

JIATIAN WU

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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

- Implemented and compared GPMP (Gaussian Process Motion Planning) and TrajOpt on task constrained industrial arm motion planning.
- Participated in point pair based 3D object recognition and pose estimation in object picking.
- Developed 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 partical 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.