JIATIAN WU

520 Cambridge Street, Boston, MA, 02134

(+1)4123524588 ⋄ jiatianwuwork@gmail.com

EDUCATION

Carnegie Mellon University, Pittsburgh *August 2016 - May 2018*
Master of Science, Robotics Technology
Robotics Institute

Nanjing University of Science and Technology, Nanjing *August 2012 - June 2016*
Bachelor of Science, Electrical Engineering and Automation
Department of Automation

WORK EXPERIENCE

XYZ Robotics Inc., Boston/Shanghai June 2018 - present
Perception Engineer/Robotics Engineer, first technical staff

· Work on full stack industrial robot rebinning/stowing pipeline for automated warehouse.
· Lead software and hardware team to deploy the robot rebinning system in customers' warehouse.
· Vision and perception module design and development including machine vision, 3D point cloud processing, model design, lighting control, data labeling and data collection.
· Industrial barcode scanner research, design and setup.

Aqrose Technology, Beijing/Pittsburgh December 2017 - May 2018
Algorithms Intern

· Implement and compare GPMP (Gaussian Process Motion Planning) and TrajOpt on task constrained industrial arm motion planning.
· Participate in point pair based 3D object recognition and pose estimation in object picking.
· Develop a self-supervised real-time single shot 6D pose prediction framework.

Horizon Robotics Inc., Beijing February 2017 - August 2017
Algorithms Intern

· Generalized DSO (Direct Sparse Odometry) to stereo cameras. Stereo DSO achieves 1.1% - 3.2% translation error, 0.001 deg/m - 0.0053 deg/m rotation error, with running time of 53ms per frame on Kitti dataset. Stereo DSO is released on https://github.com/HorizonAD/stereo_dso.
· Combined direct methods and feature based methods to build a semi-dense map using a stereo camera based on RGBD ORB-SLAM. Designed a localization solutions for self-driving cars based on ORB-SLAM using vision, lidar and RTK GPS fusion.
· Participated in camera auto-calibration and camera-lidar calibration.

PROJECTS

Computer Science Department, Carnegie Mellon University January 2018 - May 2018

· Implemented a CUDA render that draws an animation of falling snow.
· Used OpenMP to improve the performance of agent modeling through multithreaded parallelism.
· Used MPI to implement a program consisting of a number of independent processes that communicate and coordinate with one via message passing.
· Explored and implemented two communication-efficient SGD algorithms to release the synchronization consistency in distributed deep learning.

Machine Learning Department, Carnegie Mellon University   January 2018 - May 2018

· Implemented Expectation–Maximization algorithm in Hierarchical Mixture of Experts model.
· Implemented a conditional random field (CRF) for optical character recognition (OCR).
· Implemented the Metropolis-Hastings algorithm in a hierarchical Bayesian model to do sports analytics.
· Implemented the variational autoencoder and compare the classical wake-sleep algorithm and the modern autoencoding variational (empirical) Bayes.

Robotics Institute, Carnegie Mellon University   September 2017 - November 2017

· Implemented a vanishing point detection algorithm.
· Used homographies to do plane detection and 3D reconstruction.
· Explored and implemented a full pipeline of a typical 3D reconstruction system using Structure from Motion and Stereo Matching.

Robotics Institute, Carnegie Mellon University   September 2017 - November 2017

· Implemented a global pertical filter for indoor mobile robot localization.
· Implemented Extended Kalman Filter SLAM to improves the estimation of both the trajectory and the map.
· Implemented a basic 3D dense mapping system using ICP and Point based fusion.

Robotics Institute, Carnegie Mellon University   September 2017 - November 2017

· Implemented weight A* on indoor robot planning.
· Implemented RRT, RRT Connect, RRT* and PRM on five DOF arm manipulation.
· Designed a Delaunay Triangulation based node connection strategy for PRM planners to improve roadmap connectivity.

TECHNICAL STRENGTHS

Programming Language	C++, Python, C, Java
Software & Tools	ROS, Cuda, Pytorch, Tensorflow, Matlab, Latex

PATENTS

ROBOTIC SYSTEM FOR PICKING, SORTING, AND PLACING A PLURALITY OF RANDOM AND NOVEL OBJECTS. Serial No.: 62/778,221.