

RICHELLE MARVELA

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PROFILE

Computer Science and Mathematics undergraduate with a software engineering foundation and applied strength in AI/ML. Experienced across the full development lifecycle — requirement analysis, system design, and implementation — on a live product, alongside end-to-end AI system delivery (IoT, cloud deployment, and deep learning/NLP model development) on a nationally funded research project. Applies a Mathematics background to optimization and data analysis, with working proficiency in Python, SQL, and statistical methods for data-driven problem solving.

EDUCATION

Bina Nusantara University — Jakarta, Indonesia
Bachelor of Computer Science and Mathematics | 2023 - 2027

Focus areas: Machine Learning, Deep Learning, AI, Data Analysis/Text Mining, Cloud Computing, Software Engineering, Algorithms & Data Structures, Mathematical Optimization.

TECHNICAL EXPERIENCE

Developer & System Analyst—ContentBay Feb 2026 - June 2026

- Analyzed requirements and defined system workflows for ContentBay (contentbay.tech), a live product, translating stakeholder needs into functional, deployable features.
- Worked across the development lifecycle as both developer and system analyst, bridging system-level analysis with hands-on technical implementation.

Website: contentbay.tech GitHub: github.com/DavinTanaya/ContentBay

IoT & Cloud Systems Engineer—MBELYS PKM-KC 2025 · Funded Project

IoT-Based Goat Sound Analysis System for Real-Time Stress and Reproductive Activity Detection

- Built and programmed the IoT device end-to-end — hardware assembly, firmware programming, and testing — enabling reliable audio data collection for goat vocalization monitoring.
- Engineered the Google Cloud Platform integration connecting IoT-collected audio data with a deployed machine learning model, and integrated Firebase to expose prediction outputs to the mobile application.
- Designed and validated the end-to-end system architecture (IoT → ML → GCP → Firebase → Application), conducting full-pipeline testing across hardware, data, and software layers.

PROJECTS

Indonesian Sports News Classification — NLP · IndoBERT

- Fine-tuned IndoBERT (PyTorch) across two model architectures to classify 2,276 sports articles into 5 classes from 3 media sources (Detik, Kompas, Liputan6).

Query-Based Multi-Document News Summarization — NLP · Text Summarization

- Built a query-based summarization pipeline on the AQUAMUSE dataset using YAKE/RAKE/KeyBERT (MiniLM) keyword extraction and BART (facebook/bart-large-cnn).
GitHub: [QueryBased-Multinews-Aquamuse](https://github.com/RichelleMarvela/QueryBased-Multinews-Aquamuse)

Fruit / Rotten Fruit Classification & Generation — Deep Learning · Generative Models

- Implemented and compared a baseline VAE and a modified VAE for fresh vs. rotten fruit classification, evaluated on a held-out test set using Fréchet Inception Distance(FID).

DGWO-F2OPT — Humanitarian Vehicle Routing Under Flood Conditions — Mathematical Optimization · Metaheuristics

- Developed a Dynamic Grey Wolf Optimizer with Floating 2-opt local search for multi-objective CVRPTW under flood-disaster conditions, using Fuzzy Mamdani logic for node prioritization.
- Achieved the best adjusted distance (3,062.2 units) and lowest time-window penalty (6,211) against Adaptive GA, MPSO, and Classic GA baselines on CVRPLIB A-n80-k10.

GitHub: [DGWO-Routing-Optimizer](https://github.com/RichelleMarvela/DGWO-Routing-Optimizer)

Full project portfolio (NLP, Computer Vision, Cloud Architecture, Data Analytics): github.com/RichelleMarvela

TECHNICAL SKILLS

- Programming:** Python, SQL, C, JavaScript, PHP, HTML, CSS, React
- Software Engineering:** Flask, Laravel, REST API, Git, GitHub, System Analysis, Requirement Analysis
- AI / Machine Learning:** PyTorch, TensorFlow, Scikit-learn, Transformers, Regression, Classification, Clustering, Feature Engineering, Hyperparameter Tuning, Model Evaluation, Text Mining, Topic Modeling, Text Summarization
- Data Analytics:** Pandas, NumPy, Matplotlib, Seaborn, Data Cleaning, EDA, Statistical Analysis, Data Visualization
- Cloud & Systems:** GCP, AWS, Firebase, IoT, Data Streaming, ETL, Cloud Architecture
- Optimization:** Mathematical Optimization, Metaheuristic Optimization, Fuzzy Logic

AWARDS & ACHIEVEMENTS

- Funded Project, PKM-KC 2025 — MBELYS: IoT-Based Goat Sound Analysis System.
- First Place, National Web Design Competition — ITFIESTA (2021).
- Silver Medalist, National Mathematics Competition — Medalyst (2021).

CERTIFICATIONS

- Fundamentals of Deep Learning — NVIDIA (Oct 2025)
- Data Analysis Using Python — IBM (Aug 2025)
- SQL (Intermediate) — HackerRank (Aug 2025)
- AWS Educate: Introduction to Generative AI — AWS (Aug 2025)
- ISO/IEC 27001 Information Security Associate — SkillFront (Aug 2026)

LANGUAGES

Bahasa Indonesia (**Native**), English (**Working Proficiency**)

ADDITIONAL EXPERIENCE

- Scholarship Mentor & Tutor — SASC (2024–2026): Mentored students across majors on coursework and Python programming for scientific computing.