

Vincent Kee

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Education

Massachusetts Institute of Technology (MIT)

Candidate for Master 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

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.