

# Vincent Kee

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## Education

### Massachusetts Institute of Technology (MIT)

*Candidate for Master of Engineering in Electrical Engineering and Computer Science*

Concentration: Artificial Intelligence

Relevant Courses: Autonomous Vehicles, Underactuated Robotics, Cognitive Robotics

*Bachelor of Science in Electrical Engineering and Computer Science; GPA: 4.6/5.0*

Relevant Courses: Robotics: Science and Systems, Computer Vision, Feedback Systems, Algorithms

**Cambridge, MA**

*June 2017*

*June 2016*

## Work Experience

### Perception and Localization Group, Draper

*Draper Fellow*

**Cambridge, MA**

*June 2016 - Present*

- Working on the perception pipeline to enable an autonomous robot to perform an oil change on any car

*Draper Laboratory Undergraduate Research and Innovation Scholar*

*September 2015 - May 2016*

- Integrated deformation graphs into the dense visual SLAM algorithm KinectFusion to improve scene reconstruction quality in large-scale environments using RGB-D camera depth data

*Signal Processing, Algorithms, & Software Summer Student*

*May 2015 - August 2015*

- Implemented methods to robustify the iterative closest point component of the KinectFusion algorithm

### Aerospace Controls Lab, MIT Laboratory for Information and Decision Systems (LIDS)

*Undergraduate Researcher*

**Cambridge, MA**

*January - May 2015*

- Worked on path planning algorithms for navigating a car through a pedestrian rich environment

### Aerial Robotics Group, Aurora Flight Sciences

*Electrical Engineering and Computer Science Intern*

**Manassas, VA**

*June - August 2014*

- Developed path planning algorithms for scanning areas with UAVs along with workflow and software application
- Conducted two demos of mission planning tool and presented work to audience of over 50 company engineers

### MIT-SUTD International Design Centre, Singapore University of Technology and Design (SUTD)

*Undergraduate Researcher*

**Singapore**

*July - August 2013*

- Designed and fabricated a nested reconfiguration modular robotics system capable of rearranging its own modules (intra-reconfiguration) and combining with other systems to form more complex systems (inter-reconfiguration)
- Demonstrated intra-reconfiguration into all seven one-sided tetrominoes with the hinged tetromino prototype

## Projects

### Advances in Computer Vision Final Project - Scene Recognition

**November - December 2015**

- Designed deep convolutional neural networks for scene recognition and trained them with the Mini Places Challenge dataset, a subset of the Places2 Challenge dataset as part of a three person team

### Robotics: Science and Systems Final Project - A Fully Autonomous Localizing Mobile Robot February - May 2015

- Implemented a particle filter utilizing RGB-D camera sensor data and an adaptive RRT-based motion planning algorithm for a fully autonomous localizing mobile robot as part of a four person team

## Technical Skills

C++, Java, Python, MATLAB, Robot Operating System (ROS), JavaScript

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## Awards

### 2nd Place in MIT Mobile Autonomous Systems Laboratory Robotics Competition

**January 2014**

- Designed, manufactured, and programmed a fully autonomous robot utilizing computer vision and ultrasonic sensor feedback for navigation in one month as part of a five person team

## Selected Publications

Kee, V., Rojas, N., Elara, M. R., & Sosa, R. (2014, July). Hinged-Tetro: A self-reconfigurable module for nested reconfiguration. In *Advanced Intelligent Mechatronics (AIM), 2014 IEEE/ASME International Conference on* (pp. 1539-1546). IEEE.