OLIVIA Y. LEE

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EDUCATION

Stanford University **Palo Alto, CA**
B.S. with Honors in Symbolic Systems (Learning), Mathematics Minor. GPA: 4.12 / 4.0 Sep 2020 – Jun 2024
M.S. in Computer Science (Artificial Intelligence). GPA: 4.04 / 4.0 Jan 2023 – Mar 2025
B.S. Major Advisor: Prof. Nick Haber. M.S. Research Advisors: Prof. Jeannette Bohg, Prof. Chelsea Finn

Raffles Institution (Junior College) **Singapore**
Singapore-Cambridge General Certificate of Education A-Level Jan 2018 – Dec 2019
90/90 Rank Points, 8 Distinctions (Physics, Chemistry, Math, Economics, Higher Math)

PUBLICATIONS

Olivia Y. Lee, Annie Xie, Karl Pertsch, Kuan Fang, Chelsea Finn. "Affordance-Guided Reinforcement Learning via Visual Prompting." *Robotics: Science and Systems 2024, Task Specification & Lifelong Robot Learning.* In submission to *IEEE International Conference on Robotics & Automation (ICRA) 2025*. arXiv:2407.10341.

Maximilian Du*, **Olivia Y. Lee***, Suraj Nair, Chelsea Finn. "Play It by Ear: Learning Skills amidst Occlusion through Audio-Visual Imitation Learning." *Robotics: Science and Systems 2022*. arXiv:2205.14850

Olivia Y. Lee, Tom Vergoossen. "An updated analysis of satellite quantum-key distribution missions." arXiv:1909.13061.

RESEARCH PROJECTS

Language-Guided Imitation Learning from Failure Data **Sep 2024 – Present**
Stanford Artificial Intelligence Lab (IPRL Lab). Advised by Christopher Agia, Jeannette Bohg
- Leveraging language as weak supervision of failure demonstrations to improve robustness of imitation learning policies.
- Encoding paired failure trajectories and counterfactual language reasoning to predict corrective actions and trajectories.
- Training policies that learn from suboptimal data to avoid unrecoverable failure states and perform corrective retry behavior.

Cross-Embodiment Learning for Dexterous, Multi-Fingered Hands **Jun 2024 – Present**
Stanford Artificial Intelligence Lab (IPRL Lab). Advised by Tyler Lum, Jeannette Bohg
- Developing real-to-sim-to-real pipeline for cross-embodiment learning of dexterous manipulation skills from 1-10 human demos.
- Extracted 6D object pose trajectories and human hand pre-grasps to initialize RL policy training in high-fidelity simulation.
- Deployed policies trained in simulation zero-shot on a KUKA arm and Allegro hand with real-time object pose tracking.

Affordance-Guided Reinforcement Learning via Visual Prompting **May 2023 – Jun 2024**
Stanford Artificial Intelligence Lab (IRIS Lab). Advised by Annie Xie, Kuan Fang, Karl Pertsch, Chelsea Finn *Site, Paper*
- Implemented approach leveraging vision-language models (VLMs) to define dense rewards for online reinforcement learning.
- Developed pipeline for extracting affordance representations from VLMs to generate dense waypoint trajectories in image space.
- Pretrained policies on Bridge data, finetuned on modest number of demonstrations for implementation on a WidowX robot.

Play it by Ear: Learning Skills amidst Occlusion through Audio-Visual Imitation Learning **Mar 2021 – Jun 2022**
Stanford Artificial Intelligence Lab (IRIS Lab). Advised by Suraj Nair, Chelsea Finn *Site, Paper*
- Implemented multimodal imitation learning over vision, audio, and memory, to facilitate success on partially observed tasks.
- Developed behavior cloning algorithms with MuJoCo, Robosuite, and PyTorch for implementation on Franka-Emika Panda robot.
- Established pipeline to train polices offline with expert demonstrations and finetune online with human interventions.

COURSEWORK

Graduate Computer Science: CS 168 Modern Algorithms, CS 205L Mathematical Machine Learning Methods, CS 224N Natural Language Processing, CS 229 Machine Learning, CS 231N Computer Vision, CS 326 Advanced Robotic Manipulation, CS 330 Deep Multi-task & Meta-Learning, CS 422 Interactive & Embodied Learning, OSPOXFRD 196Q Graph Representation Learning (Oxford Study Abroad)
Undergraduate Computer Science: CS 103 Discrete Mathematics, CS 107 Computer Organization & Systems, CS 109 Probability, CS 110 Computer Systems Principles, CS 157 Computational Logic, CS 161 Algorithms Analysis, CS 221 Principles of Artificial Intelligence
Mathematics: MATH 51 Linear Algebra & Multivariable Calculus, MATH 52 Multivariable Integral Calculus, MATH 87Q Topology & Knot Theory, MATH 101 Math Discovery Lab: Probability Theory & Markov Processes, MATH 151 Probability Theory (self-study), PHIL 150 Mathematical Logic, PHIL 151 Metalogic, PHIL 152 Computability Theory
Philosophy: PHIL 20N Philosophy of AI, PHIL 186 Philosophy of Mind, SYMSYS 202 Theories of Consciousness, SYMSYS 205 Science and Philosophy of Perception, SYMSYS 207 Cognitive Neuroscience, OSPOXFRD 199A Philosophy of Mind (Oxford Study Abroad)
Psychology & Linguistics: PSYCH 140 Psycholinguistics, PSYCH 240A Curiosity in Artificial Intelligence, LINGUIST 130A Semantics & Pragmatics, LINGUIST 150 Sociolinguistics, CS 384 Seminar in Ethical & Social Issues in Natural Language Processing

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HONORS & AWARDS

Stanford Symbolic Systems Honors Program **Sep 2023 – Jun 2024**
- Graduated with Honors and Distinction. Honors thesis titled "Leveraging Affordance Representations for Robot Learning". *Thesis*

Phi Beta Kappa Honors Society, California Beta Chapter **May 2024**
- Nationwide honors society awarding students for excellence and breadth of undergraduate scholarly accomplishments. *About PBK*
- Awarded to the top 10% of undergraduates of Stanford's 2024 graduating class.

Tau Beta Pi Scholarship 2023-24 **Jul 2023**
- Awards ~200 members across all chapters nationwide with funds to support their studies and research, based on academic achievement, extracurriculars, and promise of substantial contributions to engineering. *About TBP Scholarship*

Tau Beta Pi Engineering Honors Society, California Gamma Chapter **Jun 2023**
- Nationwide engineering honors society. Elected junior year, top 12.5% of juniors in the School of Engineering. *About TBP*

Symbolic Systems Research Fellow 2023 **Jun 2023**
- Guaranteed funding for Stanford Symbolic Systems Department's undergraduate summer research program. *About SymSys Fellows*
- Selected as 1 of ~20 Symbolic Systems Summer Research Program fellows in 2023.

Stanford Engineering Research Scholars 2022 **Feb 2022**
- Awarded to underrepresented students interested in engineering research to empower graduate departments. *About SERIS*
- Selected as 1 of 16 students from colleges across the US to participate in Stanford's Engineering Research program.

CURIS Fellowship 2021 **Jun 2021**
- Guaranteed funding for Stanford Computer Science Department's undergraduate summer research program. *About CURIS Fellows*
- Selected as 1 of 17 undergraduate CURIS Fellows for the Summer 2021 CURIS Program.

GCE A-Level Examination Excellence Award **Aug 2020**
- Awarded to students who achieved the highest possible grades in all subjects offered in Singapore GCE A-Level Examinations.
- 1 of top 70 students who achieved 8 distinctions, out of high school's graduating cohort of ~1300 students.

TEACHING & OUTREACH

Stanford School of Engineering, Computer Science Department | *Course Assistant* **Sep 2023 – Present**
- Teaching assistant for several graduate-level CS classes: CS 157 Computational Logic (Fall 2023, Fall 2024), CS 224N Natural Language Processing (Winter 2024, Spring 2024), CS 229 Machine Learning (Summer 2024). Received several positive reviews.
- Graded assignments and mentored final projects. Held office hours to clarify queries, taught review sessions, set and revised tests.

Stanford Symbolic Systems Department | *Advising Fellow* **Sep 2023 – Present**
- Advised undergraduates in Symbolic Systems to chart their academic careers, declare majors, and engage in career planning.
- Equipped students with skills to apply for departmental research opportunities, study abroad programs, and research funding.
- Organized research symposiums, distinguished speaker series, and alumni panel events for Symbolic Systems students.

Tau Beta Pi, California Gamma Chapter | *Professional Development Chair* **Apr 2023 – Jun 2024**
- Organized professional development events for members with startup CEOs, industry partners, and government agencies.
- Organized research symposiums for Stanford engineering faculty to share and present research programs with students.
- Connected chapter members to national TBP resources, such as scholarships, fellowships, financial aid, and research grants.

Inspirit AI | *Instructor & Research Mentor* **Jun 2023 – Dec 2023**
- Taught high school students AI fundamentals. Mentored advanced high school students in independent AI research projects.

Stanford Women in Computer Science | *Outreach Volunteer* **Sep 2020 – Mar 2021**
- Developed after-school coding program for low-income, underrepresented students in STEM from the Palo Alto School District.

WORK EXPERIENCE & SKILLS

Stanford Artificial Intelligence Laboratory – IPRL Lab | *Graduate Researcher* **Jun 2024 – Present**
- Conducting research in robotics and computer vision, studying autonomous robot manipulation and sensorimotor control.
- Co-leading two projects. Working on projects supervised by Tyler Lum, Christopher Agia, and Prof. Jeannette Bohg.

Stanford Artificial Intelligence Laboratory – IRIS Lab | *Undergraduate Researcher* **Mar 2021 – Jun 2024**
- Conducted research in reinforcement learning and robotics studying intelligence through robotic interaction at scale.
- Proposed direction, initiated experiments, analyzed results, presented at weekly meetings, prepared papers and presentations.
- Led one project and co-led a second. Worked on projects supervised by Suraj Nair, Annie Xie, and Prof. Chelsea Finn.

Salesforce | *Full-Stack Software Engineer* **May 2022 – Aug 2022**
- Contributed to Flow Builder, a low-code tool for building, managing, and running automated end-to-end enterprise workflows.
- Enhanced user customization tools in Flow Builder using React, Typescript, and HTML/CSS by shipping production-ready code.
- Collaborated with engineers, product managers, and UI/UX team to iterate on features for September 2022 product release.

Languages: Python, C++, C, JavaScript, React; **ML & Data Tools**: PyTorch, NumPy, OpenCV, Open3D, Matplotlib, SLURM, Git, Linux
Robot Tools: Franka-Emika Panda Arm, WidowX Arm, KUKA Arm, Allegro Hand, MuJoCo, PyBullet, Robosuite, Robomimic, ROS
Research Areas: Machine Learning, Robotics, Imitation & Reinforcement Learning, Computer Vision, Natural Language Processing

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