Yunfan, SHI

Education

University of Liverpool, Liverpool, UK **09/2021 – 06/2023**
Bachelor of Science in Computer Science (Hons)

- Year 2 GPA: 86%
- COMP219 87% overall, Assignment: Resilience to Adversarial Attack 92%

Xi'an Jiaotong-Liverpool University (XJTLU), CN **09/2019 – 06/2021**
Bachelor of Science in Information and Computing Science

- Major Rank: Top 5%

Coursera:
Andrew Deep Learning Specialization at Ng DeepLearning.ai:

Papers to be published:

Journal name: Remote Sensing (Earth and Planetary Sciences Q1)
Title: Comparing summer and winter Deep learning-based thermal image analysis of complex pavement defect conditions
July 2022
Journal name: Remote Sensing (Earth and Planetary Sciences Q1)
Title: Automatic road pavement damage detection using DarkNet19 and YOLOv5
Aug 2022
Title: Incorrect mask detection of kitchen staff using YOLOv5 and edge computing
Aug 2022

Research Experiences

UoL Department of Civil Engineering and Industrial Design **09/2021-Present**

- Using MATLAB Darknet19 (Deep convolutional network) and PyTorch YOLOv5s to classify 9 road damage types
- Compared 2 popular model performance under SS, WS, WR, WC (weather) in DC, IR, MSX

XJTLU Surf kitchen mask/fire/uniform anomaly detection:

- Custom train, finetuned and prune YOLOv5s model

My solution:	Model ensemble from YOLOv5, v6, x and output more accurate and stable detection results.
The popular solution:	Using only 1 model or ensemble from models in the same family say YOLOv5

AI-Based BI Website Development **01/2022 – 05/2022**
Software Development Group Project
Group Leader

- Used Django, TensorFlow, Vue, LSTM model, Polynomial price demand curve model and RFM customer segmentation model to build and deployed an industrial standard website providing visualized short/long term business metric forecast

Optimization on YOLOv5n Hyperparameter of Face Detection in the Low-Resolution Image via DOE
Supervisor: Prof. Jens Rittscher from the University of Oxford 12/2021 – 03/2022

- Trained Yolov5 models on Yale Face, Wider Face, FFHQ and Casual Conversation datasets for Low-Resolution Face detection and used Design of Experiments techniques to optimize the large number of hyperparameters of YOLOv5 Object detection model family

AI UAV Water Quality Analysis **10/2020 – 03/2022**

- Responsible for safe landing procedure
- Conducted drone flight simulation in ROS Prometheus

The popular solution:	Using expensive Depth camera or LiDAR
My solution:	Fast OpenCV Edge and Polygon detection integrated to ROS MAVSDK using 2D camera Custom trained Monodepth2 model using Kaggle images

Internship/Work Experiences

Montnets, Shenzhen **Text-To-Image Research Intern** **06/2022-09/2022**

- Investigated and analyzed several novel text to image deep learning models such as GauGAN, DALL-E 1-2, Imagen, Parti, presented analysis report to supervisor
- Selected StyleGAN3 and Parti to train prototype models for company service and conducted commercial service scale up cost feasibility report
- Google imagen train, StyleGAN nada infer test
- Disco diffusion parameter tunning for inference speedup (1.6X faster) and hardware acceleration (up to 8.4X faster) API deployment into NFT artwork metaverse
- Further running time and aesthetic effect balance optimization based on off-the-shelf libraries integration, algorithm improvement (approximate, space for time) and mathematics (function discrete approximate, change of basis, AMP, change of coordinate system and dim reduction using SVD and PCA) (up to 50X faster)

Ivy **Contract Developer** **07/2022-Now**

- Contributed to ivy.all method: JAX, PyTorch, TenforFlow, Numpy, MXNet implementation & wrapping, document maintenance
- Contributed to ivy.frontend.tensorflow.hard_sigmoid activation function: code implementation, debug, write and conduct test on all backends

AI Competitions

- Kaggle NLP 21/727 07/2022
- Kaggle Petals to the Metal - Flower Classification on TPU 9/123 07/2022
- Kaggle Petfinder (ranked 464 of 3537) 01/2022

Skills

- Kaggle certificate: Python and Pandas, Data Cleaning, Feature Engineering, Machine Learning and Explanability, Computer Vision, Data Visualization
- Python, MATLAB, Excel, Tableau, Java/C/C++/C#, PyCharm/iDea, VS/VSCode