TSAI-WEI LIN

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RESEARCH INTERESTS

Computational healthcare simulation, health economics modeling, optimization methods, and data-driven health policy

EDUCATION

Washington University in St. Louis — St. Louis, MO
Doctor of Philosophy in Division of Computational and Data Sciences — *Aug 2025 – Current*
- Rotation Advisor: Ross Hammond, Matt Kasman

National Taipei University (NTPU) — Taipei, Taiwan
B.B.A., Double Specialization in Business Analytics, Information Security and Application — *Sep 2020 – Jun 2024*
- GPA: 4.0/4.0 | Rank 1st/67
- Honors: 5-time Dean's List; Honor Graduate for Academic and Moral Character Excellence (valedictorian of 140 students); Honor-Mentioned Award, 2024 Innovative Application with AI Competition

University of Edinburgh — Edinburgh, UK
Study abroad with Outstanding International Exchange Scholarship — *Jan 2023 – Jun 2023*
- First Class Honors in Business Analytics and Information Systems (top 8% of 100+ students)

SELECTED CODE AND SKILLS

- **https://cherylwei.github.io/web/index.html** | object-oriented, web crawling, full stack development
- **Programming:** Python (NumPy, Pandas, Matplotlib, SciPy, Scikit-learn), MATLAB (simulation modeling), NetLogo, R (time series), SQL, JavaScript, HTML/CSS
- **Modeling & Tools:** LINGO (nonlinear optimization), Weka (clustering, classification), SPSS, Tableau, Power BI, LaTeX (Overleaf)

RESEARCH EXPERIENCE

Spatial Meta-population Modeling of Influenza in Taiwan — Taipei, Taiwan
- Developed a deterministic SIR meta-population model across Taiwan's 22 counties, integrating epidemiological dynamics with a gravity-model-based mobility structure
- Estimated transmission parameters from observed influenza incidence, performed sensitivity and scenario analyses, and identified key drivers of epidemic spread
- Introduced a timescale separation approach (commuting vs. migration) to improve spatial epidemic modeling and inform county-level preparedness strategies.

Integrating Text Mining with Service Quality and QFD for Improvement in Taipei Zoo — Taipei, Taiwan
- Analyzed 1,000+ survey responses using Kano and PZB models to identify multi-dimensional drivers of service improvement and enhance overall operational efficiency and visitor satisfaction
- Performed web scraping, pattern mining, and sentiment analysis on 5,000+ Google Maps reviews using Python; developed sentiment patterns across 25 operational features
- Translated service expectations into actionable technical requirements and presented proposals to Taipei Zoo through interactive Tableau dashboards

Semiconductor Production Modeling via Linear Optimization — Edinburgh, UK
- Developed a linear programming-based Decision Support System (DSS) to optimize Taiwan Semiconductor Manufacturing Company's chip production across three manufacturing sites, increasing modeled profit by 13%
- Performed data preprocessing, model calibration, and sensitivity analysis to validate robustness
- Designed an entity-relationship model and implemented SQL database for structured data integration into the DSS pipeline

Impact Evaluation and Behavioral Tracking of Microloan Program — Tanzania, Uganda, Malawi
Faith Africa Mission Team, Ministry of Education, Taiwan — *Jul 2015 – Feb 2025 (on-site fieldwork each July)*
- Evaluated community-based microfinance initiatives, analyzing how financial access intersected with local social structures, entrepreneurial behavior, and economic agency; supported 100+ business launches
- Led long-term statistical tracking and follow-up analyses of loan outcomes and microbusiness stability

PROFESSIONAL EXPERIENCE

Volkswagen Group Taiwan   Taipei, Taiwan
Strategy Planning and Reporting Analyst Intern, Group Aftersales   *Dec 2023 – Jun 2024*
- Conducted after-sales analysis for Volkswagen, SKODA, and Nutzfahrzeuge across 65 dealers in Taiwan, utilizing Python, SQL, Excel/VBA, and Power BI to clean, analyze, and visualize data for strategic reporting
- Developed brand-specific campaign strategies through regression-based behavioral analysis on 1M+ unstructured data points, resulting in a 70% YoY increase in maintenance parts sales
- Performed demand planning for 2000+ accessories; built dealers' subsidy analysis models managing over $10M

Ernst & Young (EY), Consulting   Taipei, Taiwan
Data Analysis and Research Intern (Full-time)   *Jun 2023 – Jul 2023*
- Analyzed and researched industry reports, market research, and academic literature; delivered strategies and wrote reports focusing on process improvement, operational risk, and transformation initiatives
- Built a Python-based automation system for risk appetite modeling, improving cross-departmental accessibility