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: 3.925/4.0 (16 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 for autonomous underwater vehicle (AUV) in unstable and unknown ocean field
- Combined information-based planning and Markov Decision Process to approach the problem
- "An Information-Driven and Disturbance-Aware Planning Method for Long-Term Ocean Monitoring" **Kai-Chieh Ma**, Lantao Liu, Gaurav S. Sukhatme. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016). under review.

Cyberlink Corp. Taipei, Taiwan
Software Engineer, RD-ME-PowerDVD (19 team members) (Full time) 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
- Managed PowerDVD Cinema Mode module. Enhanced performance by re-factoring existing code

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
- Developed simultaneously 2-camera image capturing module, Video4Linux
- Researched on motion planning under Partially Observable Markov Decision Process (POMDP) (2014)
- Revised goal post detection for new rules in 2015 RoboCup (2014)
- Gave POMDP presentation to team members (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, Mercurial, Linux, Unix, Windows
Skills: Robotics, Machine Learning, Motion Planning, Computer Vision, Design Patterns