Xiyu Zhai

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EDUCATION

University of California, Berkeley, Berkeley, CA, US Aug 2019 - Jun 2020
Degree: Master of Engineering in Electrical Engineering and Computer Science *Advisor*: Alexandre Bayen
Courses: Introduction to Machine Learning, Virtual Reality and Immersive Computing

Xi'an Jiaotong University, Xi'an, China Aug 2015 - Jun 2019
Degree: Bachelor of Engineering in Electrical Engineering and Automation, GPA: 3.81/4.0 (86.87/100)
Honors: Outstanding Graduate (5% in ~5000 graduates), Excellent Student Cadre, Siyuan Scholarship
Courses: Data Structure and Algorithms (4.0), Application Design for Automation System (4.0), Fundamentals of Microprocessor, Analog and Digital Electronic

SKILLS

- Programming: Python (Proficient), C++, Matlab
- Techniques & Tools: Linux, ROS, TensorFlow, Git, LaTeX, LabVIEW, Multisim, LTSpice, Proteus, Fusion 360
- Hardware: STM32F4, Raspberry Pi, Jetson, MSP430, TMS320F, MCU, Arduino, FPGA

RESEARCH EXPERIENCE

Research Assistant, Berkeley Mobile Sensing Lab, UC Berkeley Berkeley, CA
Pixel Learning with Deep-RL for Mixed Autonomy Traffic Aug 2019 - Present

- Integrated pixel learning perception algorithms and hardware test interface to FLOW framework(flow-project.github.io/) to realize traffic flow learning and optimization from real traffic environments.
- Led a team to design the experiment that plans and controls over 20 Arduino and Jetson based model cars simultaneously to verify the traffic planning algorithms of FLOW.
- Built the whole real time system with ROS that uses a camera for objects recognition to perceive the environment information for the traffic planning.

Research Intern, Renewable Energy Research Center & Actionpower Electric Co Xi'an, China
Deadbeat Control Strategy of Electronic Converter Nov 2018- Jun 2019

- Built mathematical models and performance evaluation indicators for power converters.
- Implemented several control strategies with zero steady-state error that output 100-order harmonics in C++ based on multi-time synchronous rotating frame and PR control.
- Developed a power converter controlling a Reinforcement Learning framework that robust enough to generate over 200-order harmonics in Python.

Research Assistant, Toyota-CSAIL Joint Research Center, MIT Boston, MA
Suppressing Traffic Flow Instabilities using Bilateral Control Aug 2017 - Sep 2017

- Built a Java program to perceive/log the environment using Horn-Schunck optical flow algorithm to determine the cars' positions and relative velocity with other vehicles.
- Built several Gizimo-garden robots cars with Arduino microcontroller to evaluate the bilateral control theory(people.csail.mit.edu/wangliang/BilateralControlDemo.html)

PROJECT EXPERIENCE

Research Assistant, Department of Industrial Automation, Xi'an Jiaotong University Xi'an, China
Robotic Hand Design with Computer Vision Oct 2018 – Feb 2019

- Designed and built a robotic hand with 16 degrees of freedom using 3d printer.
- Implemented the real-time control of the robotic hand to imitating gestures using Node.js with a Leap Motion
- Built a deep learning model with TensorFlow that can recognize the key points of hands from images taken by a regular camera within 25 milliseconds (improve from 110ms).

Research Assistant, School of Computing, National University of Singapore Singapore
Development of Autonomous Flying Vehicles Jun 2017 - Jul 2017

- Designed and built a hexacopter which carries 2kg loads for 30 min with PX4 Controller with limited costs
- Processed the data from various sensors including GPS, PX4Flow, MPU-6050
- Used the Mavlink to implement communication and control of drones from a ground station