Stone Tao

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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 370+ stars and 200+ teams a week after launch.
- Placed top amongst students in graduate class competitions in **deep learning, computer vision**, and **reinforcement learning**.
- Self-driven, persistent, full stack engineer, **AI and HCI researcher.**

Work Experience

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

- Developing / researching 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.**
- Developing 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 RL benchmarks to test RL agents on SAPIEN, a simulated part-based interactive, 3D environment. **Accepted to NeurIPs** https://arxiv.org/abs/2107.1448

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, trust, accountability etc.

Full Stack Developer Intern at TAOS Data
Jun. 2019 to Sep. 2019 | Beijing, China

- Developed a Node.js connector for the company's product, TDengine, a big data platform. Created a **C interface** to enable high-speed interaction with TDengine and support **subscription, async,** and **stream** functionality.

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
- 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
- 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), GAN, Deep Learning, Decision Trees, Clustering Algorithms
- **Frameworks/Engines/Libraries:** Pytorch, Tensorflow, Pandas, scikit-learn, Jax, Flax, Optax, OpenAI Gym, 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