Jimmy(Pengju) Jin

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EDUCATION

CARNEGIE MELLON UNIVERSITY

BS in Computer Science
Minor in Robotics
December 2016
Pittsburgh, PA
Dean's List (All Semesters)
GPA: 3.82

MS in Computer Science
Con. in Computer Vision
Advisors: Siddhartha Srinivasa, Kris Kitani
December 2017
Pittsburgh, PA
GPA: 4.00

COURSEWORK

UNDERGRADUATE

Great Theoretical Ideas in CS
Parallel and Sequential Data Structures and Algorithms
Compiler Design
Algorithm Design and Analysis
Intro To Machine Learning
Computer Vision
Robot Kinematics and Dynamics

GRADUATE

Computer Vision
Machine Learning
Physics-based Methods in Vision
Deep Reinforcement Learning
Computational Geometry*
Statistical Techniques in Robotics*
(* - Fall 2017)

SKILLS

PROGRAMMING

C++ • C • Matlab
Haskell • Python
OpenCV •ROS •PCL

INDUSTRY EXPERIENCE

APPLE (SPECIAL PROJECTS GROUP)

Research Intern
May 2017 - Aug 2017

- Research and development with emerging technologies.
- Developed a sensor fusion systems for accurate pose estimation under high scene uncertainties using hierarchical models.

GOOGLE

Software Engineering Intern
May 2016 - Aug 2016 | Mountain View, CA

- Experimented and implemented a new training pipeline using unsupervised learning techniques to improve the Google Photo Search quality.
- Improved the precision of search results by 5% and vastly imporved the recall rate.

RESEARCH

CMU PERSONAL ROBOTICS LAB | Research Assistant

August 2014 – Present | Pittsburgh, PA
Advised by **Prof Siddhartha Srinivasa**, I am mainly responsible for building and maintaining the vision pipeline used on HERB, a bimanual manipulation robot platform. Specifically I am interested in using **computer vision** and **reinforcement learning** techniques to solve **pose estimation** and **recognition** problems under uncertainity. I have worked on various projects including:

- Buidling the vision infrastructure for HERB 3.0.
- Photometric and lidar sensor calibration.
- Pose estimation using fiducial tags and sensor fusion.

PUBLICATION

- **Jin, P**, Matikainen, P., and Srinivasa, S. "Sensor Fusion for Fiducial Tags: Highly Robust Pose Estimation from Single Frame RGBD." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2017.* (To Appear)

OTHER PROJECTS

C0 COMPILER

Compiler Desgin
Designed and implmented a fully functional compiler for the C0 language (type-safe, simplified version of C). Major components of the our compiler include source code parsing, abstract syntax extraction, register allocation, and code generation. Majority of the compiler is written in Haskell and included various loop and value propagation optimizations for speed up. Furthermore, we implemented a semi-space garbage collection system in C as an additional feature to our compiler.

NEATO MOBILE ROBOT SYSTEM

Mobile Robot Programming Lab
Implemented a system for a mobile robot platmore which is able to move around an arena and forklift wooden blocks to correct positions. The robot includes a two wheel differential drive and spining range sensor. Some of the major components include

- Localization using dead reckoning and range map alignment.
- Visual servoing and feedback controls.
- Line segmentation and detection using hough transforms and raster scans.
- Tajectory generation using cubic splines.