# Aryan Raj

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## Education

**SRM Institute of Science and Technology** — Chennai, IN
*B.Tech Computer Science and Engineering with spl. in Software Engineering* — *May 2021 – May 2025*

## Experience

**Machine Learning Engineering-Intern** — Aug 2024 – Present
*HyperVerge* — *Bengaluru, IN*

- Developed and fine-tuned LLM-based solutions to automate KYC and fraud detection workflows, tailored for real-world, domain-specific regulatory use cases across financial institutions.
- Led evaluation and benchmarking of LLMs on over a million real-world data points, setting up scalable performance monitoring pipelines and achieving industry-accepted False Acceptance Rate (FAR) and False Rejection Rate (FRR) thresholds.
- Optimized and deployed state-of-the-art computer vision and NLP models for identity verification, significantly improving inference speed and accuracy under production constraints.
- Applied MLOps best practices, including CI/CD pipelines, model versioning, and monitoring, to ensure scalable deployment and continuous integration of machine learning components in enterprise environments.

**Machine Learning Intern** — Jan 2024 – Aug 2024
*Emendo AI* — *California, USA (Remote)*

- Engineered and deployed AI solutions leveraging the AWS ecosystem with a focus on Generative AI to build scalable, client-centric applications.
- Developed and maintained 10+ Generative AI-based microservices with industry-standard integrations using AWS Lambda, API Gateway, and OpenTelemetry for observability.
- Architected scalable, serverless backends to support efficient retrieval and generation workflows across diverse application domains.
- Led the development of a robust AI system testing framework that reduced production bugs by 20% through automated evaluation pipelines.

**Research Intern** — Feb 2023 – Jul 2023
*Indian Institute of Technology, Madras (IIT M)* — *Chennai, IN*

- Collaborated with the Department of Ocean Engineering to design and implement a machine learning-based anti-collision system, improving accuracy of existing solutions by over 28%.
- Developed marine object detection, tracking, and localisation systems using stereo vision-based camera setups for alternative navigation in unmanned surface vehicles (USVs).
- Worked with state-of-the-art computer vision models and successfully deployed the solution on edge-based IoT hardware for real-time maritime applications.
- Utilized ESP32 for lightweight onboard control, and led physical experiment verification in a simulated wave basin and Unity-based virtual marine environments.

## Projects

**Educative.AI** | *Python, FastAPI, React.js, TailwindCSS, LLMs, TensorFlow*

- Developed a student assistance tool integrating OCR and 10+ fine-tuned open-source LLMs to process handwritten and blackboard notes.
- Implemented a FastAPI backend and React.js frontend for features such as MCQ generation, speech-to-text doubt resolution, and structured note organization.
- Enabled automatic resource retrieval and summarization, enhancing accessibility and productivity for students.

**PaperPilot** | *React.js, scikit-learn, AWS, Vercel, Python, JavaScript, TensorFlow*

- Designed a personalized academic paper recommendation engine using TF-IDF and KNN-based algorithms.
- Curated and cleaned a dataset of 5000+ IEEE papers across 30+ research areas for relevance and diversity.
- Integrated AWS SES to automate personalized email delivery of top-matched research papers.

**Open-KYC** | *Next.js, OpenCV, TensorFlow, Tesseract, ShadCN, WebRTC*

- Built an AI-based KYC portal with features like facial authentication, Aadhaar/PAN card OCR, and liveness detection via video stream.
- Used OpenCV and TensorFlow for identity verification workflows, achieving high accuracy and security standards.
- Secured 1st place at Standard Chartered Hackathon 2024 for end-to-end automation and production readiness.

**AI-RoadGuard** | *React.js, CNN, Flask, Python, TensorFlow*

- Engineered a CNN-based accident detection system achieving over 90% accuracy with 50% fewer false alerts than existing solutions.
- Developed a Flask backend and React.js frontend dashboard for real-time alerting to emergency services.
- Recognized as the **Best Project in Open Innovation** at MLH MesoHack 2022.

**OneMed** | *Python, Next.js, JavaScript, LLMs, Pinecone, MongoDB, AWS*

- Built a full-stack AI-powered EHR platform for hospitals, integrating LLM-based summarization and voice-to-text consultations.
- Developed a React Native app for syncing emergency data and patient conditions in real-time.
- Implemented scalable vector search with Pinecone for intelligent patient record retrieval; ranked **Top 10 at MozoHack 2024**.

## Technical Skills

**Languages**: C, C++, Python, Java, JavaScript, SQL (Postgres), HTML, CSS, R
**Frameworks**: React.js, Node.js, Flask, FastAPI, JUnit, Material-UI, WordPress
**Machine Learning**: NumPy, Pandas, Scikit-learn, TensorFlow, PyTorch, OpenCV, NLP, LangChain, Llama-Index,Transformers
**Developer Tools**: Git, Docker, AWS, Azure, Google Cloud Platform ,CDK , Terraform

## Achievements

- Secured **1st place** at the Standard Chartered Hackathon for developing *OpenKYC*, an innovative KYC solution that streamlined identity verification processes.
- Won **2nd place** at Hack Nova 2024 with *Educative.AI*, an educational technology project later selected to represent at Innverve 2023, Army Institute of Technology (AIT), Pune.
- Received the **Best Project Award** in the Open Innovation category at MLH Meso Hack 2022 for the project *AI-Roadguard*.
- Authored technical articles on AI for prestigious Medium journals, including the ***DataX Journal***.

## Club and Contributions

- Contributed to various open-source projects; notable contribution includes **Dify**, a project with over **100,000 stars** on GitHub.
- Conducted research at **Next Tech Lab**(2021–2025) as a member of Norman and McCarthy Labs, collaborating on web and machine learning projects, specializing in deep learning for image-related tasks. Delivered AI sessions and collaborated on research.
- Served as Technical Director at **Data Science Community SRM** (2022–2023), organizing technical events, workshops, and hackathons including DS Hack 2.0; contributed to one of the university's most prestigious technical clubs.
- Led machine learning initiatives at **SRM Quantum Computing Club**, managing projects at the intersection of quantum computing and machine learning; organized talks and the Quantathon 2.0 hackathon.
- Served as Event Domain Member of SRMKzilla, the official Mozilla club on campus, promoting community contributions and engagement.