



# Zachary Taylor

## Education and Experience

- 2015 - now **Senior Researcher** [ETHZ, Switzerland](#)  
Working in the Rotary Wing research group at the Autonomous Systems Lab
- 2011 - 2015 **Doctor of Philosophy** [University of Sydney, Australia](#)  
Thesis: Automatic Markerless Calibration of Multi-modal Sensor Systems.  
Supervisors Juan Nieto (Primary) and David Johnson (Associate)
- 2008 - 2011 **Bachelor of Engineering (Mechatronics)** [University of Canterbury, New Zealand](#)  
1st Class Honours

## Personal Info

Nationality: New Zealand  
DoB: 14/07/1989

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## Links to More Info

[ztaylor.com](http://ztaylor.com)  
Github  
Google Scholar  
Research Gate  
Thesis  
ASL ETHZ

## Programming Languages

### Strong

C++  
C  
Matlab

### Basic

Python  
Cuda  
Latex

## Hobbies

Running  
Hiking  
Skiing  
Diving  
Quadcopters

## Publications

18 Publications (7 first author) in top rated robotics publications in the last 6 years  
9 conferences, 5 journals and 4 workshops. See my [website](#) or google scholar for the list.  
Two indicative publications:

Helen Oleynikova, Zachary Taylor, Roland Siegwart, and Juan Nieto.

**Safe Local Exploration for Replanning in Cluttered Unknown Environments for Microaerial Vehicles.** IEEE Robotics and Automation Letters 3, no. 3 (2018): 1474-1481.  
*In order to enable microaerial vehicles (MAVs) to assist in complex, unknown, unstructured environments, they must be able to navigate with guaranteed safety, even when faced with a cluttered environment they have no prior knowledge of...*

Zachary Taylor, and Juan Nieto.

**Motion-based calibration of multimodal sensor extrinsics and timing offset estimation.** IEEE Transactions on Robotics 32.5 (2016): 1215-1229.  
*This paper presents a system for calibrating the extrinsic parameters and timing offsets of an array of cameras, 3-D lidars, and global positioning system/inertial navigation system sensors, without the requirement of any markers or other calibration aids...*

## Research Interests

I am one of two senior researchers at the Autonomous Systems Lab overseeing the work of the rotary wing group. Our groups focus is on getting Micro Aerial Vehicles (MAVs) out of the lab and into harsh unstructured environments (industrial sites, caves, forests, etc) where they need to not only operate autonomously, but perform useful tasks. These applications range from industrial inspection, to search-and-rescue, to robotics competitions and beyond. Because of this our work spans a large range of topics including state estimation, perception, mapping, planning and control that must all be brought together to run in real-time fully on-board our custom build platforms.

Before joining the ASL team I did my PhD in multi-modal sensor calibration with a focus on aligning lidar and camera systems without the need for any markers. This work studied a range of approaches and use cases such as motion based strategies for aligning vehicle mounted sensors with no overlap, or aligning high resolution tripod mounted setups where the extrinsic sensor placement changed between each scan.

