

EDUCATION BACKGROUND

University College London

Major: Robotics and Computation **Degree:** Master of Science

Sep. 2023-Sep. 2024

University of Liverpool

Major: Computer Science **Degree:** Bachelor of Science

Sep. 2019-Jun. 2023

GPA: 86/100 (First Class Honours) AI safety 87% Calculus/Algebra 90%

Specifications: Stanford Deep Learning , University of Toronto Self-driving, University of Pennsylvania Robotics

INTERNSHIP & WORKING EXPERIENCES

University of Oxford EWADA LLM

Oxford, UK

Research Developer

Jul. 2023-Now

- Privacy Preserving Web development with Solid
- Llama 2/GPT-4/Hugging Chat 2 web integration with Langchain

Ivy

London, GB

Backend Developer

Jul. 2022-Oct 2022

- Contributed to ivy.all method: JAX, PyTorch, TensorFlow, Numpy, MXNet implementation & wrapping, document maintenance
- Contributed to ivy.frontend.tensorflow.hard_sigmoid activation function: code implementation, debugging, testing on all backends

RESEARCH PROJECTS & PAPERS

UoL Honours Year Computer Science Project

Supervisor: Xiaowei Huang (Professor)

Sep. 2022-May 2023

- Developed novel attention mask proposal network architecture and specific learning mechanism
 - Studied state-of-the-art XAI metrics to develop a general trainable XAI kernel for the novel network to approximate XAI mixtures, and Heuristics to develop appropriate activation and loss functions of the novel network to find attention mask to guide PGD attack
 - Explored the stealth, explanation ability and efficiency of the attack and the future generalization prospects of XAI-guided image classification attack mask proposal
- *Patent in progress and Paper to be published:
Yunfan Shi. End-to-end mask proposal network towards stealthy, explainable and query-efficient image classification attack

UoL Road Damage Weather Analysis

Sep. 2021-Present

- Adopted the deep convolutional network Matlab Darknet19 (14-minute training for 99% accuracy) and PyTorch YOLOv5s (3-minute training for 97% accuracy) to classify 9 road damage types and compared these 2 popular models' performance under SS, WS, WR, WC (weather) in DC, IR, MSX images
- Wrote two papers on this research project, which have been accepted by *Remote Sensing* (Earth and Planetary Science Q1) and are published:

[1]Yunfan Shi. Comparing summer and winter deep learning-based thermal image analysis of complex pavement defect

[2]Yunfan Shi. Automatic road pavement damage detection using DarkNet19 and YOLOv5

XJTLU Surf Kitchen Mask/Fire/Uniform Anomaly Detection Project Leader

Jun. 2022-Mar. 2023

Supervisor: Xiaohui Zhu (Assistant Professor), Yong Yue (Professor)

- Trained and finetuned YOLOv5s model (6.5X cheaper), as well as model pruning and ensembling for over 700 images processing to output more accurate and stable detection results, with a precision of 97%
- Paper published in ICCCR23: Realtime Mask Detection of Kitchen Staff Using YOLOv5 and Edge Computing

AI-Based BI Website Development

Jan. 2022-May. 2022

Project Leader

- Used Django, TensorFlow, Vue, LSTM model, demand curve model and customer segmentation model to develop and deploy an industrial standard website providing visualized Business Intelligence

YOLOv5 Low-Resolution Face Detection

Dec. 2021-Mar. 2022

Supervisor: Jens Rittscher (Professor of the University of Oxford)

- Trained Yolov5n models on Yale Face, Wider Face, FFHQ and Casual Conversation datasets for Low-Resolution Face detection
- Employed Design of Experiments techniques to optimize a large number of parameters of YOLOv5n object detection model

AI UAV Water Quality Analysis

Oct. 2020-Mar. 2022

Supervisor: Xiaohui Zhu (Assistant Professor), Yong Yue (Professor)

- Trained and deployed a Monodepth2 model using UAV 2D camera images (37X cheaper and 9X faster)

AI Competitions: Kaggle NLP 21/727

Jul. 2022

Languages: English (proficient: GRE 326 IELTS 7.5), Mandarin (native)