- Programming Languages:** Python, C, C++, JavaScript
- Machine Learning:** TensorFlow, PyTorch, LangChain, MATLAB, Brevitas
- Web Development:** HTML/CSS, React, Node.js
- Database Management:** MySQL, MongoDB
- Development Tools:** Docker, Visual Studio Code, Git, Kubernetes

## CERTIFICATIONS

- Mathematics for Machine Learning: Linear Algebra | [Coursera](#) Feb 2024
- Identify Damaged Car Parts with Vertex AutoML Vision | [Coursera](#) Jan 2024
- Introduction to Computer Vision with TensorFlow | [Coursera](#) Jan 2024
- Fraud Detection on Financial Transactions with Machine Learning on Google Cloud | [Coursera](#) Jan 2024
- Postman API Fundamentals Student Expert | [Postman](#) Aug 2023
- Unsupervised Learning, Recommenders, Reinforcement Learning | [Coursera](#) Mar 2023
- Automatic Machine Learning with H2O AutoML and Python | [Coursera](#) Mar 2023
- Supervised Machine Learning | [Coursera](#) Feb 2023
- Advanced Learning Algorithms | [Coursera](#) Feb 2023
- IoT, Robotics and Embedded Systems | [ImmoVidu](#) Jan 2021

## PUBLICATIONS

- Ajay Vikram P**, Atanu Chatterjee, et al. "ViTFuser: Advancements in Global Context for Autonomous Vehicles," *6th International Conference on Machine Learning, Image Processing, Network Security, and Data Sciences (MIND 2024)* (accepted).
- Shankaranarayanan H, Satyapreet Singh Yadav, Adithya Krishna, **Ajay Vikram P**, Mahesh Mehendale, Chetan Singh Thakur. "HOMI: Ultra-Fast EdgeAI Platform for Event Cameras," *IEEE Transactions on Circuits and Systems for Artificial Intelligence* (under review).

## POSITIONS OF RESPONSIBILITY

**Placement Coordinator** | Career Development Center | NITK

Jun 2023 - Apr 2024

Facilitated communication between prospective employers and students. Managed the end-to-end placement process, coordinating logistics, schedules, and requirements. Arranged special student programs to develop technical skills based on industry feedback.

## EXTRACURRICULAR

**Volunteer Mentor** | Team Everest NGO | Remote

Feb 2024 - Mar 2024

Provided one-on-one mentorship to a student, focusing on leadership development. Facilitated discussions and activities to enhance leadership skills such as communication, decision-making, conflict resolution, empathy, honesty, and problem-solving.

## AWARDS

- Ranked 3rd in school in Class 10 ICSE Board Examinations; achieved a perfect score of 100/100 in Computer Science.
- Awarded the Annual Proficiency Prize for Academic Excellence for 7 years in a row.