Kevin Chow

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Education

Master of Information and Data Science (MIDS), GPA: 3.96 — Aug 2023 - Present

University of California, Berkeley — *Expected Graduation: Aug 2025*

Bachelor of Science (B.S.) in Mechanical Engineering — Aug 2016 - May 2020

University of California, Berkeley

Technical Skills

Programming Languages: Python, SQL

ML Frameworks: TensorFlow, PyTorch, scikit-learn, Hugging Face, LangChain

Data Processing: Pandas, NumPy, ETL, Data Ingestion/Preprocessing, Unstructured Data, Data Augmentation

GenAI & NLP: LLMs, RAG, Transformers (BERT, BART), Text Embeddings, NLTK, Bag of Words

Computer Vision: OpenCV, CNNs (ResNet, U-Net), Transformers (DETR), Image Processing (HOG, SIFT, Canny Edge), Bag of Visual Words

Algorithms: Regression (Linear, Logistic, Tobit), Random Forest, SVM, Gradient Boosting, Neural Networks (CNNs, RNNs), Clustering (K-Means), Hungarian Algorithm

Techniques: Experimental Design, Feature Engineering, Dimensionality Reduction, Model Selection, Hyperparameter Tuning, Custom Loss Functions, Optimization, Metric Development & Selection, Prompt Engineering, RAG Evaluation, Semantic Search Optimization, Ensemble Models

Visualization & Reporting: Matplotlib, Seaborn, Power BI, Excel

Cloud & Other Tools: AWS, Streamlit, FastAPI, Git (GitHub)

Experience

Resource Demand Modeling Data Analyst - *General Motors* — Aug 2022 - Present

- Led global Powertrain and Electrification modeling initiatives as SME, developing strategic analytical frameworks and data-driven solutions to **optimize resource decisions across the global portfolio**.
- Directed global data strategy and new model development to improve resource forecasting accuracy by an estimated **35%.**
- Managed internal forecasting models and databases**,** automating reporting into **Power BI** dashboards and presenting **key insights** to senior leadership to facilitate portfolio-level decisions.
- Modernized resource demand modeling processes by designing **scalable systems** and developing Python automation scripts for efficient **data processing**.
- Led **cross-functional** planning, collaborating with diverse business, IT, and engineering stakeholders to define user stories and guide system development for the delivery of balanced analytical solutions, robust data integration, and actionable insights.
- Proactively supported Vehicle-side modeling, introducing new data techniques that addressed systemic blind spots in demand forecasting, improving accuracy across all programs by approximately **15%.**
- Mentored and trained rotating engineers, accelerating their proficiency in modeling tools and data analysis to enhance team capabilities.

Engineering Rotational Program - *General Motors* July 2020 - Aug 2022

Two-year rotational program across multiple engineering disciplines, focusing on technical breadth and leadership in engineering and product development.

Program Quality Manager - *Advanced Vehicle Development*

- Assessed and defined **risk mitigation strategies** for new technology development, leveraging consumer intelligence, customer feedback, and warranty data to inform critical **program decisions**.

Assistant Technical Program Manager - *Autonomous Vehicle (AV) Systems*

- Managed AV systems integration between GM and Cruise, leading cross-functional planning to streamline development workflows and **optimize operational efficiency**.
- Led a team in critical AV camera testing, resulting in **successful compliance** with regulatory standards.

Program Manager - *Infotainment & Connectivity*

- Streamlined the change control process by prioritizing high-impact requests, eliminating unnecessary steps, and proactively resolving bottlenecks, resulting in **~25% reduction** in feature deployment delays.
- Managed a **Power BI** dashboard for change control data, improving reporting and stakeholder visibility.

Assistant Technical Specialist & Product Development Engineer - *Side Closures*

- **Co-authored** and implemented global engineering standards for an advanced vehicle access system.
- Led radar component development team and resolved operational, design, and integration challenges across multiple vehicle programs.

Projects

Tailored Knowledge Retrieval Using RAG and LLMs - *Gen AI, NLP* Mar 2025 - Apr 2025

- Engineered a RAG system using **LangChain** and **Mistral-7B** to enhance Q&A capabilities on Machine Learning and LLM topics, delivering precise, context-aware responses.
- Implemented RAG evaluation metrics (**P@K, semantic similarity, readability**) and developed a weighted scoring system to drive iterative system improvement and model tuning.
- Optimized semantic search of unstructured data and designed audience-specific pipelines by experimenting with embedding models, chunking strategies, retriever types, re-rankers, LLMs, and prompt engineering, significantly **improving answer accuracy** and **reducing hallucinations**.

Predicting and Ranking Online Business Review Helpfulness - *NLP* Sept 2024 - Dec 2024

- Developed an **ensemble ML model** to predict and rank Yelp review helpfulness, leveraging advanced NLP and feature engineering for improved ranking accuracy.
- Engineered features (readability, review aspects & nature, business type) and utilized **transformer models** (**BERT**, **BART-large-MNLI**) to enhance feature representation and model performance.
- Trained and tuned individual ML models (**Random Forest, SVM, Tobit Regression**) and integrated their predictions into a final ensemble model **achieving an NDCG score of 0.9595**.
- Identified business type as a **critical predictive factor**, enabling data-driven strategies for enhanced business optimization.

Making Manga Accessible - *Object Detection and Classification* June 2024 - Aug 2024

- Engineered a **deep learning model** to detect and classify faces, bodies, dialogue, and panels across **20,000+ annotated manga pages**, enhancing accessibility for visually impaired readers.
- Implemented the **Hungarian algorithm** for optimal bounding box matching and a **custom loss function** (based on class, distance, IoU metrics) to significantly enhance detection accuracy.
- Improved model performance by tuning and replacing a **U-Net** baseline with a **DETR** model, reducing loss by **58%** and achieving **a 24x** improvement in final mAP, drastically boosting overall system efficacy.