

Tse-Kai Chan

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EDUCATION

University of California, San Diego

San Diego, CA

B.S. in Computer Science, Regents Scholar, GPA: 3.986/4.0

Sep. 2022 – June 2025

- **Selected Courses:** Statistical Methods, Computer Systems (A+), Advanced Data Structures (A+), Algorithms (A+), Machine Learning, Deep Learning, ML for Music/Audio (A+), Computer Vision (A+), Computer Vision II
- **Organizations:** Event Lead at ACM AI, ICPC Team Member, Scholars Society, Hao Su Lab

EXPERIENCE

Undergraduate Researcher | *Python, PyTorch, JAX, Gymnasium, Docker, Kubernetes*

June 2023 –

Advisor: Prof. Hao Su

San Diego, CA

- Researching embodied AI and reverse reinforcement learning methods, which learn demonstrations in reverse to effectively solve long-horizon, sparse environments.
- 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.

Research and Development (R&D) Intern | *Python, PyTorch, Unreal Engine, Audio2Face, TCP*

Apr. 2023 –

Qualcomm Institute (Calit2)

San Diego, CA

- Co-developed interactive 3D avatars of historical figures in Unreal Engine 5, driven by large language models and end-to-end text-to-speech/face pipeline. Implemented a multi-speaker tracking module to drive a Metahuman's attention and face/body motion in multiplayer VR or through webcam using Google Mediapipe.
- Developed a dynamic real-time processing audio-to-face pipeline that receives input from text-to-speech, uses NVIDIA Audio2Face with Rest API to simulate facial movements from audio, and renders on a 3D avatar.
- Researching lightweight, attention-based residual neural network models that process real-time text/audio/visual data to simulate personalized facial blendshapes and body/hand gestures for conversational Metahumans.

Software Engineer Intern | *Kotlin, XML, Android Studio*

Mar. 2022 – June 2022

Nearal

San Jose, CA

- Developed various features for Nearal's Android application, including a dynamic onboarding screen, a floating login interface, and an improved sign-up process, using Kotlin and Android Studio.
- Refined multiple app fragments, ensuring optimal functionality for both logged-in and logged-out users, and resolved critical issues such as photo display inconsistencies and profile identification.

PROJECTS

Crop Optimal Planning: An 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](#))

PUBLICATION

Arbitrary Quantum State Coins - Implementation and Performance on Quantum-Walk-Based Algorithms

Advisor: Prof. Wenchao Xu, ETH Zurich

| *Python, Qiskit, IBM Q*

- Implemented arbitrary quantum state coins in Python and Qiskit. Analyzed their performance for quantum-walk-based algorithms on quantum simulators and IBM Q. Accepted to 2022 IEEE ICPECA Conference ([IEEE Xplore](#))

SELECTED AWARDS

Regents Scholarship

Sep. 2022 –

- The most prestigious merit scholarship awarded to undergraduate students at the University of California.

USA Computing Olympiad (USACO) Platinum Division

Jan. 2020

- Highest division in the most prestigious national pre-college algorithmic programming competition.

TECHNICAL SKILLS

Languages: Java, Python, C/C++, Kotlin, JavaScript, HTML/CSS, LaTeX

Skills: Competitive Programming, Deep Learning, Computer Vision, Reinforcement Learning, Web Development

Developer Tools: Git, Docker, Conda/Mamba, Jupyter, Simulink, Unreal Engine 5, Nvidia Audio2Face

Frameworks/libraries: PyTorch, NumPy, Matplotlib, Tensorflow, React.js