

ROJEAN B. PEÑANO

Backend Engineer · Python · Cloud (Azure) · ML Integration

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SUMMARY

Computer Science graduate (Specializing in Intelligent Systems) focused on Python backend development. Built a serverless Flask API on Azure Functions during an internship, and owned the backend architecture, Firebase data design, and ML model serving for Rice Up, an award-winning thesis platform for Filipino rice farmers. Takes models from notebook to REST endpoint, with the engineering around them: request validation, data integrity, and modular service design.

TECHNICAL SKILLS

Languages: Python (primary), JavaScript / Node.js, Java (academic), HTML, CSS

Backend Development: Flask, Express.js, REST API design, JWT authentication, Pydantic request validation, serverless deployment (Azure Functions via WSGI)

Cloud & Databases: Microsoft Azure (Functions, Cosmos DB, Blob Storage), Firebase (Authentication, Cloud Firestore), MongoDB (Mongoose), NoSQL schema design

Machine Learning & Data: TensorFlow / Keras, scikit-learn, CNN transfer learning (VGG16), model evaluation (confusion matrix, precision-recall, class-imbalance diagnosis), Pandas, NumPy, Matplotlib, Seaborn

Tools: Git / GitHub, Postman, Jupyter Notebook, Google Colab, Linux basics

EXPERIENCE

Backend Developer Intern — Hactiv Colab Inc.

July 2025 – August 2025

github.com/rojeanpenano/python-flask-inventory-api

- Built a cloud-based inventory management backend in Python (Flask) as the sole developer under supervisor code review; deployed serverless to Azure Functions through WSGI middleware.
- Designed five domain modules (items, categories, suppliers, transactions, image uploads) as independent Flask blueprints exposing CRUD REST APIs with Pydantic request validation.
- Integrated Azure Cosmos DB (structured records) and Azure Blob Storage (item images) behind a single API surface.
- Implemented transaction integrity across Cosmos DB containers using two-pass validate-then-mutate with compensating rollback, preserving inventory consistency on partial-failure writes.

PROJECTS

Rice Up — AI Farming Platform (Undergraduate Thesis, 3-person team)

May 2025 – May 2026

github.com/rojeanpenano/rice-up-web · Live: riceup-dev.github.io/riceup-app

- Owned backend architecture, Firebase Authentication / Cloud Firestore data design, ML model serving, the price-forecasting module, AskJuan, and the farming calendar; teammates led UI design, field research and dataset curation.
- Trained a VGG16 transfer-learning classifier (TensorFlow / Keras) on 10,689 images across 9 rice-leaf diseases (76% accuracy, 0.76 F1), chosen over ResNet50 and EfficientNetB4 in preliminary comparison; served through an isolated Flask REST inference API decoupled from the web app.
- Diagnosed class imbalance (2,000 vs. 300 images) behind an inflated 87% pest-model accuracy through precision-recall analysis; rebalanced to near 1:1 and augmented the dataset, reaching 95% accuracy and 0.95 macro-F1 on a held-out 478-image set.
- Built a Node.js linear-regression module forecasting rice prices from 226 Department of Agriculture price records (5.03% MAPE, $p < 0.05$), and AskJuan, a curated Filipino-language Q&A library with per-user history in Firestore.
- Evaluated by 55 respondents under ISO/IEC 25010, scoring a composite 4.22 / 5 across all quality characteristics.
- **Recognition: 1st Place, Technology Exhibit (CONTRENDS 2026) · 2nd Place, Best Thesis · Best Paper Presentation Finalist, ICAI 2026**

XPENDITURE — Expense Management Website (Software Engineering Course Project)

Sep 2024 – Nov 2024

github.com/rojeanpenano/xpenditure

- Owned the backend: REST APIs in Node.js / Express.js with MongoDB (Mongoose) covering budgets, expense tracking, group budgeting, and transactions.
- Implemented JWT-based authentication and authorization with middleware-based input validation and centralized error handling; verified endpoints with Postman.

EDUCATION

Bachelor of Science in Computer Science, Specializing in Intelligent Systems

De La Salle University–Dasmariñas · GPA 3.29 / 4.00

Aug 2022 – Aug 2026

Relevant Coursework: Data Structures & Algorithms · Algorithms & Complexity · Object-Oriented Programming · Application Development and Emerging Technologies · Software Engineering 1 & 2 · Operating Systems · Parallel & Distributed Computing · Information Assurance & Security · Machine Learning 1 & 2

CERTIFICATIONS

Cisco Networking Academy: Linux Essentials · Operating Systems Basics · Introduction to Cybersecurity · Introduction to JavaScript

WPH Digital: Generative AI Awareness & Effective Prompting