Junrong (Fiona) Chen

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Google Scholar
La Jolla, San Diego, CA

Education

Bachelor of Science, *University of California, San Diego* *Sept. 2022 – Jun. 2026 (Expected)*

Double Major: Mathematics-Computer Science | Cognitive Science with specialization in Machine Learning and Neural Computing | **GPA:** 3.842/4.00

Research Interests

World Model, Embodied AI, Large Language Model, Computer Vision, Natural Language Processing, Machine Learning, Speech Recognition

Publications and Conference Presentations

1. **Junrong Chen**, Jan Kwong, Sarah Creel
   Accented sentence and word recognition: Humans versus Whisper automatic speech recognition
   Abstract accepted at the 187th Meeting of the Acoustical Society of America (187th ASA) (Student oral) Link
   GenAI Summit UCSD (Poster), Feb.2025
   Full paper submitted to journal and under review.
2. Sarah Creel, **Junrong Chen**, Caroline Hall-Sherr, Carly Villongco, Sadrac Santacruzlbarra and Kaitlyn Chou
   Whispers of knowledge: ASR vs human performance in child transcription
   Abstract accepted at the ISCA/ITG LLMDiversity 2025, full paper in preparation.
3. Qiyue Gao*, Xinyu Pi*, Kevin Liu, **Junrong Chen**, Ruolan Yang, Xinqi Huang, Xinyu Fang, Lu Sun, Gautham Kishore, Bo Ai, Stone Tao, Mengyang Liu, Jiaxi Yang, Chao-Jung Lai, Chuanyang Jin, Jiannan Xiang, Benhao Huang, David Danks, Hao Su, Tianmin Shu, Ziqiao Ma, Lianhui Qin, Zhiting Hu
   Do Vision-Language Models Have an Internal World Model? Towards an Atomic Evaluation *PDF*
   63rd Annual Meeting of the Association for Computational Linguistics (ACL Findings 2025)
   World Models: Understanding, Modeling, Scaling, and Applications workshop at ICLR 2025 (Poster)

Research Experience

UCSD *Mix lab* | Research Assistant

Mentor: Professor Zhiting Hu

Project 1: World Model Evaluation (Manuscript in preparation) *Mar.2025-Present ·5mos*

- Fine-tuned and evaluated PAN-2, the second-generation PAN world model, across domains including robotics, autonomous driving, and gaming.
- Led the robotics track and initiated the autonomous driving thread, responsible for 6+ datasets streaming, model training and fine-tuning, 20+ demo and pipeline development, and 8+ controlled experiments, including IDM model training and usage of Simpler Env simulator to validate key model capabilities.
- Skills: Python, Huggingface, PyTorch, CUDA, Slurm, Bash

Project 2: World Model Benchmark *Link* *Mar.2024-Jun.2025 ·17mos*

- Developed a fine-grained evaluation framework (23 dimensions) across 6 simulated environments with controlled counterfactual simulations, testing 11 commercial/open-source VLMs through 517 controlled experiments.
- Led data pipeline development and collected data using Habitat-Lab and ManiSkill2, ThreeDWorld simulators for over 6 datasets with 12k+ cases in total. Utilized 11+ open-source datasets to evaluate models, 5 commercial VLMs and 6 open-source VLMs. Conducted data analysis, visualization, and drafted conclusions.
- Drafted the Introduction, Experimental Design, and Appendix; Produced a promotional video and website.
- Skills: Python, Huggingface, PyTorch, CUDA, Docker

Cornell *Jennifer J. Sun's lab* | Undergraduate Researcher *Mar.2024-Present ·18mos*

Mentor: Professor Jennifer J. Sun

- Developed an automated pipeline to enforce programmatic cycle consistency in text-to-image models using LLM-generated verification code and visual grounding tools (Workshop manuscript in preparation).
- Created a dataset of 20,000+ images using Stable Diffusion and conducted over 20,000 experiments on models including CLIP, SigLIP, Llava, PaliGemma, and Llama.

- Conduct controlled experiments on how improved prompt fidelity and image accuracy compared to baseline generation pipelines (e.g., Stable Diffusion).
- Skills: Python, Huggingface, PyTorch

UCSD *Language Acquisition and Sound Recognition Lab* | Lead Researcher *Sept.2023-Present ·24mos*

Mentor: Professor Sarah Creel

Project: Enhancing Speech Recognition using Machine Learning Tools

- Investigated AI bias in speech recognition tools (e.g., Montreal Forced Aligner, Char-siu, Whisper) for diverse speech types-standard American English, accented speech (Mandarin, Spanish), child speech, and distorted speech (noise-vocoded, sine-wave)-to improve inclusivity and accuracy.
- Processed 40000+ audio files using Whisper for varying model sizes, analyzed data using R, and wrote paper.
- Skill: R, Huggingface, Python, Pytorch

UCSD *Language Acquisition and Sound Recognition Lab* | Research Assistant *Apr.-Sept. 2023 ·6mos*

Mentor: Professor Sarah Creel

Project: KidTalk and L2Talk

- Investigated the gap between monolingual children's language output and language perception (KidTalk), and the gap between bilingual adults' language output and language perception (L2Talk).
- Collected and analyzed 72 pieces of 3–5-year-old child word-naming, free speech, Goldman-Fristoe Test of Articulation (GFTA) data and 5 pairs of adult data of word-naming data, contributed to experiment design.
- Skills: Matlab, Phon, Praat, Eyelink100, R

UCSD *System Neuroscience Lab* | Research Assistant *Jun. 2023-Mar. 2024 ·10mos*

Mentor: Professor Douglas A. Nitz

- Conducted rat experiment analyzing visual stimuli transitions from overhead to an eye-level perspective.
- Processed 200+ minutes of animal behavior videos using DeepLabCut and SLEAP, created machine learning models for rat positions; Assisted in brain-computer interaction (BCI) drive-building sessions for rats.
- Skills: Python, DeepLabCut, SLEAP

Professional Experience

Ask Margot, *Los Angeles, CA* | AI Studio Fellow *Aug.2024-Apr.2025 ·9mos*

- Built a web chatbot using AWS Lex, used Lambda and AWS SageMaker for sentiment analysis and model training.

Brain machine interface workshop & hackathon*, UCSD* *Sept. 2023 ·1mos*

Mentor: Professor Vikash Gilja (UCSD), Cindy Chestek (UMich), Gal Mishne (UCSD)

- Analyzed neural data with tools (NumPy, Pandas) and machine learning (scikit-learn, PyTorch) to prototype neural prostheses and present ZebraFinch Dataset findings.

TalkMeUp Software Engineering Internship*, Pittsburgh, PA* *Aug.-Sept. 2023 ·2mos*

- Developed and optimized machine learning software solutions to automatically score interview videos; Developed product-focused AI solutions using computer vision and natural language processing technologies.

Honor and Awards

UCSD Triton Research & Experiential Learning Scholarship (TRELS), Spring Quarter 2024

UCSD Provost Honor (2022-2024)

IEEE-Eta Kappa Nu (IEEE-HKN) (2024)

Instructional Apprentice

Undergraduate Teaching Assistant at UC San Diego

COGS14A - Intro. to Research Methods (Spring Quarter 2024, Professor Steven Barrera)

COGS14B - Intro. to Statistical Analysis (Winter Quarter 2024, Professor Drew Ellen Walker)