

Honghuai Ke

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EDUCATION

University of California, Berkeley — *Master of Engineering*

May 2025 | **GPA: 3.707**

Mechanical Engineering (Robotics Control & Autonomous Systems)

University of San Francisco — *Bachelor of Science*

May 2024 | **GPA: 3.98**

Major: Computer Science; Minor: Mathematics

Awards: Fung Excellence Scholarship (2025), Academic Excellence Award in Computer Science (24' Grad, Top 5 in department), Supporting Changemakers Award (2023), Dean's List (2022-2024)

PROJECT EXPERIENCE

Time-Series Demand Forecasting for Smart Retail (MEng Capstone)

Berkeley, California

Researcher

August 2024 - December 2024

- **Model Benchmarking:** Compared six architectures (Linear, Encoder-Only/Decoder Transformer, DeepAR, TFT, XGBoost) on M5 dataset (42,840 time series, 10 stores). Encoder-Decoder Transformer achieved best MAE of 122.01.
- **End-to-End Pipeline:** Built full PyTorch pipeline: 18 engineered features (lag/rolling/calendar/price), temporal train/val/test split, teacher forcing with autoregressive decoding, cosine LR scheduling, and M5 metrics (RMSSE, WRMSSE).

Follow-Me Gesture-Controlled Drone System (Autonomous Flight)

Berkeley, California

Developer

August 2024 - December 2024

- **Closed-Loop Control:** Built face-following drone with dual PID controllers (yaw + vertical), Haar Cascade detection, and bounding-box-area depth proxy for real-time 3-axis tracking on the DJI Tello platform.
- **System Architecture:** Designed decoupled dual-process system: 200Hz IMU gesture recognition loop and 10Hz control loop with atomic file IPC, lost-face recovery, and panoramic recording mode.

Facial Keypoints Detection Project

San Francisco, California

Researcher

August 2023 - December 2023

- **Model Development:** Built 6-stage ResNet (12 residual blocks) with custom NaN-aware MSE loss training on all 7,049 samples including ~5,000 partially-labeled. Kaggle RMSE: 2.10.
- **Training Pipeline:** Dual-framework pipeline (PyTorch ResNet + Keras CNN) with StepLR scheduling, early stopping, and frozen dataclass configuration for reproducible experiments.

Full-Stack Multithreaded Web Crawler Search Engine

San Francisco, California

Developer

August 2023 - December 2023

- **Core Engine & Concurrency:** Built inverted index, custom thread pool (WorkQueue), and read/write lock (MultiReaderLock) from scratch in Java. Local-then-merge pattern: each crawler thread builds a private index, atomically merges into shared thread-safe index.
- **Full-Stack:** Raw-socket HTTP/HTTPS client, BFS crawler, TF-based ranking, embedded Jetty web UI with live crawl progress — no third-party search or serialization libraries. 10+ professor code reviews.

WORK EXPERIENCE

ByteDance Ltd. - Data Analyst Internship

June 2023 - August 2023

- Led business research on MUJI's partnership potential for TikTok/Douyin live-stream e-commerce, analyzing cross-category GMV and user engagement data to inform merchant acquisition strategy.
- Conducted multi-regional data extraction and analysis; produced dashboards and reports presenting market trends, conversion funnels, and key growth segments across 5+ product categories.

VisionX LLC - Software Engineer Internship

September 2021 - January 2022

- Developed OpenCV-based human activity detection system optimized for elderly care safety monitoring; built CV pipelines for industrial quality inspection (button defects, shoe alignment).
- Served as engineer in cross-company collaboration with Nanjing Kangbo Health Research Institute on Smart Home Care Project, integrating perception modules into real-time monitoring infrastructure.

SKILLS

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

ML & Robotics: PyTorch, TensorFlow, Transformers, CNNs, XGBoost, PID/LQR/MPC, Kalman Filter, OpenCV, CUDA

Systems & Tools: Multithreading, OOP, FastAPI, RESTful APIs, Distributed Systems, Linux, Git, Docker, ROS