Tianshu Kuai

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Education

Sep 2024 – Current	**PhD in Computer Science**, Université de Montréal & Mila *GPA: 4.30 / 4.30* *Advisor: Prof. Noam Aigerman*
Sep 2022 – Dec 2023	**MSc in Applied Computing**, University of Toronto *GPA: 4.00 / 4.00* *Advisor: Prof. Igor Gilitschenski*
Sep 2017 – Apr 2022	**Bachelor of Applied Science in Engineering Science**, University of Toronto **Robotics Major**, Artificial Intelligence Minor *Major GPA: 3.80 / 4.00, cGPA: 3.73 / 4.00* *Thesis Advisor: Prof. Steven L. Waslander*

Publications

2025	[4]	**T. Kuai**, S. Honari, I. Gilitschenski, and A. Levinshtein, "Towards Unsupervised Blind Face Restoration using Diffusion Prior," ***WACV*** 2025.
2023	[3]	**T. Kuai**, A. Karthikeyan, Y. Kant, A. Mirzaei, and I. Gilitschenski, "CAMM: Building Category-Agnostic and Animatable 3D Models from Monocular Videos," ***CVPRW*** 2023.
	[2]	A. Mahmoud, J. S. K. Hu, **T. Kuai**, A. Harakeh, L. Paull, and S. L. Waslander, "Self-Supervised Image-to-Point Distillation via Semantically Tolerant Contrastive Loss," ***CVPR*** 2023.
2022	[1]	J. S. K. Hu, **T. Kuai**, and S. L. Waslander, "Point Density-Aware Voxels for LiDAR 3D Object Detection," ***CVPR*** 2022.

Academic Service

Conference Reviewer	**CVPR, ECCV, WACV, AAAI**

Honors

Jan 2020	**University of Toronto Engineering Competition** • Awarded the second prize in the senior design competition
Mar 2019	**NSERC Undergraduate Student Research Award** • Undergraduate student research award from Natural Sciences and Engineering Research Council of Canada (NSERC)

Feb 2019	**University of Toronto Excellence Award** • Awarded to University of Toronto undergraduate students based on research aptitude
Sep 2017	**University of Toronto Engineering Entrance Scholarship** • Scholarship for top engineering candidates pursuing studies at the University of Toronto

Experience

May 2023 - Apr 2024	**Samsung AI Center Toronto** | Research Intern *Supervised by Dr. Alex Levinshtein, Samsung AI Center Toronto* • Research on diffusion model based real-world image restoration and enhancement [4]
May 2022 - Apr 2024	**University of Toronto** | 3D Computer Vision Researcher *Supervised by Prof. Igor Gilitschenski, Toronto Intelligent Systems Lab (TISL)* • Research on 3D scene representation and manipulation • Proposed a template-free method [3] for building animatable 3D models for arbitrary types of articulated and deformable objects from a collection of monocular videos, which allows users to animate reconstructed objects in 3D for content creation
May 2021 - Apr 2023	**University of Toronto** | Computer Vision Researcher *Supervised by Prof. Steven L. Waslander, Toronto Robotics and Artificial Intelligence Lab (TRAILab)* • Research on self-supervised LiDAR semantic segmentation for autonomous driving, and contributed to the development of a novel method [2] that outperforms state-of-the-art 2D-to-3D representation learning frameworks • Designed and supported the development of high-performance LiDAR 3D object detection models for autonomous vehicles. PDV [1] achieved state-of-the-art multi-class 3D object detection results on Waymo Open Dataset upon publication
July 2021 - June 2022	**aUToronto** | Computer Vision Engineer *University of Toronto Autonomous Driving Group, SAE/GM AutoDrive Challenge* • Research on fast and lightweight 3D perception models on collected data • Worked on deploying real-time perception models on autonomous vehicles
May 2020 - May 2021	**Qualcomm** | Machine Learning Research Intern *Supervised by Dr. Shaojie Zhuo, Machine Learning Research Team* • Proposed several efficient deep learning models for audio processing • Applied state-of-the-art methods for neural network compression • Contributed to NPU software compiler pipeline development

Selected Projects

2021	**Real Time Audio Denoiser** • A model built using convolutional neural networks with an encoder-decoder structure • The model takes the noisy speech as input and produces a de-noised speech as the output • Achieved good performance on various types of signals with only around 33k parameters
2019	**Autonomous Ball Dispensing Mobile Machine** • Started from literature and market survey, through professional engineering decision-making tools to successfully converge to a fully autonomous ball dispensing machine prototype • Used PIC18F4620 with MPLAB X and Arduino Nano to enable movement of its components, real-time clock, user Interface, and IR Remote Control • Can potentially be used for automatic delivery and dispensing in warehouses