

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 (CV & NLP), 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, Edusave Scholarships.

WORK EXPERIENCE

DSTA, AI Engineer Intern

Dec 2021 – Present

- Implemented scene segmentation on images and videos using pyTorch mmsegmentation model.

CARRO, Data Scientist Intern

May 2021 – Dec 2021

- Computer vision team co-lead and main coordinator with external stakeholders to ensure key deliverables are met.
- Deployed AWS Lambda functions for automated scripting and used AWS SageMaker for feature extraction of image annotation polygon segmentation and bounding box instances.
- Created scripts that highlight instance segmentation annotation errors, cutting label verification time by 50%.
- Minimize label verification costs and time of up to 50% by creating automatic data labelling and verification pipeline of instance segmentation using custom Mask RCNN model (used pixelwise binary mask IoU comparison).
- Cut image labelling costs 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 the Supervisely platform.
- Extracted vehicle outline contours using OpenCV for AR overlay display in deployed mobile app camera interface.
- Reduced data preparation time up to 70% by training image classification models to filter 100,000 images.
- Managed data ingestion pipeline and trained object detection model for detection of vehicle damages.
- Performed image processing & automatic wrap perspective algorithms (improved OCR model accuracy by 30%).
- Implemented pre-trained OCR models for text recognition of car license plates and achieved CER up to 10%.
- Conducted signal pre-processing, truncation, and unsupervised classification of audio for acoustic analysis project.
- Carried out exploratory data analysis, data preprocessing, cleaning, imputation, transformation, and augmentation.

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 Industrial fans based on specifications requested by clients.
- Conducted acoustic analysis of 200 MV fans for designation of suitable sound attenuators in ducting systems.
- Used CAD, blueprint, and isometric drawings to calculate static pressure for over 500 ACMV systems.
- Innovated fan selection methods using Excel VLOOKUP and Macros, boosting sales team's productivity by 50%.

Singapore Armed Forces, ATGM Platoon Sergeant (BSC)

Jan 2017 – Nov 2018

- Led and trained a platoon of 12 soldiers, planned and managed company and platoon administrative tasks.
- Conducting and Safety Officer for physical training consisting of over 100 stakeholders in the company.

EXTRACURRICULAR ACTIVITIES

NUS Fintech Society, Technology Analyst (Machine Learning Department)	Sep 2021 – Present
<ul style="list-style-type: none">Vehicle insurance project (InsurTech) featured in Singapore Fintech Festival (SFF) 2021.Trained YOLOv5 model for vehicle damage detection and utilized Flask for inference on a web application.	
NUS Entrepreneurship Society (NES), Deputy Director of Sponsorships	Sep 2020 – Sep 2021
<ul style="list-style-type: none">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
<ul style="list-style-type: none">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).Researched vehicle dynamics, wheel skiing and sensitivity analysis of rollover to improve robot chassis design.	
NUS Bumblebee Autonomous Systems, Mechanical Engineer	Sep 2019 – Sep 2020
<ul style="list-style-type: none">Designed and constructed 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
<ul style="list-style-type: none">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
<ul style="list-style-type: none">Built tensorflow.js web application that recognizes real-time American Sign Language (ASL) alphabets in the browser via client-side prediction using Tensorflow object detection models and WebGL backend.Fine Tuned MobileNetv2 and EfficientNet from Tensorflow 2 object detection model zoo with mAP up to 0.995.	
GPT-2 Text Generation: Trump Rally Speech (Code)	Aug 2021 – Sep 2021
<ul style="list-style-type: none">Created Streamlit web app with adjustable text prompt, word limit, temperature, and top-p input parameters.Fine Tuned GPT-2 Text Generation Model on Donald Trump's Rally Speeches using aitetxgen.	
Tkinter GUI: COCO Annotation Viewer (Code)	June 2021 – Jul 2021
<ul style="list-style-type: none">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 | EasyOCR | Pillow.

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

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

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

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

Languages: English | Mandarin.

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