# Weimeng **Pu**

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## Education

**Università della Svizzera italiana** *Lugano, Ticino, Switzerland*

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

**San Jose State University** *San Jose, California, United States*

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

## Experience

### Robotics Algorithm 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