Kevin Lu

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Education

Aug 2021
Aug 2018

University of California, Berkeley

Bachelor of Science (B.S.) in Electrical Engineering and Computer Sciences (EECS)

Overall GPA: 3.95/4.00

Graduate-level courses: Unsupervised Learning, Natural Language Processing, Robotics, Theory of Bandits & RL, Population Games, Robust and Nonparametric Statistics, Theoretical Statistics

Undergraduate-level courses: Machine Learning, Artificial Intelligence, Convex Optimization, Probability and Random Processes, Efficient Algorithms, Discrete Math, Machine Structures

Experience

Sep 2022
Aug 2021

Facebook Artificial Intelligence Research

AI Resident (Advisors: Amy Zhang, Yuandong Tian)

Researching methods for better generalization in reinforcement learning.

Aug 2021
Jun 2019

Robot Learning Lab

Undergraduate Researcher (Advisors: Igor Mordatch, Pieter Abbeel)

Published work on reinforcement learning, universal models, and sequence modeling.

Mar 2019
Sep 2018

Hearst Lab

Undergraduate Researcher (Advisors: Katie Stasaski, Marti Hearst)

Worked on engineering for a tutoring project leveraging language models and collected data.

Highlighted Publications

Jun 2021

Decision Transformer: Reinforcement Learning via Sequence Modeling

L. Chen* and K. Lu* (equal contribution), A. Rajeswaran, K. Lee, A. Grover, M. Laskin, P. Abbeel, A. Srinivas†, I. Mordatch† (equal advising)

Summary: simple language modeling can do offline RL, matching traditional dynamic programming (temporal difference learning) methods on recent benchmarks.

This work was presented at Neural Information Processing Systems (NeurIPS) 2021 and as a spotlight talk at the RL4RealLife Workshop at International Conference on Machine Learning (ICML) 2021. It was also independently covered on YouTube and by assorted press (The Gradient, SyncedReview).

Mar 2021

Pretrained Transformers as Universal Computation Engines

K. Lu, A. Grover, P. Abbeel, I. Mordatch

Summary: pretrained language sequence models can exhibit cross-modal transfer to distinct non-language modalities, improving performance on random initialization.

This work will be presented at the AAAI Conference on Artificial Intelligence 2022. On popular deep learning paper aggregator arxiv-sanity, this paper was 13th most popular within a one-year timefrane. It was also independently covered on YouTube and by assorted press (The Batch, VentureBeat).

Teaching

May 2021
Jan 2019

University of California, Berkeley (EECS Department)

Head Teaching Assistant for Probability and Random Processes (EECS 126)

Head TA for upper division probability course EECS 126 (Sp21, Fa20), responsible for organizing course, managing staff, creating content, and communicating with students.

Teaching Assistant for Probability and Random Processes (EECS 126)

TA for EECS 126 (Sp20, Fa19). Worked in various teaching roles: holding office hours, teaching discussion, answering student questions, assisting with writing and grading exams.

Reader for Discrete Math and Probability (CS 70)

Reader (grading assistant) for CS 70 (Sp19); graded homework and held office hours.

All Publications

Dec 2021 **Pretraining for Language-Conditioned Imitation with Transformers**
A. Putterman, K. Lu, I. Mordatch, P. Abbeel.
NeurIPS Offline Reinforcement Learning Workshop, 2021.
Summary: unsupervised sequence pretraining improves language-conditioned behavior policies.

Oct 2021 **URLB: Unsupervised Reinforcement Learning Benchmark**
M. Laskin* and D. Yarats*, H. Liu, K. Lee, A. Zhan, K. Lu, C. Cang, L. Pinto, P. Abbeel.
Neural Information Processing Systems (NeurIPS), 2021.
Summary: we benchmark unsupervised RL algorithms on downstream finetuning performance.

Jun 2021 **Decision Transformer: Reinforcement Learning via Sequence Modeling**
L. Chen*, K. Lu*, A. Rajeswaran, K. Lee, A. Grover, M. Laskin, P. Abbeel, A. Srinivas†, I. Mordatch†.
Neural Information Processing Systems (NeurIPS), 2021.
Summary: simple language modeling can do offline RL, matching traditional dynamic programming.

Mar 2021 **Pretrained Transformers as Universal Computation Engines**
K. Lu, A. Grover, P. Abbeel, I. Mordatch.
AAAI Conference on Artificial Intelligence, 2022.
Summary: pretrained language models can exhibit cross-modal transfer to non-language modalities.

Jan 2021 **Efficient Empowerment Estimation for Unsupervised Stabilization**
R. Zhao, K. Lu, P. Abbeel, S. Tiomkin.
International Conference on Learning Representations (ICLR), 2021.
Summary: unbiased empowerment estimator representing stability better than variational methods.

Dec 2020 **Reset-Free Lifelong Learning with Skill-Space Planning**
K. Lu, A. Grover, P. Abbeel, I. Mordatch.
International Conference on Learning Representations (ICLR), 2021.
Summary: model-based planning over a space of model-free skills improves reset-free performance.

Dec 2019 **Adaptive Online Planning for Continual Lifelong Learning**
K. Lu, I. Mordatch, P. Abbeel.
NeurIPS Deep Reinforcement Learning Workshop, 2019.
Summary: model-based planning outperforms model-free acting in dangerous reset-free settings.

Invited Talks

Jul 2021 **Intel AI Labs: "Decision Transformer: Reinforcement Learning via Sequence Modeling"**

Jul 2021 **Eindhoven RL Seminar: "Decision Transformer: Reinforcement Learning via Sequence Modeling"**

Apr 2021 **IBM: "Pretrained Transformers as Universal Computation Engines"**

Apr 2021 **Facebook AI Research: "Pretrained Transformers as Universal Computation Engines"**

Apr 2021 **Berkeley Vision Group: "Pretrained Transformers as Universal Computation Engines"**

Mar 2021 **Cohere AI: "Pretrained Transformers as Universal Computation Engines"**

Academic Activities

Conference Reviewer:
Neural Information Processing Systems (NeurIPS)
International Conference on Learning Representations (ICLR)

Workshop Reviewer:
NeurIPS Deep Reinforcement Learning Workshop
NeurIPS Offline Reinforcement Learning Workshop