Niklas Chang

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EDUCATION

University of California, San Diego — GPA: 3.60
Bachelor of Science in Computer Engineering, Minor in Chinese Studies — *Sept. 2021 – June 2025*
Master of Science in ECE (Machine Learning & Data Science) — *Sept. 2025 – Dec. 2026*
Peking University — *UCEAP Exchange Spring 2025*

Relevant Coursework : Data Structures & Algorithms, Artificial Intelligence, Machine Learning, Computer Vision, Computer Architecture, Operating Systems, Data Networks, NLP, Digital Design, Signal Processing, Database Systems

EXPERIENCE

Undergraduate Researcher — March 2025 – Aug 2025
PhD Candidate Xingyu Li (mentor), Peking University — *Beijing, China*
- Built and benchmarked a federated learning framework in Python/PyTorch using CNN and MLP models on MNIST and CIFAR-10, demonstrating how heterogeneous (non-IID) data reduces model accuracy in distributed settings.
- Provided insights on improving scalability and robustness of federated learning for real-world applications.

Research Intern — June 2024 – Sept. 2024
STABLE Lab UCSD, Professor Jishen Zhao, PhD Candidate Zhongming Yu (mentor) — *San Diego, CA*
- Collaborated with PhD student Zhongming Yu and Intel Labs on developing a parallelized function calling algorithm as part of the OrcaLoCa framework, the at the time open-source state-of-the-art on SWE-bench Lite.
- Improved LLM instruction efficiency by up to 1.8x, outlined in the paper *"OrcaLoCa: Enhancing LLM-guided Reasoning through Parallelized Scheduling and Context Management"*

Research Intern — Aug. 2023 – Dec. 2023
Gene Expression Lab Salk Institute, PI Sam Pfaff, PhD Candidate Ryan Hsu (mentor) — *San Diego, CA*
- Developed a custom ResNet CNN model for cell nuclei classification, implemented cell segmentation models for thousands of cross-sectional images to analyze muscle cell treatments for muscular dystrophy in mice.
- Created React/Flask application to evaluate and apply various models for muscle cell and protein visualizations.

Lead ML Developer — Sept. 2022 – Dec. 2024
COMPASS Institution, UCSD — *San Diego, CA*
- Developed an OpenAI-powered chatbot for UCSD Data Science to answer student inquiries, leveraging LangChain for RAG and integrating historical class data and Q&A datasets provided by UCSD Associated Students.
- Built server-side RESTful APIs for the COMPASS organization's website authorization system and contact page.

Undergraduate Researcher — June 2023 – July 2023
University of South Carolina REU program, Professor Qi Wang — *Columbia, SC*
- Modeled and forecasted breast tumor growth and metabolic indicators in mice time-series data using ARIMA and RNNs (Python), identifying key predictive features to understand cancer progression.
- Engineered a 3D visualization pipeline for 27 PCA-reduced metrics to enable graphical analysis of time-series data

PROJECTS

Blog | *HTML, JS, PHP* — May 2024 – Present
- Technical and personal thoughts, insights, reviews; compendium of my personal works.
- Self-hosted linux backend employing server and client-side analytics and other technology for personal exploration.

Canary | *Pandas, Arduino, TCP* — Fall 2024
- Wireless sensor network with satellite capability for wildfire detection. Modeled with ESP32 microcontrollers and Arduino sensors using WiFi/serial connections. Winner of the Skylo sponsor competition at CalHacks 2024.

Holdit! | *OpenCV, Flask, Expo Go* — Winter 2024
- Mobile app that translates live signed ASL words to speech using a CNN-LSTM to classify recorded video, trained with the MS-ASL dataset. 1st place, Best DEI Hack, and featured article (Santa Cruz Works) at CruzHacks 2024.

SKILLS

Programming Languages: Proficient in Python, C++. Familiar with Java, SQL, Verilog
Tools: Git, Jupyter Notebook, Flask, TensorFlow, PyTorch, NumPy, Pandas, OpenCV, RESTful APIs