

KEN CHENG

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EDUCATION

Columbia University

B.S. in Computer Science (Stats Minor, Egleston Scholar - Top 1% of Class)

New York, NY

Expected Graduation: 05/2028

EXPERIENCE

Machine Learning Lead & Winner | [Embers GitHub Repository](#)

04/2025 – 04/2025

LA Hacks at University of California – Los Angeles

React | Flask | Python | TS | APIs | Supabase

- Led team to develop **Embers**, a React & Python + Flask Computer Vision app achieving **90%+ detection accuracy** in auto-inventorying household items from 30-second videos, streamlining insurance claims for wildfire survivors
- Integrated Google Gemini, ElevenLabs, & OpenAI Whisper APIs into an **intelligent voice-first chatbot assistant**, enabling personalized asset valuation and reducing manual claim documentation time by an estimated **50%**
- Placed as **Top 5 Finalist** out of **172 teams**; Won **Best Use of Google Gemini API** and **Best Financial Tech Project**

Software Engineer Intern, Optimization and Data

08/2023 – 03/2024

University of Waterloo Midnight Sun Solar Car Team

Python (NumPy, Pandas, SciPy) | Data Structures | APIs

- Engineered a Python battery optimization engine that reduced predicted race-day energy shortfall by **around 20%**, integrating real-time sunlight and speed data with dynamic programming and RESTful APIs
- Optimized routing algorithms with enhanced Dijkstra implementation and NumPy vectorization, reducing runtime from **minutes to under 30 seconds**, improving pre-race decision-making efficiency

PROJECTS

Deep Learning Traffic Forecast Model using Turning Ratios | [Publication](#)

09/2022 – 10/2023

IEEE Intelligent Transportation Systems Conference

Scikit-learn | PyTorch | Data pipelines

- Designed **GC-INF**, a hybrid Graph ConvNet + Informer model for adaptive traffic signal control in **PyTorch** (Python), improving intersection turning ratio forecasts by **24% RMSE** compared to prior state-of-the-art models
- Published as a **single-author** and served as Session Chair at IEEE ITSC 2023; Team Canada-ISEF Finalist (Top 30)
- Built full ML pipeline with Chebyshev graph convolutions, ProbSparse attention, Adam optimizer + Cosine decay

Quantiv - Options Trading Data Platform | [Quantiv GitHub Repo](#)

07/2025 - Present

Machine Learning for Options Volatility

FastAPI | SQL | AWS EC2 | Redis | Docker

- Built a **Next.js + Python (FastAPI)** options analytics platform to predict implied earnings moves for 50–100 tickers weekly, combining mathematical IV models with ML (**XGBoost**) on historical Greeks and volatility
- Integrated **Docker** containerization for faster deployment and **Redis** caching to reduce query latency to **100ms**
- Engineered a data pipeline (**DuckDB + Parquet**) processing **1B+** option chain and volatility history records
- Reduced data sync time by **around 90%** through atomic directory swap and rsync staging, ensuring zero-downtime updates of large option chain datasets on **AWS Elastic Compute Cloud (EC2)** virtual machine

Vehicle Routing Problem Solver with ML

06/2023 - 08/2023

University of Florida – Dr. Yu Yang

C++ | CMake | SLURM batch scripts | Java | JavaFX

- Improved **C++ VRP solver** with ML and data mining, reducing compute time on TB-scale datasets by **15%**
- Developed a **Java-based visualization tool** for route solutions, enabling interpretable insights for researchers

AWARDS

Platinum Division Qualifier–Perfect Score (Top 1% Competitive Programmer)

12/2023

United States of America Computing Olympiad

C++ | Adv. DSA | gdb Profiling

National Champions in High School Big Data & AI Challenge

02/2024

National Research Council Canada

Python | PyTorch (TorchVision) | Jupyter Notebook | Pillow

SKILLS

AI & MACHINE LEARNING

PyTorch, XGBoost, MLFlow, Scikit-learn, Plotly, LLM design, NLP, Feature engineering

SOFTWARE ENGINEERING

Python (Pandas, FastAPI), SQL, Postgres, Apache Spark, Docker, ETL, AWS (EC2, S3)