Ping-Lun Chen

Data Scientist | Manufacturing & Industrial Analytics

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Data scientist with an M.S. from UT Austin and 6+ years in engineering high-volume display glass manufacturing. Applies statistical modeling and machine learning to industrial data: simulation in R to compare inspection strategies and QC rule sets, screening design of experiments to isolate the process variables driving defects, and image-processing algorithms deployed in production for automated defect classification. End-to-end analytical experience spans relational data extraction and feature engineering through model selection, cross-validation, and diagnostics, translating results into decisions the production line can act on. Python, R, SQL, PyTorch, and first-hand knowledge of what manufacturing data looks like before anyone cleans it.

Experience

Corning Display Technology
Taichung City, Taiwan

Quality Engineer
Nov. 2018 – Jul. 2024

- Built simulation models in R to evaluate alternative QC rules and inspection strategies, quantifying the trade-off between detection capability and inspection cost and selecting plans that held product quality while removing unnecessary checks.
- Applied screening design of experiments and statistical analysis to isolate the process variables driving defect generation from a large candidate set, directing mitigation at the responsible process step rather than at inspection alone.
- Designed the detection logic behind recurrence prevention for customer return modes representing tens of millions of USD in returned material, redesigning outgoing inspection algorithms and decision rules; none of the addressed modes recurred.
- Established statistical process monitoring — control charts, control limits, and process capability (Cp/Cpk) studies — to detect out-of-control conditions and distribution shift on production lines.
- Led root-cause analysis of customer complaint returns, tracing each escape to both its occurrence source in the process and the detection gap in outgoing inspection, and drove formal 8D and CAPA investigations to verified closure.
- Standardized data-driven quality control plans across global manufacturing sites and presented analysis to engineering and operations stakeholders to support decisions on inspection scope and product disposition.

Corning Display Technology
Taichung City, Taiwan

Process Engineer
Nov. 2017 – Nov. 2018

- Developed image-processing algorithms that ran in production for automated defect classification, replacing subjective manual judgement with a repeatable quantitative criterion.
- Performed measurement system analysis and calibration studies on inspection gauges, quantifying and reducing measurement variation.
- Optimized calibration methods through data analysis and systematic problem solving.

Dean Shoes Company Ltd.
Huizhou City, China

Automation Engineer
Nov. 2016 – Nov. 2017

- Supported deployment of NIKE-developed automation equipment in factory operations.
- Improved equipment performance through troubleshooting, process support, and vendor coordination.
- Worked across technical and operational stakeholders to improve implementation efficiency.

Nike 360 Holding B.V.
Taichung City, Taiwan

Automation Engineer
Jan. 2013 – Jan. 2014

- Completed technical training in HMI, PLC, and servo motor systems through Mitsubishi certification programs.
- Coordinated HMI standardization efforts with factory engineers and operational teams.
- Promoted internally developed software tools by creating training materials and tutorial videos for cross-functional adoption.

Education

The University of Texas at Austin
Austin, Texas

Master of Science in Data Science (GPA: 3.9/4.0)
Aug. 2023 – May 2026

- Full-time graduate study in statistics, machine learning, and applied modeling.
- Relevant coursework: Relevant coursework: Regression & Predictive Modeling, Machine Learning, Probability & Simulation, Deep Learning, Data Structures & Algorithms

National Taipei University of Technology
Taipei, Taiwan

B.S. in Electro-Optical Engineering
Sep. 2008 – Jun. 2012

- Senior project: Sensitivity Analysis of Magneto-Optic Surface-Plasmon-Resonance Sensor Using Co/Au Films.

Technical Skills

Programming	Python, R, SQL, MATLAB
ML	PyTorch, TensorFlow, scikit-learn, tidymodels, CNNs, transformers, PCA
Statistics	Regression, hypothesis testing, simulation, DOE, causal inference, SPC (Cp/Cpk)
Data	PostgreSQL, pandas, NumPy, tidyverse, working with multi-table datasets, Minitab
Visualization	Matplotlib, ggplot2, Power BI, Excel
Domain	Manufacturing analytics, defect classification, root-cause analysis, QC plan design, NPI/product qualification
Tools	Jupyter, Colab, Git, Docker, PostgreSQL, LaTeX
Languages	Mandarin (Native), English (Fluent), Portuguese (Fluent), German (Basic)

Selected Projects

Swing Scene Radar

Personal project

Solo design, build, and operation

2025 – present

- Built and operate an end-to-end data pipeline tracking 126 dance communities and festivals across 26 countries, refreshed automatically every three days on a smart schedule.
- Classified unknown source accounts with a vision LLM over profile screenshots, and extracted structured event data through an OCR-to-LLM parsing cascade with content-addressable artifact caching.
- Raised extraction reliability using a 2-of-3 model consensus vote with with a separate tiebreaker when all three disagree, resolving the non-determinism that made single-call parsing unusable for unattended ingestion.
- Reconciled conflicting records across four source types per entity via a priority cascade, with schema validation, pre-commit hooks, and automated smoke tests guarding data quality.
- Node.js, Puppeteer, PostgreSQL and SQLite dual drivers, Docker, Hetzner VPS, Cloudflare CDN.

Selected Academic Projects

The University of Texas at Austin

M.S. Data Science coursework

2023 – 2026

- Built a multi-task encoder–decoder CNN with skip connections producing pixel-level segmentation and depth regression from a single image, correcting severe class imbalance with a class-weighted objective. PyTorch.
- Predicted ground-level PM2.5 from 2,304 satellite image features and engineered temporal features, compressing the image features with PCA and jointly tuning component count and neighborhood size by 10-fold cross-validation, then validating on a held-out quarter and diagnosing fit through residual and quantile plots.
- Joined 13 relational tables to define a benchmark cohort, then fitted per-subject regressions of performance against time to rank improvement trajectories, controlling for the confound that early-stage improvement rates are systematically steeper. R, tidyverse.

Pronunciation Analyzer

Personal project

Speech analysis application

2026

- Built a pronunciation assessment tool producing phoneme-level accuracy, fluency, and prosody scores from a learner recording and a reference script.
- Combined Whisper ASR with forced alignment and dynamic time warping to map spoken audio onto reference phonemes, with pitch analysis via Praat/Parselmouth.
- Generated interactive HTML reports with click-to-play word audio and phoneme tooltips, backed by SQLite session storage for tracking learner progress over time.
- Deployed as a Flask service on a Linux VPS with gunicorn, nginx, and systemd, scripted for one-command deployment.

Additional Training

International Business Administration Program (IBAP), International Trade Institute

Hsinchu, Taiwan

Graduate Certificate

Jul. 2014 – Jun. 2016

- Studied project management, marketing, accounting, economics, international trade, and business planning.
- Completed one year of Portuguese language training at FAAP in São Paulo, Brazil.