Weimeng **Pu**

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Education

Università della Svizzera italiana
Lugano, Ticino, Switzerland

M.S. in Artificial Intelligence
Sept 2018 - (Exp)Jun 2020

(Expected Jun 2020) thesis: machine-learning based foveated rendering (advised by Piotr Didyk)

San Jose State University
San Jose, California, United States

B.S. in Computer Science, Honors
Aug 2014 - May 2018

Experience

Robotics Algorithm Engineer Intern

Segway Robotics
Jun 2018 - Sept 2018

- Worked in Loomo Delivery team
- Researched on drivable area segmentation and lane markings detection that support vision-based localization on bikeways

Deep Learning Engineer Intern

Tuputech
May 2017 - Aug 2017

- Worked in mobile AR team
- Optimized robustness of face detection algorithms by training on two unconstrained benchmark datasets (FDDB and WIDER FACE)
- Supported commercialization of existing algorithms
- Surveyed on modern deep learning models for object detection

Lab Instructor and In-Class Teaching Assistant

CS 46A (Introduction to Programming)
Jan 2017 - May 2018

- First-year computer science course learning basic skills and concepts of computer programming

Teaching Assistant

CS 49J (Programming in Java)
Jan 2017 - May 2018

- Second-year computer science course learning a number of Java programming language topics and libraries

Projects

Follow Me on Simulated Quadcopter (TensorFlow, OpenCV, Python)

Perception
Nov 2017

- Built and trained a fully convolutional network to find a specific target in QuadSim simulator
- Transformed depth masks from simulation into binary masks suitable for training
- Scored follow me task based on intersection over union for pixelwise classifications and whether target person is detected

Pick and Place in 3D Perception (ROS, Gazebo, Python)

Perception
Oct 2017

- Completed a tabletop pick and place operation using Willow Garage PR2 robot outfitted with an RGB-D sensor
- Applied filtering, RANSAC plane fitting and clustering with extracted features to isolate objects of interest from rest of scene

Robotic Arm: Pick and Place (ROS, Gazebo, Python)

Kinematics
Sept 2017

- Controlled a Kuka KR210 robot arm with six axes to remove items from a shelf and place them into a tote
- Performed Inverse Kinematics given a list of end-effector poses to calculate joint angles for robotic arm

PID and MPC Control (C++)

Control *Aug 2017*

- Implemented a proportional–integral–derivative (PID) controller with cross track error given and a model predictive control (MPC) without the given error to maneuver vehicle around a track in simulator

Kidnapped Vehicle Localization (C++)

Localization *Apr 2017*

- Localized a vehicle's position and yaw in simulator with a two-dimensional particle filter based on a map and initial localization information, which is analogous to what a GPS would provide

Extended and Unscented Kalman Filter (C++)

Sensor Fusion *Mar 2017*

- Tracked a neighboring bicycle's position and velocity with an extended kalman filter and an unscented kalman filter on provided simulated lidar and radar measurements in simulator

Vehicle Detection and Tracking (OpenCV, Python)

Perception *Feb 2017*

- Wrote a pipeline to detect and track vehicles in a video from a front-facing camera on a car
- Performed histogram of oriented gradients feature extraction on a labeled training set of images
- Trained a Linear SVM classifier to search for vehicles using sliding windows and estimated bounding boxes for vehicles detected
- Created heat maps of recurring detections frame by frame to reject outliers and followed detected vehicles

Lane Lines Finding (OpenCV, Python)

Perception *Jan 2017*

- Wrote a pipeline to identify lane boundaries in a video from a front-facing camera on a car
- Applied camera distortion correction, color transforms, gradients and perspective transform to detect lane pixels
- Output visual display of lane boundaries and numerical estimation of lane curvature and vehicle position

Car Behavioral Cloning (Keras, OpenCV, Python)

Perception *Dec 2016*

- Used a simulator to collect data of different driving behavior
- Implemented convolution neural network in Keras to predict steering angles from image data
- Tested model to successfully drive around track autonomously in simulator without leaving road

Traffic Sign Recognition (TensorFlow, OpenCV, Python)

Perception *Nov 2016*

- Trained a simple convolutional neural networks to classify traffic signs from German Traffic Sign Recognition Benchmark (GTSRB) dataset with 91% accuracy

Examining Worldwide Income Inequality (R, SQL)

Analytics *May 2016*

- Applied Multiple Linear Regression to examine various development indicators from World Bank and discovered how they influence income inequality as measured by GINI index
- Was the only project from course that had been awarded in the competition

Honors & Awards

2018-2019 **First-year Scholarship**, Università della Svizzera italiana (top admitted student)
2016 **3rd Place**, American Statistical Association Undergraduate Statistics Class Project Competition
2016 **The Google Games Division II Bay Area Coding Winner**, Google
2014-2016 **Humanities Honors Program**, San Jose State University (top admitted student)
2012 **Outstanding Presentation Award**, Harvard AUSCR China Thinks Big Competition