Yunzhe Jonas Li

Personal Website | GitHub | LinkedIn | Email | 510-277-7856 | Berkeley, CA

EDUCATION

University of California, Berkeley | M.ENG., EECS in Robotics | GPA - 3.85/4 *Berkeley, CA* 2024-2025

Advisor: Prof. Masayoshi Tomizuka, Dr. Wei Zhan

Capstone Project - Optimization of Modularized Robot Design in Complex Scenes.

Coursework - Computer Vision(Jitendra Malik), Deep Learning for Computer Vision, Introduction to Robotics, Data Science, Agentic LLMs

Shanghai University | B.ENG., Computer Science | Rank - Top 1 | GPA - 92.59/100 *Shanghai, China* 2020-2024

WORK EXPERIENCE

Momenta | Software Engineer Intern Jan 2024 - Jul 2024

- Delivered the first version of an **autopilot reversing** feature for **GM Cadillac LYRIQ** in parking lots, covering the **full product lifecycle**
- Developed a **stuck-state** detection **benchmark** stack for reversing maneuver, integrating classification and precision-recall analysis
- **Evaluated 800+** real parking test cases in 30+ garages over 4 months, enhancing collision-free reversing performance by 3%
- Optimized threshold-based stuck-state detection by integrating **SVM**, refining borderline cases and reducing **false positives** by 15%
- Slashed **workload** for 4 product managers across 4 vehicle projects from **120min/day to 10 min/day** by automating data processing and report generation for 36,000+/day simulation test records evaluation, streamlining success rate analysis

DJI RoboMaster | **Git repo** | **Video**

Team Lead 2022-2024

- Led a 40-student team to deliver **8** fully functional **robots from scratch**, winning the **3rd place** in RoboMaster 2023
- Gained **US$20,000** in sponsorship by improving shooting, motion control, and detection through **7000+ test iterations**

Co-Head of Robot Computer Vision 2020-2022

- Developed an adaptive **vision pipeline** for **real-time** auto aiming, integrating camera calibration, image preprocessing, YOLOv7 detection, object tracking, and fire control, earning **promotion** for code contributions and troubleshooting
- Boosted detection accuracy by 25%, upgrading from pure OpenCV detection to an OpenCV + **YOLOv7** hybrid system
- Initiated a **non-linear least squares** based tracking algorithm for planar rotating object in **parametric sinusoidal speed**, integrating pitch-yaw angle computation based on geometry for precise targeting, outperforming **90%** competitors in hit rate
- Refactored the system from **Python to C++** with 5 peers, achieving **60 fps** on NVIDIA NX and **80 fps** on NVIDIA AGX

FIRST Tech Challenge | **Team Documentary** | Team Lead 2017-2020

- Bent the performance of a 15-member team, leading to **2 FIRST World Championships admissions**(top 2 % out of 7500 teams globally), **1 Inspire Award**(1st out of 40 teams), and **3 Connect Awards**(top 8% out of 60 teams)
- Developed an autonomous system using multiple sensors and **OpenCV/TensorFlow SDK**, achieving 95%+ detection accuracy and securing the highest Regional score with rule-based human driver imitating strategies

RESEARCH - National Natural Science Foundation of China

Visual Explainer For Deep Learning Image Classification (No.61936001) | **Git repo** | **Video** 2023-2024

- Designed a 2-stage **image segmentation** pipeline and an **AutoEncoder** with tree constraints, using Shapley Values to extract and rank concepts by importance, boosting explanation consistency score by 35% on 1000+ images from 20 **ImageNet** classes
- Developed a **Django backend APIs** for page navigation, handling **GET** and **POST** requests, and efficient data retrieval
- Built a **Vue.js frontend** with user authentication, image segmentation, and contribution heatmap visualization

Mining Property Relations of NASICON Solid Electrolyte (No.52073169) 2021-2022

- Developed a **BERT-based** pipeline to extract 106,896 entities and 260,475 entity-relation triples from 1,808 research papers, storing results in Neo4j and MySQL for knowledge discovery
- Optimized the NER model by labeling 7,000+ high-quality sentences, improving precision by 5%, recall by 3%, and F1-score by 4%

Selected Projects

3D Vision and IMU-aided TurtleBot Recovery | **Website** | ROS2, OpenCV, Feature-matching, 3D transformation, RealSense

- Developed a ROS2-based pipeline to correct positional drift, integrating IMU data, RealSense D435i images, and feature-matching
- Engineered an image-based transformation module, computing relative pose difference based on depth feature correspondences

MealMate: From Cravings to Carts | **Git repo** | **Video** | LLM, Flask, React.js, Python, HTML&CSS

- Designed an LLM-powered assistant to generate tailored shopping lists using user preferences and real-time inventory
- Benchmarked GPT-4o-mini against GPT-4 and GPT-3.5-turbo for LLM agent performance, demonstrating 20% higher recipe match precision and 40% suggestion accuracy, and 42% faster processing time
- Built a showcase using React.js for the frontend and Flask for the backend with effective prompts and transaction logic

Sawyer Arm Control | ROS2, MoveIt, Kinematics, PID

- Performed pick-place tasks using MoveIt and ROS2, applying kinematics, trajectory planning, and AR tag detection

Abstract: Your LeetCode Learning Assistant | **Git repo** | **Video** | LLM, openpyxl, Flask, React.js, Python, HTML&CSS

- Developed a LLM-based tool to summarize and retain key solution patterns for review