

# NG ZHILI

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Portfolio: <https://ngzhili.github.io/ngzhilicv/> | GitHub: <https://github.com/ngzhili> | Availability: 9<sup>th</sup> May to 5<sup>th</sup> August 2022



## PROFESSIONAL SUMMARY

- Highly driven and proactive engineer who is passionate about AI, data science, machine learning and deep learning.
- 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 optimize Darknet YOLOv4 bounding box object detection model for detection of vehicle damages.
- Implemented image processing, wrap perspective algorithms, EasyOCR and pyTesseract for OCR project.
- Managed 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.
- Created automatic data labeling and verification pipeline of instance segmentations using Mask RCNN model.
- 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 fan selection methods using Microsoft Excel, improving overall productivity of 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 consisting of over 100 stakeholders in the company.
- Developed planning abilities and handled company and platoon administrative tasks.

## EXTRACURRICULAR ACTIVITIES

<b>NUS Fintech Society, Technology Analyst (Machine Learning Department)</b>	<b>Sep 2021 – Present</b>
<ul style="list-style-type: none"><li>Trained Pytorch YOLOv5 Object Detection model to detect car damages for vehicle insurance project (InsurTech) and integrate into a flask web application.</li></ul>	
<b>NUS Entrepreneurship Society (NES), Deputy Director of Sponsorships</b>	<b>Sep 2020 – Sep 2021</b>
<ul style="list-style-type: none"><li>Network and source for sponsorships to provide financial support for NES events.</li><li>Organize and source for renowned speakers for NES entrepreneurship webinars.</li></ul>	
<b>NUS RoboMasters, Mechanical Engineer</b>	<b>Sep 2020 – Present</b>
<ul style="list-style-type: none"><li>Team placed 4th globally (1st in SEA) for DJI RoboMasters University Championship Online Competition 2021.</li><li>Designed and fabricated Standard robot chassis using SolidWorks to ensure it meets allowable stress, strain deformation requirements via Finite Element Analysis (FEA).</li><li>Research focused on vehicle dynamics, wheel skiing and sensitivity analysis of rollover.</li></ul>	
<b>NUS Bumblebee Autonomous Systems, Mechanical Engineer</b>	<b>Sep 2019 – Sep 2020</b>
<ul style="list-style-type: none"><li>Designed and fabricated Hornet 5.0 Autonomous Underwater Vehicle (AUV) actuator arm &amp; ball dropper to represent NUS in the Singapore AUV Challenge 2020 (SAUVC 2020).</li></ul>	

## PROJECTS

<b>SignPose: Real Time LSTM Keypoint Dynamic Sign Language Detection (<a href="#">Code</a>)</b>	<b>Oct 2021 – Present</b>
<ul style="list-style-type: none"><li>Trained Keras LSTM Model for real-time sequential classification of dynamic sign language via a flask web app.</li><li>Utilized pre-trained Mediapipe library for detection of face mesh, hand pose, body pose estimation.</li></ul>	
<b>AlphaSign: Real Time Sign Language Object Detection (<a href="#">Demo</a>) (<a href="#">Code</a>)</b>	<b>Oct 2021 – Present</b>
<ul style="list-style-type: none"><li>Build tensorflow.js web application that recognizes 24 American Sign Language (ASL) alphabets via client-side prediction using Tensorflow object detection models.</li><li>Fine Tuned SSD MobileNetv2 and EfficientNet from Tensorflow 2 model zoo via Google Colab.</li></ul>	
<b>GPT-2 Text Generation: Trump Rally Speech (<a href="#">Code</a>)</b>	<b>Aug 2021 – Sep 2021</b>
<ul style="list-style-type: none"><li>Fine Tuned Hugging Face GPT-2 Text Generation Model on Donald Trump's Rally Speeches.</li><li>Created Trump Rally Speech interactive web application via Streamlit.</li></ul>	
<b>Tkinter GUI: COCO Annotation Viewer (<a href="#">Code</a>)</b>	<b>June 2021 – Jul 2021</b>
<ul style="list-style-type: none"><li>Python Tkinter GUI desktop application to visualize CV polygon segmentation and bounding box annotations.</li></ul>	
<b>DSTA BrainHack 2021 – TIL AI Camp, Computer Vision &amp; Audio Processing</b>	<b>Jun 2021 – July 2021</b>
<b>Shopee Code League 2021 – Programming Contest</b>	<b>Mar 2021 – Mar 2021</b>
<b>AWS Build On Singapore 2020 - Finalist Top 40 Teams (Institute Category)</b>	<b>Jul 2020 – Sep 2020</b>
<b>NUS InnoVenture Case Competition 2020 - Best Pitch Award</b>	<b>Jan 2020 – May 2020</b>

## 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, 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 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.