Minh Vi Nguyen

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SUMMARY

AI Engineering student with practical experience developing and deploying AI features in real applications. Skilled in Python, data workflows, and integrating AI services through APIs, with a focus on reproducibility, clear documentation, and continuous improvement.

SKILLS

- **Programming Languages:** Python, JavaScript, SQL, HTML, CSS
- **ML & AI**: Computer Vision, LLMS, RAG, embeddings, model fine-tuning, evaluation, tool calling
- **MLOps:** Docker, CI/CD (GitHub Action), FastAPI
- **Cloud & Data** : AWS (S3, SageMaker, Bedrock, Lambda), Azure, FAISS, Pinecone
- **Agentic AI/LLM frameworks:** LangChain, LlamaIndex, LangGraph, CrewAI; vector databases

PROFESSIONAL EXPERIENCE

AI Engineer   **May 2025 – Present**
Centre for Data Analytics and Cognition - La Trobe University

- Building computer vision pipelines for food ingredient detection and calorie estimation from images.
- Collecting, preparing the required realistic food dataset from multiple sources for training, fine-tuning, and testing the AI pipeline.
- Implementing portion-size estimation using segmentation outputs (SAM2) and depth cues (Depth-Anything-V2) to support calorie prediction.
- Designing feature engineering and evaluation workflows to improve robustness across varied lighting, angles, and food presentations.
- Collaborating with stakeholders to collect requirements, validate outputs, and iterate on model behaviour using feedback from real use cases.
- Packaging experiments into reproducible runs using Docker and structured project workflows for smoother handover and deployment.
- Tested on 90 food types with 95% detection accuracy and calorie error within ±50 kcal.

Casual researcher   **Jun 2024 – Feb 2025**
Tien Giang University, Viet Nam

- Improved data classification methods by analysing existing mapping workflows and identifying performance bottlenecks.
- Evaluated the ACUTE algorithm as a potential replacement for the current mapping approach to improve efficiency and accuracy
- Implemented experiments to compare baseline vs proposed approaches, tracking outcomes and documenting findings for academic review.
- Enhanced SVM classification using the Twin Vector technique and validated improvements through controlled testing.
- Improved classification accuracy by 10% by replacing baseline mapping with the ACUTE algorithm, reducing ambiguous class assignments.

PROJECT

Stock level estimation using AI - Freshtify (2025)   *Link*
Tools: Python, FastAPI, GroundingDINO, SAM2, Depth-Anything V2, Gemini, React Router, TypeScript, Vite, TailwindCSS, Docker, and Docker Compose.

- Freshtify is an AI-powered system that detects products on retail shelves and estimates stock levels from images.
- Designed a multi-stage pipeline including object detection, segmentation, and depth estimation, with a refinement step to aggregate results and handle edge cases.
- Deployed the inference service using FastAPI and packaged the system with Docker, developed a web dashboard to visualise outputs and support qualitative evaluation.
- Achieved 88% detection accuracy and 85% stock-level accuracy on stakeholder-provided shelf images.

Hand-gesture YouTube search (2025)   *Link*
Tools: Python, OpenCV, MediaPipe Hands, NumPy, pytesseract OCR, OpenAI (RagOpenAI for RAG)

- Developed a real-time application that allows users to write queries in the air using hand gestures, converting drawings to text with OCR.
- Applied hand landmark tracking to detect finger states for drawing, stopping, and selection control.
- Integrated a retrieval-augmented generation (RAG) module to interpret queries and return relevant video recommendations, with gesture-based selection to open videos.

EDUCATION

Bachelor of Computer Science   **June 2023 – June 2026**
La Trobe University, Melbourne   WAM: 90
Provost's Commendation for Academic Excellence (2024)
La Trobe High Achiever Scholarship 2023