

Chao-Yen Huang

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Data Engineer with 3 years of experience building data pipelines and generative-AI infrastructure for smart-city and public-transportation systems. Designed production streaming architectures (Kafka, Flink, Delta Lake) and text-to-SQL AI agent workflows with MCP-based tooling and LLM evaluation pipelines, delivered for government clients including the Taipei and Kaohsiung City Governments. Focused on building scalable, cost-efficient, and observable data systems with Python and SQL.

EXPERIENCE

- Foxconn** *Data Engineer*

Jan. 2024 – Present
- Built a generative-AI text-to-SQL agent for a government open-data platform (Kaohsiung City Government), orchestrating MCP (Model Context Protocol) servers that supply the agent with database schema, metadata, and data-modeling context; the agent queries relational databases and auto-generates Apache ECharts visualizations, letting non-technical users turn natural-language questions into BI charts **in minutes instead of days**.
 - Developed an LLM evaluation and observability pipeline pairing quantitative metrics (inference time, latency, distributed tracing) with LLM-as-a-judge scoring for subjective quality; used a 50-question golden-SQL benchmark to iteratively refine system prompts and MCP tool descriptions, raising agent accuracy from **51% to 70%** and pass@10 from **57% to 85%**.
 - Architected an end-to-end streaming pipeline with Kafka and Apache Flink, ingesting Controller Area Network (CAN) telemetry and e-ticket ridership data from 33 electric buses into Delta Lake; modeled the data for analytics and built Grafana dashboards tracking mileage, trips, and routes against government subsidy requirements, helping operations raise fleet compliance from **48% (16/33) to 72.7% (24/33)**.
 - Built Apache Airflow DAGs to orchestrate batch ETL pipelines that move city transportation data from OLTP databases into an OLAP analytical store, automating scheduled extraction, transformation, and loading to replace ad-hoc manual processing.
 - Implemented a Redis caching layer (Azure Managed Redis with RedisStack modules) for the city transportation API powering the iBus+ mobile app; load-tested with k6 to reach **3× throughput (RPS)** while holding **p99 latency under 1 second**, improving performance and cost efficiency.
 - Delivered monthly analytics for Taipei City Government on bike-share station performance (utilization, weather, origin–destination flows), identifying the top 50 stations for dock expansion to guide infrastructure planning.
- YouBike** *Software Engineer Intern*

Mar. 2023 – Jul. 2023
- Prototyped a solution to the capacitated vehicle routing problem using linear programming (Gurobi) to optimize inventory rebalancing across the bike-sharing network, reducing total dispatch time by **4%** on a 6-month dataset covering one-tenth of stations.

TECHNICAL SKILLS

Languages: Python, SQL
Data Processing: Apache Kafka, Apache Flink, PySpark, Databricks
Orchestration: Apache Airflow
Storage & Warehousing: Delta Lake, Redis
AI & LLM: MCP (Model Context Protocol), RAG, LLM-as-a-judge evaluation, text-to-SQL, prompt engineering
Cloud & Infrastructure: Azure, Docker, Kubernetes, Git
Visualization & Observability: Grafana, Apache ECharts, distributed tracing

EDUCATION

- National Sun Yat-sen University** *BSc, Computer Science & Engineering*

Sep. 2019 – Jun. 2023
- First Prize, College of Engineering Graduation Project Competition
 - Undergraduate Research Fellowship, National Science and Technology Council

CERTIFICATIONS

- Building RAG Agents with LLMs — NVIDIA**

Issued Mar. 2026
- Certified Kubernetes Application Developer (CKAD)**

Issued Jul. 2025

PUBLICATIONS

- Chen, B.-H., Cai, Y.-Y., Huang, C.-Y.*, & Tsai, C.-W. (2023). An Effective Evolutionary Neural Architecture Search for Bike-Sharing System Demand Prediction. 2023 IEEE Applied Sensing Conference (APSCON), 1–4.
- Applied genetic algorithms and simulated annealing to search for an efficient CNN-LSTM architecture for bike-sharing demand prediction.