

KAI-CHIEH MA

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EDUCATION

University of Southern California (USC), California, USA

Aug 2015 – May 2017

Master of Science in Computer Science, Specialization in Intelligent Robotics GPA: 3.94/4.0 (20 units currently)

National Taiwan University (NTU), Taipei, Taiwan

Sep 2008 – Jun 2012

Bachelor of Computer Science & Information Engineering (CSIE)

GPA: 3.66/4.0

WORK EXPERIENCE

USC Robotic Embedded Systems Laboratory (Advisor: Lantao Liu) (Director: Gaurav S. Sukhatme)

USA

Research Assistant

Oct 2015 – Current

- Researched on path planning and learning for autonomous aquatic vehicle in unstable and unknown aquatic field
- Designed and implemented "Informative Planning and Online Learning" using ROS (Robot Operating System) on an autonomous boat and did experiments on actual environment.
- "An Information-Driven and Disturbance-Aware Planning Method for Long-Term Ocean Monitoring" **Kai-Chieh Ma**, et al. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016).
- "Multi-Robot Informative and Adaptive Planning for Persistent Environmental Monitoring" **Kai-Chieh Ma**, et al. International Symposium on Distributed Autonomous Robotic Systems (DARS 2016)

Cyberlink Corp. (Full-time)

Taipei, Taiwan

Software Engineer, RD-ME-PowerDVD (19 team members)

Aug 2012 – Mar 2014

- Developed PowerDVD 12, 13, 14 products (PowerDVD 12/13 Taiwan Excellence Award 2013/2014)
- Handled PowerDVD specification requests from OEM clients within tight schedule (HP, Dell, Lenovo, etc.)
- Improved DVD/Blu-ray disc playback user experience by constructing various user-friendly UI controls

PROJECT EXPERIENCE

Machine Learning: Santander Customer Satisfaction Competition

Apr 2016

- 3rd place among all groups (21) in the class and 566th out of 5236 groups participating the competition
- Solved supervised binary classification using gradient boosting and decision trees

Humanoid Robotics (NAO) Control

Apr 2016

- [Designed stepping behavior for a humanoid robot with 25 DOF's using inverse kinematics](#)
- Motion trajectory planning using minimum jerk

RoboCup Standard Platform League (Advisor: Chieh-Chih (Bob) Wang) (5 team members)

2012, 2014

- Represented from NTU Robot Perception and Learning Lab and made to top 12 in the competition in 2012
- Built robot software system from scratch within 3 months
- Devised goal post & soccer ball object recognition algorithms
- Applied sonar-based Occupancy Grid Mapping for obstacle detection
- Implemented robot-to-robot (4 robots) communication via Wi-Fi
- Revised goal post detection for new rules in 2015 RoboCup (2014)
- [Researched on motion planning under Partially Observable Markov Decision Process \(POMDP\) \(2014\)](#)

Extended Kalman Filter Localization

Dec 2011 – Feb 2012

- Solved localization problem for mobile robot in real environment
- Implemented line feature extraction via Hough Transform based on 2D-laser data points
- Associating features with given map features to achieve robot pose correction

Mobile Robot (Pioneer 3DX) Maze Exploration (3 team members)

Dec 2010 – Feb 2011

- Accomplished simple version of simultaneous localization and mapping problem
- Adopted closed-loop feedback control system to avoid bumping into walls
- Implemented uniform cost search algorithm to find the shortest path for the second run of the maze

SKILLS

Language: C, C++, Java, Matlab, Python, LaTeX **Tools:** Git, SVN, Linux, Unix-like, Windows

Skills: Robotics, ROS, Machine Learning, Motion Planning, Computer Vision, Design Patterns