Philip Lee Hann Yung (Singapore PR)
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WORK EXPERIENCE / PROJECTS

Panasonic Industrial Devices Singapore, *AI/ML Engineer* Jul 2023 – *Present*
- Designed a *knowledge graph retriever with iterative search*, improving answer relevancy in a chatbot system.
- Developed a *multi-component gas quantification pipeline in Python* for electronic nose applications, incorporating exploratory data analysis, calibration, synthetic data generation, feature analysis, and model training.
- Proposed a reference signal generation method that reduced data requirements by 50% while remaining robust to environmental fluctuations and conceptualized algorithms for indirect sensor reliability tracking.

NTU Bachelor's Thesis: Driver Action Recognition using Artificial Intelligence Aug 2022 – May 2023
- Reviewed, trained, and benchmarked 3 video action recognition model families using *PyTorch and Python* on publicly available datasets, with dual focus on accuracy and efficiency.
- Investigated improvements for robust recognition like class weighting, hard sample mining and proposed multi-modal fusion architectures (RGB, Infrared, Depth), resulting in a 13% balanced accuracy score increase.
- Built and deployed a 30 FPS *real-time driver behavior monitoring system POC*, fine-tuned on self-collected data and tested in a physical car cabin environment.

NTU Nanyang Business School, *Research Assistant (Data Science)* May 2022 – Jan 2023
- Designed *Python web scraping* scripts to extract textual content from 5 websites using *Selenium*. Conceptualised *ELT pipeline* for *indexing, archiving, field extraction, and data cleaning* to build high-quality, structured datasets.
- Interfaced with Twitter API to build *large geo-tagged datasets* (4 mil tweets) with an *ETL pipeline*. Developed *NLP-based geolocation models* with composite feature engineering to predict user locations based on tweet features.
- Utilized *JavaScript* and *Google Earth Engine* to aggregate biodiversity data on specific regions from public datasets. Conducted *geospatial data analysis* and generated visualizations using *Python, R, geopandas, and matplotlib*.

Panasonic R&D Center Singapore, *Deep Learning Algorithm Engineering Intern* *Jan* 2022 – Jun 2022
- Conceptualised robust computer vision system using *Python, OpenCV and PyTorch* for real-time end-to-end social distancing and mask detection on network camera and low-power 15-watt Jetson device.
- Investigated and trained 3 light-weight AI submodules, optimising for *computation speed* while maintaining good accuracy. Built and containerized system as *Docker image* for system reusability and deployment.
- Utilised and trained *Generative Adversarial Networks (GANs)* for image-to-image translation tasks to augment existing image datasets to different domain, reducing model bias in semantic segmentation and other tasks.

EDUCATION

Nanyang Technological University (NTU), Singapore Aug 2019 – Jun 2023
- **Bachelor of Engineering (Electrical and Electronic Engineering)**
- **Honours (Highest Distinction)** — equiv. to First Class Honours @ CGPA 4.94/5.00
- Specialization: **Info-Communication Engineering (Data Intelligence and Processing)**

Virtual Training, Learning and Development
- Certifications: **AWS Certified Solutions Architect - Associate**
- Professional Certificates/Specializations: (1) *Generative AI Nanodegree* (2) *Applied Data Science with Python* (3) *Natural Language Processing* (4) *Deep Learning* (5) *Google Business Intelligence* (6) *Meta Database Engineer*

AWARDS / RECOGNITION

- **Global Undergraduate Awards – Highly Commended (Computer Science)**, Bachelor's thesis (2023)
- **EEE Excellence Award**, Outstanding achievements in co-curricular activities and academic performance (2023)
- **NTU President Research Scholar (with Merit)**, Undergraduate Research Experience on CAmpus (URECA) (2020)
- **Champion**, Carro x AWS Hackathon, Team Leader of 5 (2022)

Publications
- Multi-modality Action Recognition based on Dual Feature Shift in Vehicle Cabin Monitoring – ICASSP 2024
- Smart Touchless Control with Credit-Card Sized Radar Sensor and Microcomputer – IEEE GCCE 2022