Aryan Mathur

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EDUCATION

- **Indian Institute of Technology Palakkad** — *2022- present*
  Bachelor of Technology in Electrical Engineering with Minor in Data Science ; GPA: 7.97 — Kerala, India
- **Little Angels School Sonipat** — *2007-2021*
  Central Board of Secondary Education Class XII: 97.4%; Class X: 98.2% — Haryana, India

WORK EXPERIENCE

- **Accenture** — *May 2025 - July 2025*
  Advanced Application Engineering Intern — Mumbai, India
  – Built cloud-native Java applications with scalable REST APIs, integrated NLP services into existing systems.
  – Designed and deployed end-to-end software pipelines on AWS using SageMaker, S3, and Lambda.
  – Applied DevOps practices for CI/CD, monitoring, and automation of data workflows.
- **EasyAlgo** — *May 2024 - August 2024*
  AI/ML Intern — New Delhi, India
  – Engineered predictive **time-series models** for stock market using Python, TensorFlow, and statistical techniques.
  – Engineered **NLP-driven sentiment analysis** pipelines from financial news to generate trading signals and optimized data workflows with **SQL, efficient data structures, and algorithmic techniques**

RESEARCH PUBLICATIONS

- **Fight Scene Detection and Violence Highlight Generation System**
  – Architected a custom CNN–BiLSTM model for fight scene detection, achieving 93.5% accuracy, built a temporal highlight generation pipeline for summarizing violent segments in long-form videos. arXiv.
- **Adapting Interleaved Encoders with PPO for Language-Guided Reinforcement Learning in BabyAI**
  – Implemented **Perception–Decision Interleaving Transformer (PDiT)** with PPO to improve multimodal grounding. Achieved **42% lower reward variance** and faster convergence (**160k** steps vs baseline 200k). arXiv:2510.23148
- **Explainable Detection of AI-Generated Images**
  – Proposed an explainable image authenticity detector combining a lightweight CNN (*Faster-Than-Lies*) and *Qwen2-VL-7B* for artifact localization. Achieved **96.5% accuracy** on the extended CiFAKE dataset with **175 ms inference latency** on 8-core CPUs, enabling real-time edge deployment. arXiv:2510.23775.

PROJECTS

- **VartalApp** — *GitHub*
  Full-Stack Collaborative Classroom Application — June 2025 – Present
  – Designed and built a **cross-device full-stack application** enabling screen sharing, video sharing, chat, collaborative canvas, AI assistance, cloud persistence, and file sharing for classroom environments.

- **AI Generated Image Detection and Explanation Generation** — *Github*
  Adobe Research — November 2024 - December 2024
  – Developed a system to identify whether or not an image is AI generated along with accurate natural language explanations for the detection. Used multimodal learning , **Binary Neural Networks (BNNs)** and **Vision-Language Models (VLMs)** to detect AI images and generate image explanations. The solution works at an accuracy of **96.5%**.

TECHNICAL SKILLS

- **Languages:** Python, C++, Java, MATLAB, JavaScript, SQL
- **Backend and Frameworks:** Swing, Spring Boot, Microservices, Node.js, DBMS
- **AI/ML:** Deep Learning, LLMs, NLP, RAGs, Computer Vision, Reinforcement Learning , Transformers, XAI, Vision–Language Models, TensorFlow, PyTorch, Scikit-learn , Machine Learning, Gen AI
- **DevOps & Cloud:** AWS (Lambda, S3, SageMaker), Azure DevOps, Kubernetes, CI/CD Git, Docker, Maven, Linux, DBMS

ACHIEVEMENTS

- **Adobe AI Challenge 2024**, Ranked 9th among all IITs
- **Flipkart GRiD 7.0 Hackathon** , National Semi-Finalist
- **Amazon ML Challenge 2025** , Top 0.9% , Ranked **251/27,600+**
- **National Physics Olympiad** , AIR 433 (Top 0.2%)

POSITIONS OF RESPONSIBILITY

- **Placement Coordinator**, CDC, IIT Palakkad — *May 2025- Present*
- **Founder and President**, Entrepreneurship Cell, IIT Palakkad — *August 2024 - May 2025*
- **Contingent Leader**, Inter IIT Tech Meet 13.0 @ IIT Bombay — *June 2024 - December 2024*