

# NG ZHILI

Mobile: +65 87170455 | Email: [ng.zhili@u.nus.edu](mailto:ng.zhili@u.nus.edu) | LinkedIn: [www.linkedin.com/in/ngzhili](https://www.linkedin.com/in/ngzhili)

Portfolio: <https://ngzhili.github.io/ngzhilicv/> | GitHub: <https://github.com/ngzhili>



## PROFESSIONAL SUMMARY

- Highly driven and proactive engineer who is passionate about AI, data science, machine learning, robotics.
- Being an entrepreneur and engineer at heart, I seek to utilize my strong analytical and quantitative skills to solve complex tasks and problems in diverse cross-functional teams through cutting edge AI solutions.

## 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).
- 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 EAGLES, College Outstanding Leadership Award, Good Character Award.
- Nominated for Lee Hsien Loong Outstanding All-Round Achievement Award in 2017.

## WORK EXPERIENCE

### CARRO, Data Scientist Intern

May 2021 – Present

- Co-Lead for computer vision project and main POC with project external stakeholders.
- Train and optimized Darknet YOLOv4 bounding box object detection model for detection of vehicle damages.
- Utilized image processing and Tesseract OCR Engine for car license plate recognition.
- Manage data ingestion pipeline and deployed AWS Lambdas functions for automated scripting.
- Scripting using Python to automate feature extraction of instance in AWS SageMaker for the training of computer vision model (COCO to CSV to YOLO annotation formats).
- Created script that automatically generates CSV that highlights image annotation errors such as duplicates, missing annotations, self-intersecting polygons to ensure consistency of labelled data.
- Built an interactive webpage for hiring overseas annotators and managed 20 overseas annotators via Supervisely.
- Carried out exploratory data analysis and data preprocessing, cleaning, transformation, augmentation.
- Conducted signal pre-processing, truncation, and unsupervised classification of audio.

### Opporizon Global, Business Development and Research Intern

May 2020 – Jul 2020

- Assistant to CEO/Founder and supervised 4 interns as Head Intern Coordinator.
- Created content and source for new global business opportunities (B2B and B2C).
- Redesigned company webpage layout and quoted 100 technical data sets for clients.

### 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 new fan selection program methods using Microsoft Excel, improved overall efficiency and productivity of engineering sales department.

### Singapore Armed Forces, ATGM Platoon Sergeant (BSC)

Jan 2017 – Nov 2018

- Led and trained a platoon of 12 soldiers to aid personal and professional development.
- Conducting and Safety Officer for physical trainings for 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 Pytorch YOLOv5 Object Detection model to detect car damages for vehicle insurance project (InsurTech) and integrate into a flask web application.

### NUS Entrepreneurship Society (NES), Deputy Director of Sponsorships

Sep 2020 – Sep 2021

- Network 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 – Present

- 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

### Real Time LSTM Keypoint Dynamic Sign Language Detection ([Code](#))

Oct 2021 – Present

- Trained and built LSTM Keypoint Model that detects dynamic sign language in real-time via a flask web app.
- Utilized pretrained Mediapipe library for detection of face mesh, hand pose, body pose estimation.

### Tensorflow.js: Real Time Sign Language Object Detection ([Demo](#)) ([Code](#))

Oct 2021 – Present

- Build tensorflow.js web application that recognizes 26 American Sign Language (ASL) alphabets via client-side prediction using Tensorflow object detection models.
- Fine Tuned MobileNetv1 SSD and EfficientNet from Tensorflow 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
- Deployed web application via Streamlit.

### Tkinter GUI: COCO Annotation Viewer ([Code](#))

June 2021 – Jul 2021

- Python Tkinter GUI desktop application to visualize CV 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.

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

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

**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.