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stonet2000

Stone Tao

Highlights

AI researcher interested in reinforcement learning, robotics, tree learners, and building efficient and adaptable intelligent systems

Co-founder of the Lux AI Challenge, a non-profit dedicated to building creative and accessible Multi-Agent AI competitions, attracting 1100+ teams and 20000+ submissions in our first season

Education

2019–2023 **B.S. Double-Major in Computer Science and Cognitive Science, Math Minor**, *UC San Diego*, San Diego, CA, Advisors: Hao Su, Steven Dow. GPA: 3.98/4.00.

Graduate Courses: Computer Vision (ML meets Geometry), Robotics and RL, Differentiable Programming, Recommender Systems; **Undergraduate Courses**: Decision-Making in the Brain, Parallel Computing, Advanced Optimization Methods for Data Science, Design and Analysis of Algos, Advanced Data Structures, Operating Systems.

Founder of ACM AI at UCSD, an org dedicated to cultivating a community of AI enthusiasts at UCSD

Publications & Preprints

In submission to ICLR 2023 **Abstract-to-Executable Trajectory Translation for One-Shot Task Generalization**.
Stone Tao, Xiaochen Li, Tongzhou Mu, Zhiao Huang, Yuzhe Qin, Hao Su

In submission to CHI 2023 **MetaWriter: Supporting Information Synthesis Through Machine-Generated Highlights and Summaries**.
Lu Sun, **Stone Tao**, Junjie Hu, Steven P. Dow

NeurIPS 2021 (Datasets and Benchmarks) **Maniskill: Generalizable Manipulation Skill Benchmark with Large-scale Demonstrations**.
Tongzhou Mu, Zhan Ling, Fanbo Xiang, Derek Cathera Yang, Xuanlin Li, **Stone Tao**, Zhiao Huang, Zhiwei Jia, Hao Su
arXiv, project page

Experience

2020–Now **UC San Diego: Hao Su Lab**, *Undergraduate Researcher*, Advisor: Hao Su.
- Researching reinforcement learning and robotics
- Current research areas include imitation learning, demonstration-based RL, intersections of language models and paradigms with RL, and skill discovery/learning.
- Researching and developing the ManiSkill challenge to benchmark RL, CV, and robotics in learning manipulation skills and achieving object generalization.

2019–Now **UC San Diego: ProtoLab**, *Undergraduate Researcher*, Advisor: Steven Dow.
- Researching intersections of AI and HCI
- Current research areas include the use of NLP in systems requiring in-depth synthesis of information such as peer-review systems.
- Previously developed the Design for San Diego competition's front and backend.

2021–Now **Lux AI Challenge**, *Co-Founder*.
- Lead the research, development, and design of creative, accessible, and inclusive AI competitions.
- Season 1 finished with 1100+ teams, 800+ github stars, 22,000+ submissions, 8,000,000+ matches run, and had one of the most diverse group of participants ever. Enabled competitors to research novel deep RL and IL methods to a unique large-scale multi-agent problem.
- Currently working on season 2 in collaboration with Kaggle.

2021 **QuantCo**, *ML Engineer Intern*, Advisor: T. Ben Thompson.
- Researched high precision and accurate 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
- 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

2020 **LaunchDarkly**, *Software Engineer Intern*.

- Worked full stack on feature workflows, semantic patches, and conflict handling to enable state independent scheduling of feature flagging, a feature requested by LaunchDarkly's largest business customers.

Awards

2021–2022 **UCSD CSE Alumni Advisory Board Leadership Excellence Scholarship**

2019–2021 **MIT Battlecode (AI Competition) Finalist**: Made finals 3 times in a row (2019-2021), placing 1st out of all soloists and 5th overall in 2020, 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.

Projects

2022 **Robojax**: A Jax-based library with RL algorithms and other approaches (e.g. Transporter Nets) with a focus on robotics. `https://github.com/StoneT2000/robojax`

2022 **Jax bandits**: An assortment of algorithms for multi-armed bandits with support for massive parallelization in Jax. `https://github.com/StoneT2000/jax-bandits`

2021 **Reinforcement Learning Gym and Library in Typescript**: Implements a gym interface and algorithms like PPO and DQN in Typescript for reinforcement learning on browsers and Node.js. `https://github.com/StoneT2000/rl-ts`

2020 **Dimensions - Generalized AI Competition Framework**: Simple framework for creating language agnostic, scale-able, AI programming competitions. Provides plugins to run on Google Cloud and use various databases in 3 lines of code. `https://github.com/stonet2000/dimensions`

Skills

Programming Languages	Python, SQL, Typescript, Go, C/C++, Java, Javascript
AI	Reinforcement Learning, 2D/3D Computer Vision, Deep Learning, Tree Learners, Boosted Trees
Frameworks	Jax, Pytorch, Tensorflow, Pandas, scikit-learn, Numpy, Node.js, React, MongoDB, Express.js
Tools	Docker, Google Cloud, Jupyter Notebook, Git, Adobe Photoshop, Figma

Interests / Other

Languages	English, Chinese
Sports	Fencing (Saber), Fencing Coaching
Music	Violin, Viola, Ukulele, Guitar