

Benedict Michael Pepper

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CS student at Ma Chung University specializing in machine learning and full-stack development, with deployed projects in computer vision and applied ML. Currently leading technical development for a government-funded health-tech initiative (PKM-KI) and conducting ML-based quantitative finance research as a university research intern.

Experience

Technical Researcher — National Student Creativity Program (PKM-KI) Mar 2026 – Present

Ma Chung University | Government-Funded Research Initiative

- Leading technical development of a Python rule-based chatbot integrated with the WhatsApp API to scan and translate Mandarin herbal medicine labels, flagging dosage risks and drug interactions
- Building a companion web platform as part of a nationally funded health-tech project (PKM-KI) aimed at reducing unsupervised medication errors in Indonesian households

Quantitative Research Intern (PKL) Feb 2026 – Present

Ma Chung University | Informatics Engineering Department

- Conducting empirical ML research evaluating CBBI (Bitcoin Bull Run Index) on-chain indicators as classification signals for Bitcoin market cycles across 3 halving periods
- Applying Random Forest and Logistic Regression with backtesting on historical data to identify the most predictive on-chain features for forward return classification

Programming Instructor Jun 2025 – Present

PT Karya Warga Indonesia (Kawai Edu Lab)

- Conduct 6 hours of weekly instruction across Python, Lua (Roblox Studio), and Scratch platforms, completing 30+ functional projects across 25+ sessions
- Apply structured problem-solving methodology to break down complex logic into implementable code, working across diverse codebases and programming paradigms

Coding Instructor Feb 2025 – Present

Ma Chung University | Partner Program with Kalam Kudus Christian School

- Manage 3 weekly programming sessions across 2 locations, working with 60+ participants in Python and Scratch environments
- Develop curriculum covering data structures, algorithms, and game development; debug and code-review student projects; evaluate submissions as a technical competition judge

Treasurer & Event Manager Oct 2023 – Jun 2025

Informatics Engineering Student Association (HMP TIF UMC)

- Managed budget of IDR 3,130,000 for Harmony IT outdoor program, negotiating vendor contracts and achieving a 53% reduction in participant fees across a 24-student event
- Coordinated IT School technical workshop involving 100+ high school participants, leading a cross-functional team of 13 to execute event logistics from planning to implementation

Projects

CNN Batik Motifs Detector | Python, TensorFlow, Keras, Streamlit, EfficientNetB0

github.com/bennypepper/CNN-Batik-Motifs-Detector | cnn-batik-motifs-detector.streamlit.app

- Trained EfficientNetB0 classifier on 800+ images across 20 Indonesian Batik motif classes using a 2-phase freeze/unfreeze transfer learning strategy, achieving 81% accuracy and 0.81 F1-score on the test set
- Implemented data augmentation pipeline (rotation, zoom, flipping) to prevent overfitting on a small, high-variance cultural image dataset of complex textile patterns
- Deployed interactive Streamlit web app serving real-time predictions with confidence histogram visualization — accessible via live public URL

LaporAman: Secure Whistleblower Platform | HTML5, Tailwind CSS, Firebase, AES-256, Gemini AI

github.com/bennypepper/Lapor-Aman

- Built client-side AES-256 encryption for all PII (NIK, phone, address) before Firebase write, ensuring raw personal data never reaches the database; admin decryption requires a separate key
- Automated EXIF metadata stripping on uploaded evidence images via HTML5 Canvas before Firebase Storage upload, eliminating passive reporter identity leakage
- Integrated Gemini 2.5 Flash AI chatbot with live Firebase context for real-time ticket status queries, alongside a 5-stage tracking pipeline and admin CSV export dashboard

Technical Skills

Languages: Python, Java, JavaScript, Lua, SQL

Frameworks / Libraries: TensorFlow, Keras, Scikit-learn, Flask, Streamlit, Firebase, Tailwind CSS, Bootstrap

Developer Tools: Git, GitHub, Jupyter Notebook, Google Colab, Kaggle, FFmpeg, Roblox Studio, Google Workspace

Concepts: Convolutional Neural Networks, Transfer Learning, ML Classification, Backtesting, Image Segmentation, Discrete Event Simulation, AES Encryption, Data Augmentation, REST APIs

Education

Ma Chung University

Bachelor of Informatics Engineering (Semester 6)

2023 – Present

Malang, Indonesia

- Relevant Research: Machine Learning classification, Computer Vision (CNN), UI/UX evaluation (SUS), Quantitative Finance