OLIVIA Y. LEE

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EDUCATION

Stanford University **Palo Alto, CA**
B.S. Symbolic Systems (Learning). Minor: Mathematics Sep 2020 – Jun 2024
GPA: 4.08/4.0.
Major Advisor: Prof. Nick Haber. Research Advisor: 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

PUBLICATIONS

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

Learning Affordance Models for Autonomous Robotic Exploration and Data Collection **Jun 2022 – Present**
Affiliated with Stanford Artificial Intelligence Laboratory (IRIS Lab). Advised by Suraj Nair, Annie Xie, Chelsea Finn
- Developing approach to learn affordance groundings for skill selection and application from pre-trained representations.
- Developing system to facilitate autonomous robotic exploration and data collection in novel environments.

Play it by Ear: Learning Skills amidst Occlusion through Audio-Visual Imitation Learning **Mar 2021 – Jan 2022**
Affiliated with Stanford Artificial Intelligence Laboratory (IRIS Lab). Advised by Suraj Nair, Chelsea Finn
- Conducted reinforcement learning research for multimodal robot learning using vision, audio, and memory.
- Demonstrated that augmenting visual, audio, and proprioception data improves success rates on partially-observed tasks.
- Developed reinforcement learning and behavior cloning algorithms with MuJoCo, Robosuite, and PyTorch for implementation on Franka-Emika Panda robot.
- Established novel robotic imitation learning data pipeline to collect expert demonstrations using Oculus Quest headset.

A Shot in the Dark: Modeling Transfer Learning with Self-Supervised Models for Sentiment Classification **Jun 2022**
CS 229: Machine Learning Final Project
- Modeled improved zero-shot and few-shot transfer learning with self-supervised models for sentiment classification.
- Engaged in comparative testing of direct tuning, zero-shot, and few-shot capabilities of logistic regression models with validation, long-short-term memory (LSTM) networks with frozen and trainable word2vec embeddings, and DistilBERT.

Model Predictive Curiosity **Jun 2022**
PSYCH 240A: Curiosity in Artificial Intelligence Final Project
- Proposed Model Predictive Curiosity (MPCu), backpropagates on predicted curiosity value to select curiosity-maximizing actions.
- Tested MPCu's capability to optimize for high-curiosity action values and enrich multi-object interactions in Box2D environment.

Building Safety Benchmarking Services for Comprehensive AI Services (CAIS) systems **Jan 2021 – Jun 2021**
Affiliated with Stanford Existential Risk Initiative Research Program
- Analyzed potential to mitigate AI existential risk through K. Eric Drexler's Comprehensive AI Systems (CAIS) framework.
- Proposed protocol encompassing safety benchmarking services for CAIS systems, ranging from pre-deployment safety benchmarks applied during model training to post-deployment safety benchmarks applied during model application.

Automatic Speech Recognition (ASR) with iBeacon Sensors for Product Location and Indoor Navigation **Jun 2019**
Affiliated with Raffles Science Institute, Raffles Institution Singapore
- Trained an automatic speech recognition (ASR) engine contextualized to Singaporean accents and terminology.
- Incorporated ASR engine into a mobile app to help consumers navigate local supermarkets with verbal queries.
- Combined mobile app with a lattice formation of bluetooth low-energy sensors in a convenience store, which identified the user's position relative to the intended item, then generated and displayed the shortest path.

TECHNICAL SKILLS

Languages and Libraries: Python, PyTorch, TensorFlow, NumPy, Matplotlib, Pandas, C++, C, HTML/CSS, JavaScript, React
Tools: MuJoCo, Robosuite, Franka-Emika Panda Robot, Oculus Quest VR Headset, Git, Unix, LaTeX, Terminal
Research Areas: Machine Learning, Reinforcement Learning, Behavior Cloning, Robotics, Graph Representation Learning, Natural Language Processing, Computer Vision

HONORS & AWARDS

Stanford Engineering Research Scholars 2022 **Feb 2022**

- Awarded to underrepresented students interested in academic engineering research to diversify and empower graduate school engineering departments.
- Selected as 1 of 16 students from colleges across the US to participate in Stanford's Engineering Research program.

CURIS Fellowship 2021 **Jan 2021**

- Guaranteed funding to participate in Stanford Computer Science Department's undergraduate summer research program.
- 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 the GCE A-Level Examinations.
- 1 of 70 students who achieved 8 distinctions, out of high school's graduating cohort of ~1300 students.

Agency for Science, Technology and Research (A*STAR) Science Award **Apr 2019**

- Awarded to Singaporean students with strong aptitude for mathematics, science, and engineering research.
- Selected as 1 of ~80 students nationwide to receive the award, and engaged in a research attachment program with A*STAR.

EXPERIENCES

Stanford Artificial Intelligence Laboratory – IRIS Lab | *Research Engineer* **Mar 2021 – Present**

- Conducting research in reinforcement learning and robotics, studying intelligence through robotic interaction at scale.
- Working 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.
- Enhancing user customization tools in Flow Builder using React, Typescript, and HTML/CSS by shipping production-ready code.

CS + Social Good | *Fellowships (Team Lead, Executive Board)* **Jul 2021 – Jun 2022**

- Secured $25,000 in funding and coordinated full-time student summer projects in tech and social impact organizations.

Women in Computer Science (WiCS) | *Outreach (Volunteer)* **Sep 2020 – Nov 2020**

- Developed curriculum to teach core CS principles to low-income, underrepresented students in the Palo Alto School District.

Center for Quantum Technologies | *Research Intern* **Aug 2018 – Sep 2019**

- Researched quantum computing theory, algorithms, and cryptography by conducting analyses of ~25 papers with postgraduates.

COURSEWORK

Computer Science

- CS 422: Interactive and Embodied Learning (Winter 2023)
- CS 224N: Natural Language Processing with Deep Learning (Winter 2023)
- OSPOXFRD 196Q: Graph Representation Learning (Fall 2022) (Stanford in Oxford Study Abroad Program)
- CS 157: Computational Logic (Fall 2022)
- CS 229: Machine Learning (Spring 2022, A)
- CS 161: Design and Analysis of Algorithms (Winter 2022, A)
- CS 205L: Continuous Mathematical Methods for Machine Learning (Winter 2022, A+)
- CS 221: Artificial Intelligence: Principles and Techniques (Fall 2021, A)
- CS 110: Principles of Computer Systems (Summer 2021, A+)
- CS 109: Probability for Computer Scientists (Spring 2021, A)
- CS 103: Mathematical Foundations for Computing (Spring 2021, A)
- CS 107: Computer Organization and Systems (Winter 2021, A)
- CS 106B: Programming Abstractions in C++ (Fall 2020, A)
- CS 56N: Great Discoveries and Inventions in Computing (Fall 2020, A+)

Mathematics

- MATH 87Q: Mathematics of Knots, Braids, Links, and Tangles (Spring 2022, A)
- PHIL 151: Metalogic (Winter 2022, A)
- PHIL 150: Mathematical Logic (Fall 2021, A+)
- MATH 52: Integral Calculus of Several Variables (Spring 2021, A+)
- MATH 104: Applied Matrix Theory (Winter 2021, A)
- MATH 51: Linear Algebra, Multivariable Calculus, and Modern Applications (Fall 2020, A)

Philosophy

- SYMSYS 202: Theories of Consciousness (Winter 2023)
- OSPOXRD 199A: Philosophy of Mind (Fall 2022) (Stanford in Oxford Study Abroad Program)
- OSPOXRD 29: Artificial Intelligence and Society (Fall 2022) (Stanford in Oxford Study Abroad Program)
- SYMSYS 205: The Philosophy and Science of Perception (Spring 2022, A)
- SYMSYS 207: Conceptual Issues in Cognitive Neuroscience (Fall 2021, A)
- PHIL 80: Mind, Matter, and Meaning (Spring 2021, A)
- PHIL 20N: Philosophy of Artificial Intelligence (Winter 2021, A+)
- SYMSYS 1: Minds and Machines (Winter 2021, A+)
- ESF 7: The Transformation of the Self (Fall 2020, A)

Psychology & Linguistics

- PSYCH 209: Neural Network Models of Cognition (Winter 2023)
- PSYCH 240A: Curiosity in Artificial Intelligence (Spring 2022, A)
- LINGUIST 130A: Introduction to Semantics and Pragmatics (Winter 2022, A+)
- PSYCH 1: Introduction to Psychology (Winter 2022, A+)
- LINGUIST 150: Language and Society (Winter 2021, A)