

Gayashan Dewanarayana

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SUMMARY

Artificial Intelligence Engineer with hands-on experience integrating large language models into production backends, mitigating hallucinations through structured outputs and data grounding, and designing AI powered services that improve system reliability and developer productivity. Strong background in backend and full-stack engineering, with practical experience building serverless, cloud-deployed AI systems and prototyping GenAI-powered solutions for real-world applications.

TECHNICAL SKILLS

Artificial Intelligence & Machine Learning

Computer Vision (object detection, pose estimation), Deep Learning (CNN-based models), Large Language Models (LLM integration, prompt pipelines), NLP fundamentals (tokenisation, embeddings, evaluation), Model evaluation and confidence thresholding

AI Systems & Data Pipelines

Pose landmark extraction and metric computation, Frame-quality filtering and validation, RAG pipelines, semantic search systems, vector databases (OpenAI Vector Database), Structured AI outputs (JSON-based pipelines), LLM grounding and hallucination mitigation, Semantic metric aggregation for downstream analysis

Data & Storage

Firebase, Oracle, MS SQL, schema-aware data handling, backend data validation

Programming & Frameworks

Python, OpenCV, Pandas, NumPy, Matplotlib, PyTorch, TensorFlow, MediaPipe , REST API development

Cloud & Backend

Firebase Cloud Functions, Firestore, Serverless architectures, Azure, GitHub Actions (CI/CD)

Engineering Tools

Git, GitHub, Postman, Swagger, VS Code, Cursor

EXPERIENCE

Artificial Intelligence Engineer | Onwards Analytics

Perth, Western Australia (Remote) | Jul 2025 – Present

- Enhanced and extended an existing computer vision-based swimming pose analysis system to improve technique evaluation accuracy and AI-generated feedback quality.
- Refined pose-tracking pipelines using MediaPipe's heavy model, improving joint landmark extraction and metric computation including stroke count, arm symmetry, glide duration, and hip rotation timing.
- Designed frame-quality filtering and validation logic (body-facing verification, anatomical consistency checks, displacement-based anomaly detection) to stabilise pose analysis.

- Identified and mitigated model failure modes, including landmark hallucinations when limbs exited the camera's field of view, preventing corrupted data propagation.
- Implemented semantic, metric-grounded LLM pipelines by transforming vision-model metadata into validated swimming metrics and injecting structured context to generate reliable, technique-specific feedback.
- Improved the stability and reliability of automated swim analysis outputs in a real-world production pipeline.

Technologies: Python, OpenCV, MediaPipe, Matplotlib, NumPy, OpenAI API, JSON

Intern Artificial Intelligence Engineer | Blackbox Innovation

Melbourne, Australia | Mar 2025 – Jun 2025

- Contributed to the development of a serverless AI-powered mobile workout planner (pre-release) that generates personalised training plans based on user goals, available equipment, and targeted muscle groups.
- Designed and implemented RAG pipelines with semantic search using OpenAI Vector Database and Firestore to ground LLM outputs and eliminate hallucinations.
- Built backend orchestration using Firebase Cloud Functions to integrate LLM-based plan generation into a production-ready API.
- Enforced structured, ID-based generation and authoritative metadata retrieval from Firestore to ensure deterministic and reliable AI outputs.
- Implemented validation and persistence workflows to store finalised workout plans in Firestore with auto-generated document IDs, server timestamps, and user references.

Technologies: Python, Firebase Cloud Functions, Firestore, OpenAI API, Postman, GitHub

Software Engineer | Mickiesoft

Colombo, Sri Lanka (Nov 2022 – Nov 2023)

- Contributed to backend and API-driven features for production web and mobile systems, including organisational management platforms and ERP systems.
- Implemented RESTful APIs supporting data retrieval, validation, and persistence across HR, inventory, and financial modules.
- Developed backend functionality using Laravel (PHP) and .NET Core, including API endpoints, database migrations, and role-based access logic.
- Supported system stability through API debugging and testing using Postman and Swagger,

Technologies: .NET Core, Laravel (PHP), React, Redux, REST APIs, MS SQL, Postman, Swagger, Git, TypeScript

Co-founder and Creative Director | Needlesack

[Website](#) | [Google Play Store](#) | [Live Game URL](#)

- Co-founded an independent game development studio and led development of a cross-platform mobile game with 100,000+ downloads.

- Designed and implemented gameplay logic, systems, and progression mechanics using C# in Unity.
 - Designed modular progression and upgrade systems using an in-game economy.
 - Demonstrated product-market fit through global user adoption.
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PROJECTS

Object Detection and Tracking with Mask R-CNN

(Postgraduate coursework – Computer Vision)

- Implemented an object detection and tracking pipeline using a pre-trained Mask R-CNN model to track multiple COCO objects in video sequences.
- Applied IoU-based tracking to maintain consistent object identities across frames.
- Improved detection reliability by defining class-specific confidence thresholds instead of a global threshold.
- Used IoU overlap analysis to evaluate bounding box continuity between consecutive frames.

Technologies: Python, OpenCV, Mask R-CNN

Outcome: Assignment score – 32/40

Personal Portfolio (Cloud-Hosted)

[GitHub](#) | [Portfolio](#)

- Designed and developed a production-ready portfolio website to showcase AI and full-stack engineering projects.
- Built a responsive frontend using Next.js, React, and Tailwind CSS.
- Deployed using Azure Static Web Apps with CI/CD for automated builds and releases.

Technologies: Next.js, TypeScript, React, Tailwind CSS, GitHub Actions, Azure Static Web Apps, Cursor

EDUCATION

La Trobe University – Australia

MSc – Artificial Intelligence (Specialization: Natural Language Processing), 2023-2025 | WAM = 76.07

University of Colombo - Sri Lanka

BSc (Hons) in Electronics and Information Technology (2018-2023) *Second Class (upper division)*

CERTIFICATION

Microsoft Azure Fundamentals (AZ-900)

AWS Academy Cloud Foundations

REFERENCES

Available upon request.

RIGHT TO WORK

Full Work Rights in Australia.