Stone Tao

Email: stonezt2019@gmail.com | Website: stoneztao.com | GitHub: github.com/StoneT2000

Highlights

- 3x MIT Battlecode **Finalist**, best result: 1st out of solo competitors, 5th overall out of 600+ graduate to HS students globally.
- Launched a new generation of AI competitions with **Kaggle** called the **Lux AI Challenge**, with 780+ teams and github stars after 2 months.
- Placed top amongst students in graduate class competitions in **deep learning, computer vision**, and **reinforcement learning**.
- Self-driven, persistent, **full stack software engineer**, **AI and HCI researcher.**

Work Experience

ML Engineer Intern at QuantCo
Jun. 2021 to Sep. 2021 | Boston, USA

- Developed / researched high precision and accurate white-box function approximation using deep neural nets, decision trees, and boosting. Helps automatically migrate slow, complex, hand-built calculators in old systems to new systems, and learn fast differentiable approximations of these functions for analysis purposes.
- Results beat LGBM, deep neural nets, and other methods by **100x or by being feasible in high dimensions.**
- Developed OCR+NLP tools for analysis of insurance documents for automatic categorization of insurance types and their properties
- Used Pytorch, Jax, Flax, Optax, scikit learn, scipy, Pandas, GCP

AI Research Intern at SU Lab
Jan. 2021 to Now | San Diego, USA

- Researching **Reinforcement Learning** (RL) and **Robotics** under Professor Hao Su. Currently researching skill translation between different morphologies. Previously built gym environments and systems for the ManiSkill challenge to benchmark RL, CV, and robotics on SAPIEN, a simulated part-based interactive, 3D environment. **Work accepted to NeurIPs 2021** https://arxiv.org/abs/2107.14483

Software Engineering Intern at LaunchDarkly
Jun. 2020 to Sep. 2020 | Oakland, USA

- Worked full stack on **feature workflows, semantic patches**, and **conflict handling** to enable state independent scheduling of feature flagging, allowing users to release complex features with confidence. Developed a REST API to enable an approval review system for feature flagging, a feature requested by LaunchDarkly's largest business customers. Used Go, React, and Typescript.

Undergraduate Researcher at ProtoLab / Design Lab at UCSD
Oct. 2019 to Now | San Diego, USA

- Researching at the intersection of **AI and HCI**. Currently researching NLP summarization methods, tree learning models, and how to introduce crowdwork to improve models, fairness, accountability, and transparency.

Projects

Reinforcement Learning Gym and Library in Typescript - Apr. 2021: github.com/StoneT2000/rl-ts

- Implements a **gym interface** and algorithms like PPO and DQN in Typescript for reinforcement learning on browsers and Node.js.

Dimensions - Generalized AI Competition Framework – Apr. 2020: github.com/StoneT2000/dimensions

- Allows users to easily create language-agnostic AI competitions. Provides **Google Cloud** and **MongoDB** integrations to **scale** up a competition in 3 lines of code.
- Being used in a collaborative effort with **Kaggle** to launch a new AI competition called the Lux AI Challenge: https://lux-ai.org/

Awards

- **MIT Battlecode (AI Competition) Finalist**: Made finals 3 times in a row (2019-2021), competing against over 600 teams of high school to graduate students, won the **Five Rings adaptive strategy award** for spearheading an influential strategy in 2021.
- Graduate Robotics and RL Course. **2nd out of 20+ graduate students** in RL competition using PPO and Random Network Distillation.
- Graduate Computer Vision (ML Meets Geometry). **Highest placing undergraduate student** on 3D segmentation and pose estimation tasks, using PointNet / PointNet++, Frustum PointNet, Faster-RCNN etc.

Education

Undergraduate: University of California San Diego, Graduation Date: Jun. 2023

- B.S. Computer Science, Cognitive Science (double major); Math minor (intended); GPA: 3.98/4.0 - Provost Honors List
- Graduate Courses: Convex Optimization, Computer Vision (ML meets Geometry), Robotics and RL, Differentiable Programming, Recommender Systems
- Undegraduate Courses: Honors Linear Algebra & Honors Calculus sequence, Decision Making in the Brain, Advanced Data Structures, Advanced Optimization Methods for Data Science, Design and Analysis of Algos, Data Science in Practice, Computer Architecture: Software Perspective, Operating Systems
- Activities: Founding president of ACM AI at UCSD; Member of TBP Honors Engineering Society at UCSD

Skills

- **Programming Languages:** Typescript, Python, SQL, Go, C, C++, Java, PHP, Javascript
- **AI:** RL, 3D CV (Object Detection, Segmentation, Pose Estimation), Deep Learning, Tree Learners, Boosted Trees
- **Frameworks/Engines/Libraries:** Pytorch, Tensorflow, Pandas, scikit-learn, Jax, Flax, OpenAI Gym, RLLib, Numpy, Matplotlib, Seaborn, Node.js, React, MongoDB, Express.js
- **Tools:** Docker, Google Cloud, Jupyter Notebook, Git, Adobe Photoshop

Other

- **Sports**: Competitive fencer. Assistant coach at the La Jolla Fencing Academy.
- **Languages:** Fluent English and Chinese
- **Interests:** Artificial Intelligence, Design, Physics, Mathematics (Primarily combinatorics)

References

Available upon request