

Kevin Ta

ROBOTICS · MECHATRONICS ENGINEER

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Skills

Programming	Python, Rust, C, C++, C#, MATLAB, ROS
Robotics	computer vision, calibration, SLAM, machine learning, 3D reconstruction, dynamic programming & optimization
Mechatronics	lidar, radar, event cameras, visible cameras, systems modelling, thermal modelling, mechanical design, CAD

Experience

Waabi

SOFTWARE DEVELOPER

- Building the next-generation of safe and scalable self-driving technology.

Toronto, Canada

Jan. 2023 - Present

ETH Zürich Computer Vision Lab

MASTER THESIS

- Developed methods for implicitly learning sensor-agnostic uncertainty from noisy depth maps for online neural implicit SLAM.
- Fused multiple sensor observations by learning the implicit weighting from the learned uncertainty to improve neural scene reconstruction.

Zürich, Switzerland

May 2022 - Nov. 2022

SEMESTER THESIS

- Fully calibrated a perception sensor stack featuring a state-of-the-art event-based camera, a traditional frame-based camera, a MEMS LiDAR, and a spinning RADAR to enable collection of a new autonomous driving dataset for adverse conditions.

Mar. 2022 - May 2022

Cruise

SENSOR CALIBRATION INTERN

- Developed high accuracy calibration and signal processing for next-generation perception sensors on the Cruise Origin, a re-imagined and purpose-built autonomous vehicle platform.
- Corrected intrinsic calibrations for visible cameras, long-wave IR cameras, and indirect time-of-flight cameras to accurately address geometric distortions and reduce projective geometry errors by a factor of 10 at vendor calibration stations.
- Researched and built software tools to analyze impact of calibration errors, developing calibration verification strategies to mitigate effects on perception by limiting errors to within one pixel space.

San Francisco, California

Sep. 2021 - Feb. 2022

ETH Zürich Neural Control of Movement Lab

RESEARCH ASSISTANT

- Implemented a real-time computer vision pipeline to estimate pupil size from RGB and infrared images using RANSAC-based feature extraction and ellipse fitting, achieving pupil size fits within one pixel standard deviation.

Zürich, Switzerland

Oct. 2020 - Jul. 2021

UBC Collaborative Advanced Robotics and Intelligent Systems Lab

MECHATRONICS RESEARCH ASSISTANT

- Developed individualized ML pipelines for terrain classification and user intention detection to inform more intuitive co-control schemes using power-assisted wheelchairs, reducing user load in adverse terrain.
- Built up sensor hardware/software for TCP/IP and Bluetooth connections with Python and C++ for kinematic data streaming at 300 Hz.

Vancouver, Canada

May 2019 - Aug. 2019

Schneider Electric Solar

SOLAR PREDICTIVE ANALYTICS AND MODELLING INTERN

- Implemented ML-based anomaly detection algorithms in Python to analyze daily data logs from globally situated utility-scale inverters in a predictive reliability model, informing effective preventative maintenance on deployed utility-scale solar inverters.

Burnaby, Canada

Jan. 2018 - Aug. 2018

Publications

Kevin Ta*, Erik Sandström*, Luc Van Gool, and Martin R. Oswald, "UncLe-SLAM: Uncertainty Learning for Dense Neural SLAM," IEEE/CVF International Conference on Computer Vision Workshops (ICCVW), 2023.

Kevin Ta, David Brueggemann, Tim Brödermann, Christos Sakaridis, and Luc Van Gool, "L2E: Lasers to Events for 6-DoF Extrinsic Calibration of Lidars and Event Cameras," IEEE International Conference on Robotics and Automation (ICRA), 2023.

Education

ETH Zürich (Swiss Federal Institute of Technology)

M.Sc. IN ROBOTICS, SYSTEMS, AND CONTROL

Zürich, Switzerland

Sep. 2020 - Dec. 2022

UBC (University of British Columbia)

B.A.Sc. IN MECHANICAL ENGINEERING, MECHATRONICS SPECIALIZATION

Vancouver, Canada

Sep. 2014 - May 2020