

Tse-Kai (Kevin) Chan

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EDUCATION

Stanford University

Stanford, CA

M.S. Computer Science - Specialization in Artificial Intelligence

Sep 2025 –

University of California, San Diego

San Diego, CA

B.S. Computer Science, Regents Scholar, GPA: 3.986/4.0, Summa Cum Laude

Sep 2022 – Jun 2025

- **Selected Awards:** Regents Scholarship, USA Computing Olympiad - Platinum Division, Provost Honors
- **Organizations:** Director of Events at ACM AI, ICPC Team, Scholars Society, SU Lab, Qualcomm Institute
- **Selected Courses:** **CS:** Data Structures, Algorithms, Software Engineering, Database, Operating System, Computer Security, Network Services; **CG:** Computer Graphics, 3D User Interaction, 3D Asset Design; **AI:** Statistical Methods, Probabilistic Models, Machine Learning, Deep Learning, Computer Vision I/II, ML for Music/Audio, ML with Few Labels, Deep Learning for 3D Data (Graduate), ML for Robotics (Graduate)

PUBLICATION & PREPRINT

1. Stone Tao, Arth Shuka, **Tse-kai Chan**, Hao Su. *Reverse Forward Curriculum Learning for Extreme Sample and Demonstration Efficiency in RL*. International Conference on Learning Representations (ICLR) 2024. [[Paper](#), [Project Page](#)]
2. Stone Tao, Fanbo Xiang, Arth Shukla, Yuzhe Qin, Xander Hinrichsen, Xiaodi Yuan, Chen Bao, Xinsong Lin, Yulin Liu, **Tse-kai Chan**, Yuan Gao, Xuanlin Li, Tongzhou Mu, Nan Xiao, Arnav Gurha, Zhiao Huang, Roberto Calandra, Rui Chen, Shan Luo, Hao Su. *ManiSkill3: GPU Parallelized Robotics Simulation and Rendering for Generalizable Embodied AI*. Robot Learning Workshop at ICLR 2025 (Oral). [[Paper](#), [Project Page](#)]

EXPERIENCE

AI Research Intern | *Python, PyTorch, JAX, Docker, Kubernetes, Robotics*

Jun 2023 –

Advisor: Prof. Hao Su

San Diego, CA

- Researched demo-guided deep reinforcement learning methods to effectively solve long-horizon, sparse tasks. Co-authored paper *Reverse Forward Curriculum Learning* accepted in ICLR 2024.
- Benchmarked various state-of-the-art demonstration-guided deep RL methods, including RLPD, IQL, etc., on ManiSkill2, D4RL, and Meta-World tasks. Performed experiments on Kubernetes cluster using Docker.
- Adapted TD-MPC2 to Maniskill3 CPU/GPU vectorized environments and visual (rgb) based RL.
- Developed and optimized implementations of TD-MPC2 and SAC in JAX, achieving a 5x reduction in training time in comparison to previous PyTorch implementations.
- Proposed a RL method leveraging layer-wise freezing and a latent state replay buffer to enhance both sample and wall-time efficiency and wall-time in visual and continual learning tasks. Preliminary results show a 2x reduction in training time on ManiSkill3.

Research and Development Intern | *Python, PyTorch, Unreal Engine, Kubernetes, Docker, C++* *Qualcomm Institute (Calit2)*

Apr 2023 –

San Diego, CA

- Co-developing interactive 3D avatars of historical figures, driven by large language models, text-to-speech / animation pipeline, and Unreal Engine 5. Co-developing Climate Games, an educational video game, to raise awareness on climate change and archaeology. Both projects were presented at ASOR 2024 Annual Meeting.
- Developed a real-time audio-to-face pipeline that receives audio input from text-to-speech and uses NVIDIA Audio2Face through Rest API to animate facial movements on a 3D avatar. Further researched and developed our own multimodal co-speech gesture generation model for holistic body animation.
- Developed an Unreal plugin for real-time speech gesture generation and player communication. The plugin supports seamless communication in multiplayer gameplay and between Unreal Engine and external AI models.

Instructional Assistant | *Python, PyTorch, scikit-learn*

Jan – Mar 2024, Jan 2025 –

UC San Diego Department of Computer Science and Engineering

San Diego, CA

- CSE 152A: Assisted in teaching Computer Vision and Deep Learning concepts for a class of 150+ students and assisted 20+ students weekly with programming assignments in office hours.

LEADERSHIP

AI Board - Director of Events

May 2023 – Present

AI Community in the Association for Computing Machinery (ACM) at UCSD

San Diego, CA

- Leading 9 event hosts in ACM AI's Events and Social teams in designing and hosting technical workshops, social events, and professional/academic seminars for a 2,000+ members Artificial Intelligence student organization.
- Co-hosted AI School, a workshop series on Computer Vision during Fall 2023 and 2024, and workshops on other AI topics, including recommender systems, RL, NLP, and frameworks. Co-hosted social events, including kickoff, study jam, game night, sports day, and collaboration with other student organizations.

CONFERENCE PRESENTATION

1. Jeffrey Hata, **Tse-Kai Chan**, Ismail Faiz, Andrew Smithwick, Arthur Cheung, Mabel Szeto, Sandy Vo, Giovanni Vindiola, Thomas Levy, Neil Smith. *Historic Metahumans: Avatars, Artifacts and Biblical Archaeology*. ASOR 2024 Annual Meeting.
2. Doris Zhong, Jeffrey Hata, **Tse-Kai Chan**, Hamza Dehaini, Gilead Cosman, Julia Bang, Ismail Faiz, Tassja Falcatan, Zhuoran Li, Hantian Lin, Annie Wong, Giovanni Vindiola, Gilad Steinberg, Assaf Yasur-Landau, Thomas Levy, Neil Smith. *Gamification of the Archaeological Record – Underwater Excavations on the Carmel Coast, Israel*. ASOR 2024 Annual Meeting.

SELECTED PROJECTS

Reinforcement Learning / Robotics Simulation

SAC Implementation in JAX | *JAX, Gymnasium*

- Re-implemented SAC algorithm in JAX, supporting state, RGB, and PointCloud environments in ManiSkill. This implementation achieved a 5x reduction in training time compared to previous PyTorch implementations. [\[Github\]](#)

ManiSkill3: GPU Parallelized Robotics Simulation for Embodied AI | *PyTorch, JAX, Gymnasium*

- Developed SlideCube-v1 task for robotics manipulation in simulated environment. [\[Report\]](#)
- Adapted the original implementation of TD-MPC2 to Maniskill3 CPU/GPU vectorized environments and visual-based RL. My implementation was merged into the Maniskill3 library. [\[Github\]](#)

Horizon Scheduling in Model-based RL | *PyTorch, Gymnasium*

- Experimented with horizon scheduling techniques in model-based RL methods, specifically TD-MPC2. [\[Report\]](#)

3D Generative AI / Virtual Environment

Neural Radiance Fields (NeRF) on Bottles | *PyTorch*

- Implemented NeRF algorithm for novel scene synthesis on the bottles dataset. My improved implementation was able to reach 31 PSNR after 750K iterations. [\[Github\]](#)

AILA Diagnosis and Treatment in Virtual Reality | *Unity 3D, Meta Quest VR, OpenXR, C#*

- Implemented a VR application in Unity 3D simulating an AI-assisted healthcare assistant (AILA) to diagnose conditions and provide step-by-step care instructions. [\[Github\]](#)

Co-speech Gesture Generation for Virtual Avatars in Unreal Engine | *Python, PyTorch, LMDB, Docker*

- Developing an efficient gesture generation model that translates multi-modal speech data to holistic 3D body motion. Live animation/audio is sent to Unreal Engine through UDP. The model was trained on BEAT. [\[Github\]](#)

Other

ACM AI Wiki | *Leadership, Presentation, PyTorch, JavaScript, Next.js*

- Co-developing the AI Wiki platform, an accessible, beginner-friendly resource for organizing workshops and introducing newcomers to AI concepts. The wiki is undergoing development to add recent workshops. [\[Webpage\]](#)

Crop Optimal Planning: Irrigation Management Model using Historical/Sensor Data | *MATLAB, Simulink*

- Developed an AI weather prediction model, mathematical soil/crop models, and the supporting database to predict short-term water usage. Experiments with historical/sensor data have demonstrated accurate predictions [\[Github\]](#)

TECHNICAL SKILLS

Languages: Java, Python, C/C++, C#, Kotlin, Go, SQL, LaTeX

Developer Tools: Git, Docker, Kubernetes, ZBrush, Unity, Unreal Engine 5, Nvidia Omniverse, Meta Quest

Libraries: PyTorch, JAX, Flax, OpenCV, Gymnasium, OpenGL, LMDB