

# WAN-TING HSIEH

## MACHINE LEARNING RESEARCHER

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### WORK EXPERIENCE

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<b>AI Research Engineer</b>	<b>Inventec Corporation</b>	<b>April 2021 – Now</b>
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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 improve 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 morphology 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.

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<b>AI Engineer</b>	<b>AHEAD Medicine</b>	<b>July 2020 – March 2021</b>
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Blood cancer risk stratification and relapse detection

- Developed algorithms for blood cancer prescreening in collaboration with pharmacy and hospital.
- Implemented mass spectrometry deconvolution algorithm to enable customized parameter setting.
- Reached 93% AUC in blood cancer risk stratification by Fisher Vector encoding using flow cytometry data.

### EDUCATION

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<b>Hsinchu, Taiwan</b>	<b>University National Tsing Hua University</b>	<b>Sep 2013 – Apr 2020</b>
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- **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.
- **B.S.** in Mechanical Engineering, Jul 2017. GPA: 3.9/4.3.  
Thesis: Design a 3D stylus pen including mechanism and software application using Unity.

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<b>Aachen, Germany</b>	<b>RWTH Aachen University</b>	<b>Oct 2019 – Feb 2020</b>
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- **Exchange student** in Electrical Engineering

### ACADEMIC PROJECTS

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<b>Brain fMRI representation learning</b>	<b>July 2017 – Aug 2019</b>
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- Implemented MRI research pipeline: Data-Preprocessing (SPM, DPARSF), Modeling (3D CNN), and Explainable AI tool.
- Propose a 3D Convolutional Autoencoder with multi-view contrastive loss (BSEN) for Alzheimer detection using fMRI.
- Proposed a Graph-Embedding-based Event-Contrastive network for Face Processing Ability Detection using fMRI.

### AWARDS AND HONOR

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- **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

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- 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: Time series processing, Biomedical data processing, Survival analysis, Explainable AI
  - Language: Chinese (Native), English (Fluent), Deutsch (Beginner)