Vittavas Tangsriworakan

Recent Biomedical Engineering B.Eng. Undergraduate | Student Researcher at Brain-Computer Interface Lab, Mahidol University

PROFILE

- Recent **biomedical engineering** undergraduate with strong skills in **machine learning, data science, and signal analysis**
- Familiar with developing Python-based **program pipelines** for real-time applications and expertise in **prompt engineering**
- Passionate about advancing healthcare technology, particularly in **brain-computer interface applications**.

EDUCATION

Mahidol University
Nakhon Pathom, Thailand

GPAX: 3.93 **First-Class Honour**
Bachelor of Engineering: Biomedical Engineering (International Program)
2020 – Present

RELEVANT COURSEWORK

Computer Programming
Digital Systems & Microprocessors
Biostatistics
Medical Signal Processing
System Modeling
Image Processing in Medicine

AWARDS

Distinguished Engineering Student Award
as a part of the Engineering Institute of Thailand (EIT) under His Majesty the King's Patronage
Grand-prize Award
at Online Global Leaders Conference 2021 by International Youth Fellowship (IYF)
Second-runner Award
at Mahidol Startup Entrepreneur Challenge (Mahidol Startup Club)

EXPERIENCES

Looloo Company
Machine Learning Engineer Part-time
09/2023 - 04/2024 (8 months)
- Developed LLM-based audio transcription program infrastructure, optimizing real-time data processing capabilities
- Performed error analysis to evaluate the performance of trained ASR models, identifying key areas for accuracy improvement

Machine Learning Engineer Internship
05/2023 - 08/2023 (3 months)
- Applied generative AI to address customer requirements by refining prompt-driven engineering designs
- Developed Python-based program pipelines to access LLM APIs (OpenAI, VertexAI, etc.)
- Developed a comprehensive testing methodology and implemented PyTest for unit and automated functional tests, reducing post-deployment issues and improving product quality

Brain-computer Interface Lab, Mahidol University
Electrocardiogram Event Recorder — Medical Device Firmware and Cloud Integration Engineer
01/2023 – 03/2023 (3 months)
- Developed communication firmware for ECG recorder to RPI on Linux
- Developed upload software to upload ECG data using AWS SDK

Functional Test (FCT) Software for Electrocardiogram Printed Circuit Board Test Jig — Software Engineer
11/2022 – 01/2023 (3 months)
- Developed serial communication software packages using Python OOP
- Implemented GitLab CI system for project integration with Git

Biomedical and Robotics Technology Lab, Mahidol University
Electronic Engineer of BART Team
01/2022 – 07/2022 (7 months)
- Managed power systems, wiring, and electrical maintenance of the rescue robot
- Designed 3D component supports using SolidWorks
- Developed command protocols using Arduino microcontroller programming

PROJECTS

The Study of Electroencephalogram: Spectrogram Approach
Class Project Associated with Bio Signals and Systems Course
10/2022 – 11/2022 (2 months)
- Utilized EEG data from MNE open source to analyze event-related potentials of subjects
- Conducted signal analysis in the frequency domain using Fast Fourier Transform (FFT)
- Generated spectrograms using Short-Time Fourier Transform (STFT) for signal visualization

CONTACTS

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GitHub: https://github.com/YunVittavas

The Development of Bispectral Index Monitoring (BIS) for Anesthesia and Perioperative Care (Capstone Project)
Software and Machine Learning Engineer
08/2023 - 05/2024 (10 months)

- Developed Python-based program infrastructure for real-time prediction of BIS values based on electroencephalogram (EEG)
- Optimized digital filters to enhance EEG detection performance in a near real-time system
- Conducted data analysis on EEG data to determine optimal model training approaches
- Trained and implemented classification and regression models in the project pipeline
- Designed a simple interface to display predicted results using DearpyGUI

ACHIEVEMENTS

17th TESA Top Gun Rally 2023
Hardware Engineer of BME Ranger 13 Team
19/11/2023 – 25/11/2023

- Achieved National **1st Runner-up** award among 58 teams
- Implemented computer vision, WIFI connectivity and MQTT protocol client using C programming on ESP32 microcontroller
- Trained TinyML models on Edge Impulse, customized protocols, and developed firmware for the competition.
- Integrated a real-time operating system to enable multi-tasking

The 8th Delta International Smart & Green Manufacturing Contest
Software Engineer of Gaia Team
In Association with Brain-Computer Interface Lab
06/2022 – 08/2022

- Achieved International Grand Prize award among 963 teams
- Contributed to the development of a carbon polymerizing system for polyhydroxy butyrate transformation
- Developed a MySQL database for uploading data received from Arduino using Python

SKILLS

Python:

- **Object-orineted Programming**
- **Data Analysis**:
  - Data visualization e.g. Matplotlib, Seaborn
  - Data Science e.g. Numpy, Pandas
- **Signal Processing**: Scipy
- **Machine Learning**: Decision trees and clustering classifications, regressions (Scikit-learn), Deep learning (PyTorch)
- **Prompt Engineering**: OpenAI, VertexAI (GCP), Langchain
- **GUI**: Tkinter, Gradio, Dear PyGui
- **Testing**: PyTest

SQL: Writing complex queries, Database management (MySQL)

MATLAB: Signal processing, Biostatistics

Embedded Systems: C, Arduino, ESP32, RTOS, Raspberry Pi

Cloud Automation: AWS SDK (Boto3) Development

Version Control and CI/CD: Git, GitLab CI with GitKraken

CAD Design and 3D Printing: SolidWorks, SolidEdge, CURA

OS: Windows, Linux