Jonas Li

University of California, Berkeley 2024-2025
M.ENG., Electrical Engineering and Computer Sciences

Shanghai University 2020-2024
B.ENG, Computer Science, Rank: 1/31, GPA: 3.78

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SKILLS

Programming & Tool: ***Python***, ***C++***, SQL, MATLAB, Java, JavaScript, ***Git***, ***Linux***, JIRA, Figma, Neo4j, AWS, Unity, ***Issac Sim***
Library & Framework: ***PyTorch***, ***OpenCV***, ***ROS***, Matplotlib, Numpy, Pandas, PyDocx, Py2neo, Vue.js, Django
Domain Expertise: Reinforcement Learning, ***Computer Vision***, Deep Learning, camera calibration, ***product management***

RESEARCH & APPLICATION

DJI RoboMaster Competition | Team Leader & Computer Vision Engineer *Sept 2020 - June 2024*
Director of a 40-student team to build 8 types of robots from scratch to product

- Coordinated resources to promote R&D progress, winning the **3rd in RoboMaster 2023 University League**
- Developed a **real-time auto-aim system** for **mobile robots** on NVIDIA NX in **C++/Linux** environment
- Processed video inputs from **Hikvision industrial cameras** with **OpenCV** to support **object detection**
- Implemented a **trajectory prediction** algorithm using **least squares** method, improving efficiency by **50%**
- Co-designed an **user interface** for robot **manipulation**, outperforming **80%** teams in the match

Visual Explainer For Deep Learning Decisions | Research Assistant *Sept 2023 – May 2024*
*Developed a **web application** for explaining DNN image classification decisions*

- Utilized **semantic segmentation** followed by superpixel segmentation to extract two-level image features
- Trained an **AutoEncoder** using **PyTorch** to construct an image tree with outputs of DNN feature extractor
- **Clustered** two-level image features respectively to identify human cognition-aligned concept for explanation
- Showcased the explanation result through heatmaps by developing a **Vue+Django+MySQL** based web application

Mining Property Relations of NASICON Solid Electrolyte | Research Assistant *Sept 2021 - May 2023*
*Developed a **web application** for investigating relations between material properties*

- Formalized a data pipeline for NASICON-related texts, integrating pre-processing, **BERT-based NLP models** for Named Entity Recognition (**NER**) and Relational Extraction (**RE**), and visualization
- Pre-processed **7,000+** high-quality NASICON literature **sentences** to enhance NER and RE model performance
- Visualized entity-relation triples using **Neo4j knowledge graph** and Py2neo for user-friendly interaction
- Implemented the processing pipeline utilizing **Vue+SpringBoot+MySQL/Neo4j**

WORK EXPERIENCE

Mechanical Systems Control Lab at UC Berkeley| Directed by Prof. Masayoshi Tomizuka *Sept 2024 – Present*
Manipulation in complex scenes with Unitree H1 humanoid robot

- Generate 3D simulation environment with randomly instantiated obstacles in **NVIDIA Isaac Sim**
- Develop **Reinforcement Learning** algorithms to optimize the mechanical design of modularized robot arm
- Develop the **feedback loop** in generated 3D environment to **evaluate** the performance of RL-optimized design

Momenta Product Manager Intern | Shanghai, China *Feb 2024 – June 2024*
*Product management of **autopilot** software for **GM Cadillac** in challenging underground **parking scenarios***

- Composed product **requirement** documents by leveraging data from 5 drivers with 20+ years' driving experience
- Wrote a **Python class library** to extract and format extensive Microsoft Word test reports using PyDocx
- Pioneered a data processing tool for automatic report generation, improving efficiency in issue analysis by **87.5%**
- Boosted performance by **3%** in simulation, road, and bench tests within **4 months** since the first version released

DJI Event Technical Executive | Hybrid *Dec 2023 - Apr 2024*
*Served as **head referee** for a national college robotics competition with 35+ teams in China*

- Made **final judgement** on cases of violating rules during events
- Managed **technical troubleshooting** and safety issues, ensuring event flow and equipment functionality
- Facilitated meetings for event coordinators regarding **event schedule**, event logistics, etc.

Jonas Li
University of California, Berkeley
M.Eng., Electrical Engineering and Computer Sciences
San Jose, CA
September 25, 2024

Hiring Manager
Honda Research Institute USA
San Jose, CA

Dear Hiring Manager,

I am writing to express my interest in the Software Engineer position for Mobile Robots (Job Number: P23F10) at Honda Research Institute USA. With a strong academic background in Electrical Engineering and Computer Sciences from UC Berkeley, coupled with hands-on experience in robotics, computer vision, and autonomous systems, I am enthusiastic about the opportunity to contribute to your team's cutting-edge research and development in autonomous driving and cooperative mobility.

During my time as the Team Leader and Computer Vision Engineer for the DJI RoboMaster Competition, I led a team of 40 students to develop and deploy multiple types of robots, earning us third place in the 2023 University League. I was responsible for architecting the software systems, implementing real-time auto-aim features using C++ in a Linux environment, and integrating advanced algorithms for object detection and trajectory prediction. This experience not only honed my skills in developing low-latency and high-performance software but also in integrating and testing these systems in real-world scenarios.

My role as a Research Assistant at UC Berkeley further solidified my expertise in developing scalable software infrastructure and tools. I have experience with ROS/ROS2, Python, C++, and modern software engineering tools like Git and Docker, which I used to create a web application for explaining deep learning decisions. Additionally, my work at Momenta as a Product Manager Intern exposed me to the intricacies of developing and optimizing software for autonomous vehicles, providing me with practical insights into the challenges and requirements of this domain.

I am particularly excited about the opportunity at HRI-US because it aligns perfectly with my passion for advancing autonomous driving technologies. I am confident that my technical skills, coupled with my hands-on experience in robotics, make me a strong candidate for this role. I am eager to contribute to your team's efforts in implementing state-of-the-art algorithms and improving software libraries for real-world applications.

Thank you for considering my application. I look forward to the possibility of discussing how I can contribute to the innovative work at Honda Research Institute USA.

Sincerely,
Jonas Li
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