

Vincent Kee

vincentkee.wordpress.com • vkee@mit.edu • Phone: (310) 528 - 8831

Education

Massachusetts Institute of Technology (MIT)

Candidate for Bachelor of Science in Electrical Engineering and Computer Science

Relevant Coursework: Robotics: Science and Systems, Computer Vision, Feedback Systems, Algorithms, Signals, Systems, and Inference, Probabilistic Systems Analysis, Artificial Intelligence, Microelectronic Devices and Circuits
GPA: 4.7/5.0

Cambridge, MA

June 2016

Work Experience

Perception Systems Group, Charles Stark Draper Laboratory

Advanced Undergraduate Researcher

Cambridge, MA

May 2015 - Present

- Integrating deformation graphs into KinectFusion algorithm to improve scene reconstruction quality in large-scale environments using RGB-D camera depth data
- 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
- Developed software for competition where each team was provided a quadrotor with a camera to provide visual feedback for their sensorless iRobot Create tasked with navigating through a stochastic environment
- Designed a ROS program integrating RAVEN Vicon system data and generating visualizations with Vispy

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
- Revamped flight data display application to maximize area available to display data
- 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
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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

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
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Technical Skills

Proficient: C++, Java, Python, MATLAB, NVIDIA CUDA *Familiar:* 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
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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.