NG ZHILI

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PROFESSIONAL SUMMARY

Highly driven and proactive engineer who seeks to utilize my strong analytical and quantitative skills to solve complex business problems in diverse cross-functional teams via data driven approaches in AI, machine learning and deep learning.

EDUCATION

National University of Singapore (NUS) **Aug 2019 – Present**

- Bachelor of Engineering (Hons) in Mechanical Engineering (CAP: 4.71/5.0, First Class Honors).
- Recipient of Dean's List AY2020/2021 Semester 2 (Top 5% of cohort) and Char Yong scholarship AY2020/2021.
- NUS University Scholars Programme (USP) (Only admits top 3% of all 7 schools in NUS annually).
- Awarded NUS USP Scholarship (The Jixun & Serene Scholarship) and USP Honour Roll AY2020/2021.
- Minor in Computer Science and specialization in Robotics.
- Relevant coursework: Machine Learning, AI Projects, Quantitative Reasoning, Multivariate Calculus.

Jurong Junior College (JJC) **Jan 2015 – Dec 2016**

- GCE A-Levels: Subject Combination PCME, Graduated with university IGP (AAB/A).
- Bestowed College Outstanding Leadership Award, EAGLES, Good Character Award.

WORK EXPERIENCE

CARRO, Data Scientist Intern **May 2021 – Present**

- Co-Lead for computer vision project and main POC with project external stakeholders.
- Managed data ingestion pipeline and trained YOLOv4 object detection model for detection of vehicle damages.
- Implemented image processing, automatic wrap perspective algorithms that improves overall accuracy by 30% for pre-trained EasyOCR and pyTesseract models in OCR project.
- Deployed AWS Lambdas functions for automated scripting and used AWS SageMaker for feature extraction of instances for the training of computer vision model (COCO to CSV to YOLO annotation formats).
- Created script that highlights image annotation errors such as duplicates, missing annotations, orientation errors, self-intersecting polygons to ensure consistency of labelled data.
- Minimize label verification costs and time of up to 50% by creating automatic data labeling and verification pipeline of instance segmentations using custom Mask RCNN model (using pixelwise binary mask IoU comparison).
- Cut image labelling costs of up to 74% per image by building an interactive webpage to hire overseas annotators, managed labelling pipeline, costings, and manpower of over 20 overseas annotators via Supervisely platform.
- Extracted vehicle contours using OpenCV for deployment as AR overlay display in mobile app camera interface.
- Carried out exploratory data analysis and data preprocessing, cleaning, transformation, augmentation.
- Conducted signal pre-processing, truncation, and unsupervised classification of audio for acoustic analysis project.

Opporizon Global, Business Development and Research Intern **May 2020 – Jul 2020**

- Supervised 4 interns as Head Intern Coordinator, developed new global business opportunities (B2B and B2C).

Kruger Engineering Pte Ltd, HVAC Engineer Intern **Feb 2019 – May 2019**

- Applied fan engineering theory to quote over 2000 Mechanical Ventilation (MV) and Jet fans based on needs, specifications and budget requirements requested by clients.
- Conducted acoustic analysis of 200 MV fans by calculating acceptable sound tolerance levels to designate suitable sound attenuators in distinct HVAC ducting systems.
- Utilized CAD software, blueprint, and isometric drawings to perform static pressure calculations for over 500 MV fans, Fan Coil Units and Air Handling Units' systems.
- Innovated fan selection methods using Excel VLOOKUP and Macros, boost productivity of sales team by 50%.

Singapore Armed Forces, ATGM Platoon Sergeant (BSC) **Jan 2017 – Nov 2018**

- Led and trained a platoon of 12 soldiers, aiding to their personal and professional development.
- Conducting and Safety Officer for physical trainings consisting of over 100 stakeholders in the company.
- Developed planning abilities and handled company and platoon administrative tasks.

EXTRACURRICULAR ACTIVITIES

NUS Fintech Society, Technology Analyst (Machine Learning Department) **Sep 2021 – Present**

- Trained YOLOv5 Object Detection model to detect car damages for vehicle insurance project (InsurTech), integrated into a flask web application and project featured in Singapore Fintech Festival (SFF) 2021.

NUS Entrepreneurship Society (NES), Deputy Director of Sponsorships **Sep 2020 – Sep 2021**

- Networked and source for sponsorships to provide financial support for NES events.
- Organize and source for renowned speakers for NES entrepreneurship webinars.

NUS RoboMasters, Mechanical Engineer **Sep 2020 – Oct 2021**

- Team placed 4th globally (1st in SEA) for DJI RoboMasters University Championship Online Competition 2021.
- Designed and fabricated Standard robot chassis using SolidWorks to ensure it meets allowable stress, strain deformation requirements via Finite Element Analysis (FEA).
- Research focused on vehicle dynamics, wheel skiing and sensitivity analysis of rollover.

NUS Bumblebee Autonomous Systems, Mechanical Engineer **Sep 2019 – Sep 2020**

- Designed and fabricated Hornet 5.0 Autonomous Underwater Vehicle (AUV) actuator arm & ball dropper to represent NUS in the Singapore AUV Challenge 2020 (SAUVC 2020).

PROJECTS

SignPose: Real Time LSTM Keypoint Dynamic Sign Language Detection (Code) **Oct 2021 – Present**

- Trained Keras LSTM Model for real-time sequential classification of dynamic sign language via flask web app.
- Utilized pre-trained Mediapipe library for detection of facemesh, hand pose, body pose estimation.
- Implemented interactive overlay display on webcam interface based on facemesh landmark mappings.

AlphaSign: Real Time Sign Language Object Detection (Demo) (Code) **Oct 2021 – Present**

- Built tensorflow.js web application that recognizes real time American Sign Language (ASL) alphabets in browser via client-side prediction using Tensorflow object detection models and WebGL backend.
- Fine Tuned SSD MobileNetv2 and EfficientNet from Tensorflow 2 object detection model zoo via Google Colab.

GPT-2 Text Generation: Trump Rally Speech (Code) **Aug 2021 – Sep 2021**

- Fine Tuned Hugging Face GPT-2 Text Generation Model on Donald Trump's Rally Speeches using aitextgen.
- Created Trump Rally Speech interactive web application via Streamlit.

Tkinter GUI: COCO Annotation Viewer (Code) **June 2021 – Jul 2021**

- Python Tkinter GUI .exe desktop app for visualization of polygon segmentation and bounding box annotations.

DSTA BrainHack 2021 – TIL AI Camp, Computer Vision & Audio Processing **Jun 2021 – July 2021**

Shopee Code League 2021 – Programming Contest **Mar 2021 – Mar 2021**

AWS Build On Singapore 2020 - Finalist Top 40 Teams (Institute Category) **Jul 2020 – Sep 2020**

NUS InnoVenture Case Competition 2020 - Best Pitch Award **Jan 2020 – May 2020**

ADDITIONAL INFORMATION

Programming Languages: Python | SQL | C++ | HTML | CSS | Javascript | MatLab | Excel VBA.

Libraries/Frameworks: TensorFlow | Tensorflow.js | Keras | PyTorch | TensorBoard | Weights & Biases | OpenCV | Tkinter | SciKit-Learn | Pandas | Numpy | Seaborn | Matplotlib | Librosa | NLTK | TextBlob | BeautifulSoup | Tweepy | Mediapipe | Hugging Face | Streamlit | Pytesseract | Pillow.

Tools: Git | Github | Docker | Flask | JupyterLab | Google Colab | Anaconda | VS Code | Tableau | Notion.

Cloud: GCP Data Science & Machine Learning | AWS SageMaker, Lambdas, S3, Cloud Formation, CLI, Mechanical Turk.

Technical Skills: Telegram Bots | Machine Learning | Deep Learning | Computer Vision | NLP | Audio Processing | Data Crawling, Scraping, Cleaning, Wrangling, Imputation & Visualization | Virtual Environments | Flutter | MS Office | CSWP Solidworks Mechanical Design | Autodesk Fusion 360 | Accounting | Arduino | Statistics | Google Sheet & Excel Marcos.

Non-Technical Skills: Leadership | Project Management | Problem Solving | Collaboration | Initiative | Adaptability | Communication | Presentation | Writing | Curiosity | Creativity | Business Acumen.

Languages: English | Mandarin.

Interests: Volunteering | Travelling | Equity Investment | Table Tennis | Hiking.