YIXUAN (RICHARD) XU

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email \diamond linkedin \diamond github

EDUCATION

University of Toronto Toronto, ON Candidate for BASc in Engineering Science (Machine Intelligence) September 2018 - April 2023 cGPA: 3.6 Extracurricular Involvement: Co-president at University of Toronto Machine Intelligence Student Team. Relevant Coursework: Algorithm and Data Structure; AI/ML; Database; Operating System; Matrix Algebra and Optimization; Statistic and Probability.

RESEARCH INTERESTS

Autonomous Vehicle, LiDAR-based Object Detection and Recognition, LiDAR-based Semantic and Instance Segmentaion, Image Generation, Audio Generation, Efficient Vision Transformers.

PUBLICATIONS AND PREPRINTS

Yixuan Xu^{*}, Hamid Fazlali^{*}, Yuan Ren, and Binging Liu. AOP-Net: All-in-One Perception Network for Joint LiDAR-based 3D Object Detection and Panoptic Segmentation. Under review.

Enxu Li*, Ryan Razani*, Yixuan Xu, and Bingbing Liu. CPSeg: Cluster-free Panoptic Segmentation of 3D LiDAR Point Clouds. Under review. ArXiv

Hamid Fazlali, Yixuan Xu, Yuan Ren, and Bingbing Liu. A Versatile Multi-View Framework for LiDAR-based 3D Object Detection with Guidance from Panoptic Segmentation. To appear at CVPR, 2022. ArXiv

Enxu Li*, Ryan Razani*, Yixuan Xu, and Bingbing Liu. SMAC-Seg: LiDAR Panoptic Segmentation via Sparse Multi-directional Attention Clustering. To appear at ICRA, 2022. ArXiv

PATENTS

Yixuan Xu, Hamid Fazlali, and Binging Liu. System and Method for Guiding LiDAR-based 3D Object Detection by Multi-resolution Features Recovery Using Panoptic Segmentation Information. US Patent Application No. 63/317,360

PROFESSIONAL EXPERIENCE

Noah's Ark Lab, Huawei Canada **3D** Perception Research Intern

Supervised by Dr. Bingbing Liu, Cognitive IoV Perception Team

• Researching LiDAR-based 3D object detection, panoptic segmentation, and multi-task perception systems for autonomous vehicles.

LEADERSHIP EXPERIENCE

UTMIST (University of Toronto Machine Intelligence Student Team)	Toronto, ON
Advisor, VP Technical Writing	June 2021 -
Co-president, Student Researcher	Jun 2020 - May 2021

- Served a community of 950 machine intelligence enthusiasts, with the goal of connecting students with graduate students, professors, and industries in the field to "clear the mist" in machine intelligence.
- Oversaw workshops, community engagement, industry relations, marketing efforts, and project teams, in collaboration with other execs.
- Actively engaged with 80+ associates to understand their needs, while striving to achieve new ways and gain new connections to grow organization.

Markham, ON May 2021 - August 2022

OpenRace Co-founder, Team Lead

- Launched a react mobile fitness app (Java, JavaScript, SQL), enabling runners to match and race virtually in real-time and in an equivalent condition.
- Directed a team of 12 to carry out extensive market research, customer validation, UX/UI testing before developing features and pitch deck.

Basic Military Training Centre, Singapore Armed Forces Section Commander, Infantry Sergeant

- Excelled in demanding training exercises, later appointed as army instructor.
- Led training, ensured safety, and provided counselling for 124 new enlistees.

TECHNICAL SKILLS

Programming Machine Learning	Python, Matlab, C, SQL, Assembly, Verilog, Shell Pytorch, Tensorflow
Tools	Git, Docker
Presentation	Latex, Powerpoint

PROJECTS

deMISTIfy: Machine Intelligence Newsletters (Ongoing since 2021)

- Monthly machine learning e-mail newsletters featuring summaries of articles written by UTMIST's technical writers, covering interesting machine learning papers, news, and resources.
- Serving as the head editor and technical writer.

SketchToPicture: Paired Image-to-Image Translation using cGAN Conditioned on Class Prediction (2021) Video

- A generative model that uses sketches or edge maps as input, classifies the depicted objects, and converts the sketch into realistic images. Used pretrained ResNet50 as classifier to provide labels for a label-supervised pix-2-pix that leverages conditional instance normalization.
- Served as the team lead.

COVID-19 Detection Diagnosis and Segmentation Tool (2020)

• An encoder-decoder model for detecting COVID-like symptoms and segmenting affected areas on lungs given CT scans as a potential method for easier diagnosis during test kit shortages. Achieved 91% classification test accuracy given limited samples...

OpenRace: Bringing Runners Together in Virtual Races (2018) Pitch Deck, App Demo, Promo Video

- A mobile fitness app that enables runners to match with other similarly-skilled runners from around the world and compete in real-time races anywhere, anytime.
- Served as the team lead.

Video

Singapore October 2016 - August 2018

Past Issues, Medium Articles