Frank Cally A. Tabuco

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An experienced Machine Learning Engineer with a strong background in AI research and industry-level development, specializing in signal processing, 2D and 3D medical image analysis, and natural language processing. Proven ability to design and deploy innovative AI solutions, with expertise spanning healthcare, cybersecurity, and meteorology applications.

SKILLS

- **Engineering:** OpenCV, MONAI, Llama, Gemini, Langchain, Flask, Docker, FastAPI, Django, Streamlit, Polars, SQL, Git
- **Management:** Operations research, finance, business process re-engineering, operations management

WORK EXPERIENCE

Emsisoft Ltd. (Remote - New Zealand)

Machine Learning Engineer | Natural Language Processing (NLP) | November 2022 - Present

- Lead machine learning engineer tasked to develop machine learning and deep learning models for behavioral and dynamic malware analysis using NLP and large-language models (LLM).
- Designed and developed the data collection, extraction, transformation and preprocessing pipelines of malware and benign data using virtual machines and ~500GB of telemetry data.
- Trained a high-quality tokenizer model using byte-pair-encoding from ~100TB of system log data. Additionally, maintained the quality of datasets produced with daily addition of samples.
- Researched, developed, and trained state-of-the-art AI architectures for dynamic malware detection with a top false positive rate of 0.001% and a false negative rate of 0.000001%.
- **Tech Stack:** Python, C#, PyTorch, Azure, Grafana, PowerShell, ONNX, HuggingFace, BERT, Hyper-V, RNN

Merlin Solutions (Remote - Canada)

Machine Learning Research Engineer | Signal Processing | March 2024 - April 2024

- Lead and sole machine learning research engineer tasked to develop a prototype sleep staging AI model.
- Designed and developed the data extraction and transformation algorithms for processing raw XML and EDF data formats containing polysomnographic signal data including respiratory, EEG, ECG, EMG, and EOG.
- Developed the pipelines for transforming data into features from AWS S3 to training in AWS Sagemaker.
- Developed a prototype sleep staging detection model with 70% accuracy in 40 hours which was successfully accepted by investors.
- **Tech Stack:** Python, PyTorch, S3, Sagemaker, EC2, Docker, Ensemble, Transformers, Autoencoders, Scipy, GitLab

University of the Philippines Diliman (Remote - Philippines)

Artificial Intelligence Researcher | 3D Computer Vision | December 2021 - March 2023

- Lead researcher and developer of a deep learning model for thunderstorm prediction using computer vision.
- Developed a deep learning model capable of predicting localized thunderstorm events with 98% accuracy and sends automated warnings on probable affected neighboring areas.
- Designed and developed the end-to-end processing of large-scale radar data (~1TB per year).
- **Tech Stack:** Python, TensorFlow, Linux, PyArt, Vision Transformers, YOLO, GAN, ResidualGRU, GitHub

NOTABLE PROJECTS

Two-View Left Ventricular Segmentation and Ejection Fraction Estimation in 2D Echocardiograms

- *33rd British Machine Vision Conference (BMVC)* | United Kingdom | November 2022 | Paper Link
- **Tech Stack:** Python, PyTorch, U-Net, Vision Transformers, Video Vision Transformer, 2D Imaging

Deep Learning for Enhancement of Echocardiographic Prediction of Left Ventricular Ejection Fraction: Development of a Novel Learning Framework using Artificial Intelligence

- *Philippine Heart Association's 53rd Annual Convention* | Philippines | May 2023
- **Awarded the "Most Outstanding Research in Cardiology".**

Phishing Detection Using Ensemble of Classifiers

- *16th Asian Conference on Intelligent Information and Database Systems* | UAE | April 2024 | Paper Link
- **Tech Stack:** Python, Ensemble methods, Boosting methods, Feature Importance

Myocardial Infarction Detection Using Video Frame Key-Point and Gradient Matching

- *The IEEE World Congress on Computational Intelligence 2024* | Japan | June 2024 | Paper Link
- **Tech Stack:** Python, PyTorch, U-Net++, Harris Corner Detection, Histogram of Oriented Gradients, Feature Matching

EDUCATION

- **University of the Philippines Diliman :** *Master of Science in Computer Science (2022);* GPA: 4.00/4.00
- **Ateneo de Manila University** : *Bachelor of Science in Management Engineering (2016);* GPA: 3.33/4.00