Maxime Kawawa-Beaudan

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Education

M.S. Electrical Engineering and Computer Science — Aug. 2021 - May 2022
University of California, Berkeley — Berkeley, CA

- Research Area: Robotics and Artificial Intelligence
- Coursework: Deep Reinforcement Learning, NLP, Multimodal ML, Product Development

B.A. Computer Science, Minor in Creative Writing — Aug. 2017 - Dec. 2020
University of California, Berkeley — Berkeley, CA

- Honors: Magna Cum Laude; GPA: 3.9/4.0
- Coursework: Machine Learning, AI, Probability Theory, Efficient Algorithms, Convex Optimization, Robotics, Computer Architecture, Data Structures, Linear Algebra

Professional Experience

J.P. Morgan — New York, NY
Senior Artificial Intelligence Research Associate — June 2022 - Present

- Computer vision and reinforcement learning in industry.

Berkeley Artificial Intelligence Research — Berkeley, CA
Graduate Researcher — Apr. 2020 - June 2022

- Graduate student in the Video and Image Processing Lab, advised by Professor Avideh Zakhor. Worked on:
  1. Autonomous robotic navigation.
     - Designed six-legged robots to perform building inspection tasks in inaccessible spaces. Built methods in reinforcement learning for multi-objective rewards and novel approaches to sim-to-real transfer.
     - Deployed policies learned entirely in simulation to real robots in rough terrain, surmounting 3 obstacles in under 15 seconds. All using a single GPU and $600 in robotic hardware.
  2. Automatic detection of skin cancer.
     - Building deep-learning based approaches for segmentation of invasive melanoma. Collaborating with UCSF pathology for expert data annotation.
  3. Image compression for vision tasks.
     - Leader of research team designing neural-network based compression systems to jointly optimize for recognition, distortion, and compression losses. Project owner, contributing 98% of lines of code in repository.
     - First author on paper accepted for oral presentation at conference. Author on grant proposal for up to $150,000 in funding (Sony Focused Research Award).

J.P. Morgan — New York, NY
Summer Analyst – Fixed Income Research — Jun. 2021 - Aug. 2021

- Designed AI models to predict relevant market movements from sparse datasets for the U.S. Rates Strategy team (Corporate and Investment Bank).
- Contributed to, copy-edited and laid out mid-week, end-of-week, and daily publications for institutional clients and internal partners.
- Automated data collection and aggregation methods, producing higher resolution insights for researchers and improving data accessibility.

Salesforce, Inc. — San Francisco, CA
Software Developer Intern — Jun. 2019 - Aug. 2019

- Developed a novel anomaly detection algorithm with Salesforce's AI group, Einstein. Proposed method helped team launch the Messaging Insights feature, used by thousands of marketers worldwide.

Publications and Talks

Learning to Walk: Legged Hexapod Locomotion from Simulation to the Real World
Maxime Kawawa-Beaudan, Avideh Zakhor

- We employ hierarchical reinforcement learning to train robotic systems to navigate challenging environments. We train on-policy algorithms entirely in simulation before transferring to a real robot. We successfully surmount obstacles in the real world and propose novel approaches to the sim-to-real problem. Paper. Project page.

Recognition-Aware Learned Image Compression Comp. Img. 2022
Maxime Kawawa-Beaudan, Ryan Roggenkemper, Avideh Zakhor

- We jointly learn compression and recognition networks to optimize a rate-distortion loss alongside a task-specific loss. We achieve as much as 26% higher recognition accuracy at equivalent bitrates compared to state-of-the-art traditional compression methods. Paper.

Skills

Languages: Python, Java, C; **Platforms:** AWS, Google Cloud; **Frameworks:** Apache Spark, PyTorch, ROS, OpenAI Gym; **Tools:** NumPy, Pandas, OpenCV, matplotlib, Jupyter notebooks, Unix; **Natural Languages:** English (native), French (fluent)