WAN-TING HSIEH

MACHINE LEARNING RESEARCHER

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WORK EXPERIENCE

AI Research Engineer **Inventec Corporation** **April 2021 – Now**

Cardiovascular diseases detection
- Developed end-to-end heart disease detection by the proposed deep anomaly detection using time series ECG.
- Proposed a mix-domain self-attention Resnet to identify outliers and allow generalizability to unseen datasets.
- Winner of the best poster in Physionet/Cinc 2021 challenge.

Heart failure survival analysis
- Developed an explainable heart failure survival estimation using 30-second ECGs.
- Reached 85% AUC and 83% concordance index through instance-weighted XGBoost.
- Adopted an iterative data augmentation technique to accelerate big data (~44 M samples) learning process.
- Proposed soft label for ordinal regression to learn the interclass relationship in discrete-time survival models.
- Studied the influence of ECG morphological information on heart failure estimation using Shapley analysis.

Benchmark of blood pressure estimation
- Benchmarked intermittent and continuous blood pressure estimation using Photoplethysmography (PPG).
- Proposed a subject-level stratification strategy to prevent dependency leakage in time-series PPG.
- Introduced the Mean Absolute Scaled Error (MASE) to enable reliable multi-dataset multi-label algorithm comparison.

AI Engineer **AHEAD Medicine** **July 2020 – March 2021**

Blood cancer risk stratification and relapse detection
- Collaborated with pharmacy and doctors to develop algorithms for blood cancer prescreening.
- Implemented mass spectrometry deconvolution algorithm with python to enable customized parameter setting.
- Reached 93% AUC in blood cancer risk stratification by fisher vector encoding using flow cytometry data.

EDUCATION

Hsinchu, Taiwan **University National Tsing Hua University** **Sep 2013 – Apr 2020**
- **M.S.** in Electrical Engineering, Apr 2020. GPA: 4.2/4.3
  Thesis: A Condition-Contrastive Embedding Network: Using Meta Information to Guide fMRI Representation Learning.
  Course: Computer vision, Data mining, Natural language processing
- **B.S.** in Mechanical Engineering, Jul 2017. GPA: 3.9/4.3.
  Course: Computer aided design, Theory of mechanisms, Dynamics

Aachen, Germany **RWTH Aachen University** **Oct 2019 – Feb 2020**
- **Exchange student** in Electrical Engineering
  Course: Digital image processing (Score: 3.0, satisfactory)

ACADEMIC PROJECTS

Brain FMRI representation learning **July 2017 – Aug 2019**
- Implemented MRI research pipeline: Data-Preprocessing (SPM, DPARSF), Modeling (3D CNN), and Explainable AI tool.
- Proposed a meta information guided CNN by contrastive loss to learn multi-view brain representation.

AWARDS AND HONOR
- **2021 Winner of best paper in Physionet/Cinc Challenge,** proposed MDARsn for cardiovascular disease detection.
- **2018 Third Prize, Civil IoT Competition in Taiwan,** proposed air quality alert bot using text style transfer NLP model.

LANGUAGES AND TECHNOLOGIES
- Programming | DevOps & MLOps: python, Matlab, Bash | Git; Docker, Linux, MLflow, Kubeflow, Jenkins
- Deep Learning | Data science: Pytorch, Tensorflow | Scikit-learn, Numpy, Pandas, Matplotlib, SHAP
- Domain: Biomedical data processing, Time series processing, Survival analysis, Explainable AI