

Luis Angel Villanueva

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EDUCATION

University of California, Irvine

Irvine, CA

B.S. Computer Science ♦ 3.30 Overall GPA ♦ 3.43 Major GPA

March 2024

✧ Relevant Coursework:

- Project in AI
- Machine Learning and Data-Mining
- Data Structure Implementation and Analysis
- Design and Analysis of Algorithms
- Introduction to Artificial Intelligence
- Introduction to Data Management
- Application of Probability in CS

PROJECTS

Electricity and Settlement Detection in Sub-Saharan Africa (Python)

Developed machine learning models to identify human settlements without electricity using satellite imagery, addressing energy poverty in sub-Saharan Africa. Implemented segmentation CNN, U-Net, ResNet-based architectures, and a UNet++ model with transfer learning. Preprocessed multispectral and polarimetric data from satellites like Sentinel-1, Sentinel-2, Landsat 8, and VIIRS, and optimized models using Bayesian hyperparameter tuning. Contributed to the design, training, and evaluation of models, aiming to support the expansion of electricity access and inform sustainable energy solutions.

Starcraft II Player Analysis (Python)

Developed and calibrated skill estimation models using Starcraft II match data to predict player win probabilities. Implemented models based on Poisson distributions and explored alternative approaches such as beta distributions. Conducted extensive evaluation using training and validation data to measure performance, achieving low mean squared errors for offline and online match predictions. Contributed to fine-tuning the model, identifying key limitations, and suggesting improvements in distribution selection and validation methods for enhanced accuracy in skill estimation.

Crawler & Search Engine (Python)

Built full web crawler that politely sends requests to a server and parses successful responses. Using collected data, built a search engine from scratch using Flask. It can handle tens of thousands of documents or web pages with a query response time under 150ms.

SKILLS & TOOLS

Programming Languages: Python, C++, C, TypeScript, JavaScript, Bash

Frameworks & Libraries: PyTorch, PyTorch Lightning, Scikit-Learn, OpenCV, Flask, Next.js

Tools: Weights & Biases, NumPy, Matplotlib, Docker, MySQL, Git