

# Alexander Millane

SENIOR ROBOTIC PERCEPTION ENGINEER

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## Summary

Hey, I'm Alex. I work at [Nvidia](#) on real-time 3D reconstruction for robotics using [embedded GPUs](#). I finished my Ph.D. in the [Autonomous Systems Lab](#) at [ETH Zürich](#), in Switzerland, where I worked on 3D mapping for rotary-wing UAVs. I love working with passionate people on hard problems that lie in the intersection of mathematics, software, and physical systems.

## Education

### ETH Zürich - Ph.D

Zurich, Switzerland

DISSERTATION: SCALABLE DENSE MAPPING USING SIGNED DISTANCE FUNCTION SUBMAPS.

2016 - 2021

- My Ph.D. focused on 3D map-building for rotary-wing UAVs.
- Research on representations for mapping large-scale environments on computationally constrained platforms.
- I spent the final part of my Ph.D. as a visiting scientist in the [Microsoft Mixed Reality & AI Zurich Lab](#).

### ETH Zürich - Master in Robotics, Systems and Control

Zurich, Switzerland

DISSERTATION: STATE ESTIMATION FOR A TETHERED AIRCRAFT. GPA: 5.55/6.0.

2012 - 2015

- Sensor fusion for estimating the pose of a tethered, power generating aircraft.

### University of Canterbury

Christchurch, New Zealand

B.S IN MECHATRONICS (WITH HONORS), GPA: 8.5/9.0.

2007-2010

## Work Experience

### NVIDIA

Zürich, Switzerland

SENIOR ROBOTICS ENGINEER

2021-present

- Developed a **GPU-accelerated 3D construction framework** from zero in a 3 person team.
- Integrated into an on-robot navigation pipeline. [Check out our video](#)
- Continuous testing of the pipeline on NVIDIA servers.
- Released code open source ([nvblox](#) and [nvblox\\_ros](#))

### Sauber Motorsport AG.

Hinwil, Switzerland

RESEARCH AND DEVELOPMENT INTERN

2013

- An eight month internship as a member of the electronics design team for Sauber's 2014 Formula 1 race car.
- Creation of a **simulation model** of an electro-hydraulic brake-by-wire system. Model-based **controller design**.
- Implementation of real-time, safety and performance-critical **control code** which was **deployed to a Formula 1 car** during the 2014 season.

### Infact Limited, Engineering Design Consultancy

Christchurch, New Zealand

RESEARCH AND DEVELOPMENT ENGINEER

2010-2012

- Development of an acoustic wood testing tool and integration into a hydraulic, heavy vehicle.
- **Digital electronics** design, **embedded software** development, **signal processing** and extensive prototyping and testing.
- Running **operational trials** at forestry sites located in New Zealand, Australia and the United States.

## Research Projects

### Mixed Reality & AI Lab Zurich

Zürich, Switzerland

VISITING RESEARCHER

2020

- 6 month visiting researcher position.
- Research on **geometry-based global localization** in distance-function-based maps.
- Led to a [Robotics and Automation Letters](#) submission. Check out our [video](#).

