

ZENG Linlin

Zenglinlin00@gmail.com • +65 97713181 • Blog: <https://veraz00.github.io/> • Github:veraz00

SUMMARY

- Highly skilled Data Scientist with a proven track record in designing, developing, and deploying AI and Machine Learning solutions for autodriving.
- Proficient in Python, SQL, C++, and AWS, with a **deep learning framework on LLM with LangChain**.
- **Experienced in working with large-scale datasets, including querying on PostgreSQL, creating dynamic dashboard on Tableau.**
- Passionate about leveraging AI to solve complex real-world problems and drive business impact.

TECH SKILLS

- **Programming Languages:** Python, C++, PostgreSQL, MySQL
- **Statistical Analysis:** Tableau for data visualization, Trend Prediction
- **Machine Learning Frameworks:** PyTorch, TensorFlow, LangChain, Streamlit, FlaskAPI
- **Cloud Platforms:** AWS, Azure, Google Cloud
- **Tools and Libraries:** Git, Docker, Kubernetes, MLOps tools

EXPERIENCE

MLOps Engineer ATTIX, Singapore | Feb 2025 – Present

- **Trade Pipeline Setup:** Architected a containerized trade pipeline using Docker Compose, Amazon ECS, and Amazon EKS

Data Scientist Monarch Tractor, Singapore | Apr 2022 – Jan 2025

- **AI-Powered Autodriving:** Developed AI models for self-driving tractor systems, including data collection, model training, and deployment, resulting in a 20% reduction in inference time and 5% IOU increase in semantic segmentation task
- **Model Optimization:** Optimized CNN models for object detection, segmentation, and 3D lane detection, achieving significant improvements in accuracy and speed.
- **Data Engineering:** Designed and implemented scalable data pipelines for 24h data ingestion, cleaning, and transformation.
- **Data Visualization:** **Built interactive data dashboards on Tableau, leveraging PostgreSQL,** to provide actionable insights for data-driven decision-making.

Research Engineer A*STAR, Singapore | Aug 2021 - Mar 2022

- **Medical Image Analysis:** Conducted research on adversarial attacks and defenses for medical images, enhancing model robustness.
- **Model Improvement:** Improved classification algorithms on noisy datasets using techniques like co-teaching and knowledge distillation, bringing 5% increase in classification accuracy.
- **API Development:** Developed and deployed a Flask API for eye disease prediction, leveraging containerization for efficient scalability.

PROJECTS

FIELD SEGMENTATION

Sep 2024

- **Initialized solution roadmaps, aligning with business objectives and reporting to senior management**

- Collaborated with the labeling team to define and communicate geographic data labeling requirements in QGIS, ensuring data quality and consistency.
- Developed and trained deep learning segmentation models using TorchGeo, mmdcv and PyTorch Lightning.
- Incorporated unit testing and database logging for development tracking and experiment reproducibility.

LLM (Large Language model) AGENT AS MAINTENANCE CHATBOT

Feb 2024

- **Pioneered research into LLMs for agricultural applications, identifying potential use cases**
- Built a **user-friendly farming chatbot using LangChain** to chat with farmers about tractor maintenance questions
- Developed a **RAG tool** capable of retrieving structured and unstructured data from **graph vector database** to improve chatbot accuracy and response time by 30%.
- Created a **docker image**, with UI interface for easy maintenance and accessibility

ROWFOLLOW FROM IMAGE AND POINTCLOUD

May 2023

- Streamlined data labeling and cleaning operations by designing a user-friendly Flask Web API
- Developed a bidirectional transformer network for robust driving direction tracking
- Enabled customized Distributed Data Parallel (DDP) training with Pytorch Lightning
- Improved 5% (IOU) in precision and 20% in FPS through optimized data preprocessing, model architecture, and loss functions

2D VINEYARD SEGMENTATION

Dec 2022

- Enhanced video segmentation stability by incorporating TC loss and memory modules into the network, improving IOU by 2%
- **Implemented A/B testing** to evaluate the impact of deployment strategies, aiming to optimize the overall deployment process
- **Created technical documents** for the vineyard segmentation system to facilitate knowledge sharing

AUTOMATIC IMPLEMENT DETECTION

April 2022

- Spearheaded object detection model research and benchmarking
- Streamlined data labeling by generating ground truth using Gen AI, totally removing manual effort
- Developed image calibration techniques for fisheye camera data using OpenCV
- Designed and automated a complete model pipeline (data collection, fine-tuning, evaluation, and TensorRT conversion) **for deployment on AWS**

ADVERSARIAL ATTACK TO MEDICAL IMAGE

Jan 2021

- Developed adversarial algorithms based on seniors' research ideas
- Experimented attack using adversarial attack (FGSM, PDG), special logos and gradient heatmap

EDUCATION

- **Master of IT in Business (AI Track)** *Singapore Management University | Jan 2021 - Mar 2022*
- **Bachelor of Science in Chemistry** *Southwest University | Sep 2015 - Jun 2019*
- **Exchange Program in Computer Science** *Colorado State University | Aug 2017 - Dec 2017*

ADDITIONAL

- Current Location: Singapore
- Citizen: Chinese

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