Yu-Lun Yeh

jason910522@gmail.com
github.com/jeason522 — Portfolio Website
linkedin.com/in/Yu-Lun Yeh
Taoyuan, Taiwan

Education

National Sun Yat-sen University — Kaohsiung, Taiwan
M.S. in Applied Mathematics (Statistics) — *Expected 7/2026*

- **Thesis**: *Inference for a Cox Proportional Hazards Model with an Ordinal Marker and Copula Dependence*
- **Focus**: Survival analysis, statistical inference, predictive modeling, simulation study, and data-driven problem solving

Research Experience

Master's Thesis Research — Kaohsiung, Taiwan
Graduate Researcher, Applied Mathematics — *9/2024 – Present*

- Developed a novel inference framework for Cox proportional hazards models incorporating ordinal markers and copula-based dependence structures.
- Built end-to-end analysis pipelines in R and Python for simulation studies, statistical estimation, and model validation across multiple dependence scenarios.
- Conducted Monte Carlo simulations to evaluate estimator performance under varying sample sizes, censoring rates, and copula families.

Selected Projects

- **Crack Detection with Vision Mamba (SCSegamba)**: Implemented the SCSegamba architecture for surface crack segmentation, leveraging state-space models as a lightweight alternative to Transformers for pixel-level structural health monitoring.
- **Transformer from Scratch**: Built a complete Transformer encoder-decoder in PyTorch from the ground up, including multi-head self-attention, positional encoding, and layer normalization.
- **Pig Detection Vision Pipeline (YOLOv10)**: Designed a two-stage fine-tuning pipeline with YOLOv10 for pig detection and counting, incorporating hard-mining, Albumentations augmentation, and background synthesis strategies.
- **Diffusion Model for Image Generation**: Implemented DDPM and DDIM samplers with a FiLM-conditioned UNet on MNIST, applying EMA, MinSNR loss weighting, and FID-based evaluation for generated image quality.
- **Long-Tail UAV Object Detection**: Addressed class imbalance in 4-class UAV detection using YOLO11s with offline augmentation pipelines (ASRZ, QRM, RCPB, HNT) and minority class oversampling.
- **Phishing Website Classification**: Developed an end-to-end ML pipeline for phishing website detection with feature engineering, multi-model training, and cross-comparison of classifier performance using scikit-learn.
- **Financial Network Analysis**: Constructed correlation-based financial networks from market data and analyzed systemic risk transmission using centrality metrics, clustering coefficients, and minimum spanning trees.

Skills

Programming: Python, R, C, C++, SQL, LaTeX, Git

Machine Learning / AI: Deep Learning, Computer Vision, Object Detection (YOLO), Diffusion Models, Transformer Architecture, LLM API Integration, Predictive Modeling

Statistics: Survival Analysis, Statistical Inference, Monte Carlo Simulation, Regression, Classification, Nonparametric Methods, Time Series

Libraries / Tools: PyTorch, scikit-learn, pandas, NumPy, matplotlib, OpenCV, Albumentations, Ultralytics, Linux, Jupyter