

# YUNFAN SHI

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## EDUCATION BACKGROUND

<b>University College London</b> <b>Major:</b> Robotics and Computation <b>Degree:</b> Master of Science	<i>Sep. 2023-Sep. 2024</i>
<b>University of Liverpool</b> <b>Major:</b> Computer Science <b>Degree:</b> Bachelor of Science <b>GPA:</b> 86/100 (First Class Honours) AI safety 87% Calculus/Algebra 90%	<i>Sep. 2019-Jun. 2023</i>

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

## INTERNSHIP & WORKING EXPERIENCES

<b>University of Oxford EWADA LLM</b> Research Developer	<b>Oxford, UK</b> <i>Jul. 2023-Now</i>
➤ Privacy Preserving Web development with Solid ➤ Llama 2/GPT-4/Hugging Chat 2 web integration with Langchain	

  

<b>Ivy</b> Backend Developer	<b>London, GB</b> <i>Jul. 2022-Oct 2022</i>
➤ 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

<b>UoL Honours Year Computer Science Project</b> Supervisor: Xiaowei Huang (Professor)	<i>Sep. 2022-May 2023</i>
➤ 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	
<b>UoL Road Damage Weather Analysis</b>	<i>Sep. 2021-Present</i>
➤ 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 <i>Remote Sensing</i> (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	
<b>XJTLU Surf Kitchen Mask/Fire/Uniform Anomaly Detection Project Leader</b> Supervisor: Xiaohui Zhu (Assistant Professor), Yong Yue (Professor)	<i>Jun. 2022-Mar. 2023</i>
➤ 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 ICCRR23: Realtime Mask Detection of Kitchen Staff Using YOLOv5 and Edge Computing	
<b>AI-Based BI Website Development</b> Project Leader	<i>Jan. 2022-May. 2022</i>
➤ 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	
<b>YOLOv5 Low-Resolution Face Detection</b> Supervisor: Jens Rittscher (Professor of the University of Oxford)	<i>Dec. 2021-Mar. 2022</i>
➤ 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	
<b>AI UAV Water Quality Analysis</b> Supervisor: Xiaohui Zhu (Assistant Professor), Yong Yue (Professor)	<i>Oct. 2020-Mar. 2022</i>
➤ Trained and deployed a Monodepth2 model using UAV 2D camera images (37X cheaper and 9X faster)	
<b>AI Competitions:</b> Kaggle NLP 21/727 <b>Languages:</b> English (proficient: GRE 326 IELTS 7.5), Mandarin (native)	<i>Jul. 2022</i>