John Michael R. Reyes

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Education

National University *Lipa City, Batangas*

BS in Computer Science, <u>**GWA: 3.51/4.00**</u> *2022 - 2026*

Relevant Coursework: Systems Programming, Data Structures and Algorithms, Advanced Machine Learning, Deep Learning, Software Engineering

iNUvators member, <u>**7-time**</u> Deans Lister, TOEIC Exam Score: <u>**885**</u>

Tech Skills and Projects

Programming: Java, JavaScript, Python, MySQL   **Frameworks:** React, Django, Tensorflow, Keras

Legal Aid at Your Access (LAYA) || *iNUvators, APPCON 2023 Submission*

Developed a bilingual conversational AI for Philippine law using **Microsoft Azure's Conversational Language Understanding (CLU)**. I was part of the AI training team, responsible for web scraping over <u>**3,000+**</u> legal documents from sources such as **Lawphil.net** and various local law firms, covering Republic Acts, Constitutional Acts, and other public legal texts. I also contributed to **data annotation** and **model context optimization** within Azure to improve entity recognition and response accuracy.

- The model achieved an <u>**F1 score of 84.43%**</u>, <u>**Precision of 85.22%**</u>, and <u>**Recall of 83.65%**</u> across <u>**3,000 training**</u> and <u>**600**</u> testing utterances.
- Focused on data preprocessing, multilingual intent handling, and legal-domain entity extraction for AI-assisted legal information access.
- The project was submitted for publication in *Data in Brief*.

NPK Deficiency Detector in Bitter Gourd Leaves || *Software Engineering Project*

Developed a **Deep Learning CNN model using ResNet50** to classify bitter gourd leaves as *healthy* or *deficient in nitrogen, phosphorus, or potassium*. As the **lead AI programmer and data scientist**, I handled dataset preparation, model design, and performance tuning.

- Achieved <u>**95% accuracy**</u>, with an <u>**F1 score of 96%**</u>, <u>**Precision of 96%**</u>, and <u>**Recall of 96%.**</u>
- Trained and tested on <u>**2,500+**</u> **verified images**, sourced online and through local data validated by the **Department of Agriculture IV-A**.
- Focused on improving model generalization and minimizing class imbalance for real-world agricultural applications.

Predicting Enrollment Probability Using KNN and Random Forest || *NU-Lipa School Commission Project*

As a part of a small development team to enhance the university's admission analytics system. I led the **data science and model optimization** efforts, focusing on **feature engineering**, **model tuning**, and **performance evaluation**.

- Improved the existing predictive model's accuracy from **83% to 90.67%**, achieving a **7% performance increase**.
- Utilized **K-Nearest Neighbors (KNN)** and **Random Forest** algorithms to predict enrollment likelihood based on **20,000+ official student application records** from NU-Lipa.
- Enhanced data preprocessing and variable selection for better model interpretability and decision support for admissions officers.

Barako Sense: Developing a Sensory Lexicon for Kapeng Barako || *Thesis*

Led the **AI engineering and model development** for a hybrid research project aimed at creating the **first sensory lexicon for Kapeng Barako (Coffea Liberica)** in Batangas. The study combined **CNN-based tree identification** with **traditional coffee cupping** and sensory evaluation.

- Collected and processed **4,000+ images** of bark, leaves, and cherries from **5 DNA-tested Liberica trees**, in collaboration with **De La Salle University Manila**.
- Designed and trained a **MobileNetV2 model** with a **multi-input, single-classification pipeline**, achieving **95% accuracy** in distinguishing individual Liberica trees.
- Contributed to the creation of a **sensory and physical traits dataset** with **100+ cupping entries** supporting future agricultural and sensory research on Batangas Barako coffee.

Activities and Participations

CHED LAKAS   *National University Lipa, October 25, 2023*
Certificate of Participation Holder
A conference for computing educators, researchers, and professionals in the Philippines and nearby countries.

APPCON 2023   *National University Lipa, Oct. 2023 – April 2024*
Represented NU-Lipa as part of 'iNUvators' Nationwide
Submitted "LAYA", an AI application in terms of the theme "A web or mobile application to address social issues in the Philippines"

24th Philippine Computing Science Congress   *De La Salle Laguna, May 9-11, 2024*
Organized by the Computing Society of the Philippines to enable local and neighboring computing educators, researchers, information and communications technology (ICT) professionals, and students to interact and share their work in computing, computer science, computational science, and ICT.

Base Build Calabarzon   *National University Lipa, September 10, 2025*

A seminar for blockchain development, within a day of hands-on, learning, collaboration and on chain creation.

- Achieved 3rd place in the hackathon with **"Arcade Hub,"** a project developed and pitched within the event

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Certifications

[IC3 Digital Literacy Global Standard Six](#) *Aquired: August 30, 2024*

[Information Technology Specialist: Python](#) *Aquired: March 6, 2025*

[Machine Learning w/ Python](#) *Aquired: July 13, 2025*