

Yichen (Ethan) Jiang

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EDUCATION

University of California, San Diego (UCSD)	La Jolla, CA
B.S. in Electrical Engineering	09/2018-01/2022
<ul style="list-style-type: none">GPA: 3.912/4.0Provost Honor (received every quarter), 2018-2019 MMW 13 Showcase Paper (ranking top 5%), CUM LAUDE (GPA ranking top 12%)	
Stanford University	Stanford, CA
M.S. in Electrical Engineering	09/2023-present
<ul style="list-style-type: none">GPA: 3.92/4.0	

RESEARCH EXPERIENCE

ReMix: Optimizing Data Mixtures for Large Scale Imitation Learning	Stanford, CA
<i>Researcher, Stanford Intelligent and Interactive Autonomous Systems Group (ILIAD)</i>	03/2024-07/2024
<ul style="list-style-type: none">Established and debugged the communication environment between the robot and the clientImproved and debugged codes for robot manipulation, evaluation, and data collection.Collected demonstrations for robot tasks and co-trained the robot using collected demonstrations and Bridge V2 datasetEvaluated the robot's performance and success rates across various models during real-world testingSubmitted the project paper <i>ReMix: Optimizing Data Mixtures for Large Scale Imitation Learning</i> and was accepted by CoRL 2024 Conference	
Self-driving Program Based on Adversarial Domain Adaptation Semantic Segmentation and Computer Vision	Remote
<i>Researcher, instructed by Dr. Erik S. Yan & Dr. Ian Deng</i>	04/2022-09/2022
<ul style="list-style-type: none">Familiarized with image processing in Python and network architectures in deep learning, such as VGG, CNN, and ResNetLearned fully convolutional network (FCN) and applied FCN to implement pixel-wise semantic segmentationBuilt models in TensorFlow and used the CIFAR10 dataset to test the accuracyLearned Field Adaptation theory and PyTorch for deep learningDownloaded GTA5 dataset and Cityscapes dataset, and applied different models to implement Field Adaptation and semantic segmentationUsed GTA5 database for training and used the trained model to implement the semantic segmentation of Cityscapes datasetCompleted a paper <i>Semantic Segmentation for Self-Driving Car Based on Adversarial-Learning Domain Adaptation</i> independently and was accepted by 2023 International Symposium on Connected and Autonomous Vehicles for publish	
Indoor Simultaneous Localization and Mapping Using Mobile Phone	La Jolla, CA
<i>Undergraduate Researcher, Wireless Communications Sensing and Networking (WCSNG)</i>	05/2021-09/2021
<ul style="list-style-type: none">Fixed the mobile phone for an experiment on TurtleBot, recorded phone IMU data with MATLAB, and let the TurtleBot move to the experimental siteUsed IMU data to calculate theoretical movement trajectory with the recorded three-axis acceleration, velocity and angular velocity, visualized the parameters, and drew theoretical movement trajectoryImported IMU data as the ground truth and visualized various data, and drew ground truth movement	

trajectory

- Proposed Gravity Cancellation algorithm in Python and used the algorithm to improve phone IMU to present a better movement trajectory (e.g. decreasing the calculated length from 100m to 30m, closer to ground-truth)

Indoor Simultaneous Localization and Mapping Using WiFi

La Jolla, CA

Undergraduate Researcher, WCSNG

03/2021-06/2021

- Assembled the TurtleBot and attached the signal transmitter and Ladar to the TurtleBot, and placed five to six signal receivers in the test area
- Connected TurtleBot and signal receivers to the same LAN, set the transmitter signal frequency and other parameters on the computer, and implemented remote control with a PS4 gamepad
- Collected Ladar data with receivers, programmed in MATLAB to modify Ladar data format, and visualized Ladar data to draw two-dimensional plans
- Visualized the received signal's Angle of Arrival (AoA) and Time of Flight (ToF), used the SpotFi algorithm to predict and identify the possible direct path of each signal, and calculated TurtleBot's position and distance at each moment for path drawing
- Used IMU to draw the actual movement trajectory as the Ground Truth and compared it with the trajectory predicted by SpotFi to improve the algorithm

COURSE PROJECTS

Emotion Recognition in Videos Through Deep Neural Network Models

Stanford, CA

Group Leader

04/2024-06/2024

- Preprocessed the video emotion recognition dataset for application in the project
- Implemented and trained four different deep learning model structures (late fusion, early fusion, 3D CNN, and RCNN) to detect emotion in videos and achieved ~85% accuracy
- Analyzed the project results quantitatively and qualitatively

Generative Adversarial Network for Image Harmonization

Stanford, CA

Independent Project

01/2024-03/2024

- Adapted *Intrinsic Harmonization for Illumination-Aware Compositing* algorithm to pre-process composite images
- Implemented a U-Net-based Generative Adversarial Network (GAN) to achieve enhanced image harmonization
- Utilized three different loss functions (pixel-wise content loss, content loss + mask loss, content loss + feature map loss) to achieve various aspects of image harmonization
- Analyzed the project outcomes quantitatively and qualitatively

Optimal Insulin Dosing for Type I Diabetes: Reinforcement Learning Approaches

Stanford, CA

Group Leader

09/2023-12/2023

- Adapted an open-source blood sugar simulator for modeling blood sugar levels in diabetes patients
- Implemented the Action Value Function Approximation (reinforcement learning) method to recommend optimal insulin dosages

Construction of Bitcoin Hashing RTL Model Based on SHA-256 Algorithm

La Jolla, CA

Group Leader

01/2021-03/2021

- Implemented the Secure Hash Algorithm SHA-256 in FPGA and developed a testbench to assess the algorithm
- Implemented bitcoin hashing with SHA-256

Design of An Over-low Frequency Amplifier with A Built-in Power Supply

La Jolla, CA

Group Leader

10/2021/-11/2021

- Designed an amplifier with many specifications, such as the overall DC gain, phase margin, gain margin, unity gain bandwidth, etc.

- Analyzed the overall structure of the amplifier and divided dozens of MOSFETs into power supplies
- Calculated the range of MOSFET parameters according to the design requirements and deducted to determine the parameters
- Used Cadence to simulate the amplifier, tested the performance to meet the design parameters, and expected to improve the amplifier to reduce energy consumption

Digital Integrated Circuit Design: A Carry-Lookahead 8-bit Full Adder

La Jolla, CA

Group Leader

03/2021-06/2021

- Created a schematic design in PSpice and tested the schematic in a testbench
- Listed the required number of components, time consumption, energy consumption, etc., and created a layout diagram
- Ensured the final layout to pass LVS and DRC tests

ASSISTANT EXPERIENCE

UCSD ECE Department

La Jolla, CA

Tutor & Reader for ECE 100 (Prof. Professor Saharnaz Baghdadchi)

03/2021-06/2021

Tutor & Reader for ECE 101 (Prof. Professor Saharnaz Baghdadchi)

01/2021-03/2021

- Held discussion sessions and office hours, answered questions on Piazza and during lectures, and helped students with their lab projects and homework
- Graded homework and exams and assisted the professor in improving the outline of the course

UCSD ECE Department

La Jolla, CA

Tutor & Reader for ECE 25 (Prof. Professor Saharnaz Baghdadchi)

01/2021-03/2021

- Held discussion sessions, office hours, and one-on-one lab meeting, answered questions on Piazza and during lectures, and helped students with their lab projects and homework
- Graded homework and exams and assisted the professor in improving the outline of the course

SKILLS

Language Skills: Chinese (Native), English (Advanced), German (Elementary)

Computer Skills: C (Intermediate), Python (Intermediate), MATLAB (Intermediate)

Circuits Simulation Software: CAD (Intermediate), PSpice (Intermediate)

Engineering Skills: 3-D Printing (Elementary), Model Building (Intermediate), PCB Designing (Elementary)

Electrical and Computer Engineering Knowledge: Data Networks (Intermediate), Analog Integrated Circuit Design (Intermediate), Microwave Systems and Circuits Design (Intermediate), Digital Integrated Circuit Design (Intermediate), Engineering Probability & Stats (Intermediate), Machine Learning (Advanced)

PUBLICATIONS

Domain Adaptation Semantic Segmentation for Self-Driving Cars

Feb 2023

Accepted by 2023 International Symposium on Connected and Autonomous Vehicles (SoCAV 2023)

ReMix: Optimizing Data Mixtures for Large Scale Imitation Learning

Sep 2024

Accepted by 2024 Conference on Robot Learning (CoRL 2024)