Tse-Kai (Kevin) Chan

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Education

Stanford University — Stanford, CA
M.S. Computer Science - Specialization in Artificial Intelligence — *Sep 2025 – Present*

- **Affiliations:** Stanford AI Lab · Stanford Vision and Learning Lab
- **Selected Courses:** Robot Perception · Visual Computing Systems · Parallel Computing · Computer Animation and Simulation · Deep Learning for Genomics and Biomedicine

University of California, San Diego — San Diego, CA
B.S. Computer Science · Regents Scholar · Summa Cum Laude · GPA: 3.99/4.0 — *Sep 2022 – Jun 2025*

- **Affiliations:** Director of Events at ACM AI · ICPC Team · Scholars Society · The Intermission Orchestra
- **Selected Awards:** Regents Scholarship · USA Computing Olympiad - Platinum Division · Provost Honors
- **Selected Courses:** Operating Systems · Computer Security · Networks · Computer Vision I/II · Deep Learning · Probabilistic Models · Deep Learning for 3D Data (Graduate) · Machine Learning for Robotics (Graduate)

Experience

Machine Learning Intern — Sep – Dec 2026
Gridmatic — *Cupertino, CA*

- Incoming Fall 2026 - ML Models for Grid Forecasting.

Software Engineer Intern — June – Sep 2026
Meta — *Menlo Park, CA*

- Incoming Summer 2026 - Instagram Recommendations.

Graduate Researcher | *Python, PyTorch, Swift* — Sep 2025 – Present
Stanford Vision and Learning Lab | Advisor: Prof. Jiajun Wu — *Stanford, CA*

- Built SyncREC, a multi-iPhone video capture system for high-fidelity 3D/4D reconstruction, coordinating millisecond-level synchronized recording, remote camera control, and automated media/calibration ingest.
- Benchmarked state-of-the-art 3D / 4D reconstruction methods.

Undergraduate Researcher | *Python, PyTorch, JAX, Docker, Kubernetes, Robotics* — June 2023 – Sep 2025
UC San Diego Hao Su Lab | 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 adaptive freezing and latent mixup to enhance computational efficiency in visual and continual learning tasks. Results showed a better success convergence and 2x reduction in training time.

Machine Learning Engineer Intern | *Python, PyTorch, Unreal Engine, Docker, C++* — Apr 2023 – June 2025
Qualcomm Institute — *San Diego, CA*

- Co-developed 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 – Mar 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

Director of Events May 2023 – June 2025

AI Community in the Association for Computing Machinery (ACM) at UCSD *San Diego, CA*

- Led 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+ member artificial intelligence student organization.
- Co-hosted two iterations of 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.

Publications & Preprints

1. 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); Robotics: Science and Systems (RSS) 2025. [Paper, Project Page]

2. Stone Tao, Arth Shukla, **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]

Selected Projects

Full-Stack & Applied AI Systems

SyncREC Camera: Multi-iPhone Capturing System for 3D/4D Reconstruction | *Python, Swift*

- Built a multi-iPhone video capture system for high-fidelity 3D/4D reconstruction, coordinating millisecond-level synchronized recording, remote camera control, and automated media/calibration ingest. [Github]

Museum&: Museum Discovery Platform | *Next.js, Convex, Expo, Vercel, PyTorch*

- Built a cross-platform museum discovery and curator management platform with mobile check-ins, realtime catalog data, curator dashboards, geospatial recommendations, and automated museum enrichment. [Github]
- Developed curator/admin catalog systems, batch import and autofill with Google Places/Firecrawl API, artwork search with DINOv3 + FAISS, dashboard analytics, and account/org management.

Reinforcement Learning & Robotics Simulation

SAC Implementation in JAX | *JAX, Gymnasium*

- Extended a SAC codebase in JAX to support RGB and PointCloud environments in ManiSkill. Observed up to 5x faster wall-clock training throughput vs. a comparable PyTorch implementations. [Github]

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

- Developed SlideCube-v1 task for robotics manipulation in a 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]

3D AI, Graphics & Virtual Environments

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]

Technical Skills

Languages: Java, Python, C/C++, C#, Go, SQL, LaTeX
Developer Tools: CUDA, Git, Docker, Kubernetes, Unity, Unreal Engine 5, Nvidia Omniverse, Meta Quest
Frameworks: PyTorch, JAX/Flax, OpenCV, Gymnasium, OpenGL