Tai Wong

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Education

University of Illinois at Urbana-Champaign Champaign, IL

Bachelor of Science in Computer Science and Bioengineering | GPA: 4.0 | Dean's List Expected Graduation: May 2028

Technical Skills

Languages: Python, Swift, Java, C++, SQL, JavaScript, MATLAB

AI & ML: Deep Learning, CNNs, Computer Vision, NLP, LLMs, Multi-Agent Systems (LangGraph), OCR

Data & Infrastructure: PostgreSQL, MongoDB, Neo4j, SQLite, AWS, Docker, FastAPI, REST APIs, Web Scraping

Research Experience

Research Assistant — Dream Lab, UIUC *2025 – Present*

Multi-Agent AI Systems & LLM Trustworthiness Champaign, IL

- Developing a multi-agent AI system using LangGraph to identify biomedical research opportunities by analyzing data from PubMed, NIH Reporter, and ClinicalTrials.gov; architecting a Neo4j knowledge graph with MeSH-based semantic structure for scalable research trend analysis and gap detection.
- Researching code-first approaches to improve LLM trustworthiness, where agents design statistical analyses in sandboxed environments to ground claims in verifiable outputs; building a backtesting framework to validate predictions against historical publication and funding trends.

Deep Learning Research Intern — COOL Lab, OHSU *2023 – 2025*

Biomedical Imaging Research Portland, OR

- Developed CNN and U-Net models to analyze OCTA scans for dilated vessel detection (biomarker of diabetic retinopathy); improved segmentation via hyperparameter tuning and data augmentation; evaluated with AUC, IoU, and sensitivity, and presented at the OHSU Research Symposium.

Research Assistant — Mattis Lab, UCSF *2022 – Present*

Computational Biology & NLP San Francisco, CA

- Developing an NLP pipeline using PubMedBERT and local LLMs to extract structured cell differentiation protocols from ∼300,000 PubMed papers, building a unified database linking source cells, growth factors, and experimental conditions for stem cell research.
- Designed bioinformatics pipelines predicting miRNA–mRNA interactions related to NAFLD; automated SNP and sequence analyses in Python, identifying genomic biomarkers; contributed to a published paper on regulatory networks in metabolic disease.

Project Highlights

MeshNL *2025*

Python, PyTorch, BiomedBERT, BioLORD, HuggingFace Transformers

- Multi-stage hierarchical MeSH classification trained on the full PubMed baseline: Stage 1 fine-tunes BiomedBERT for 15-branch prediction (macro recall >0.95); Stage 2 fine-tunes a BioLORD dual encoder on 3M paper-term pairs with hard negative mining for fine-grained term retrieval (Recall@50); engineered streaming MeSH XML parser and Colab training infra with mid-epoch checkpointing.

SkyHub *2025 – Present*

FastAPI, PostgreSQL, Docker, Cloudflare Tunnel, SwiftUI

- Full-stack Hypixel SkyBlock stats platform (successor to SkyStats, 15,000+ MAU): 42-endpoint FastAPI backend with PostgreSQL and background workers for live auction indexing, bazaar polling, leaderboard ranking, and networth calculation across 40+ item upgrade types.
- Self-hosted on a Mac Mini via Docker Compose with Cloudflare Zero Trust tunnel (no exposed ports), launchd auto-start, and automated 6-hour PostgreSQL backups; companion SwiftUI app with decoded NBT inventory, wardrobe pagination, pet collection, and dungeon stats.

IllinoisBuddy *2025 – Present*

Flask, SQLite → PostgreSQL, React, TypeScript, Tailwind, DnD Kit

- UIUC course planning web app aggregating Rate My Professor ratings, GPA distributions (Wade Fagen dataset), and Course Explorer API data; Flask + Google OAuth backend with React/TypeScript drag-and-drop multi-semester planner, GPA visualization, and schedule conflict detection; migrating to PostgreSQL + FastAPI for production.

SkyStats *2021 – 2023*

SwiftUI, MongoDB, Python

- Built and maintained a Hypixel SkyBlock stats tracker (15,000+ MAU) over three years; rewrote iOS client to SwiftUI and migrated backend to MongoDB, reducing latency 20%.