Hao Dai

National Yang Ming Chiao Tung University, 1001 University Road, Hsinchu, Taiwan
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Education

National Yang Ming Chiao Tung University — *Institute of Information Management*
PhD, Information Management — *Since 2016*
- Advisor: Dr. Hsin-Ginn Hwang (National Yang Ming Chiao Tung University, R.O.C.)
- Co-Advisor: Dr. Vincent S. Tseng (National Yang Ming Chiao Tung University, R.O.C.)

Shanghai Jiao Tong University — *The Antai College*
Exchange Student, Information Management — *2018-2019*
- Advisor: Dr. Hsin-Ginn Hwang (National Yang Ming Chiao Tung University, R.O.C.)

Nanjing Normal University — *School of psychology*
MS, Applied Psychology — *2013-2015*
- Advisor: Dr. Xi Haoli

Awards & Grants

Award of Outstanding Students	National Chiao Tung University	NTD $ 200,000	*2018*
Award of Outstanding Students	National Chiao Tung University	NTD $ 200,000	*2017*
Best Paper	UHIMA 2017, 12th International Conference on Healthcare Information Management		*2017*
Award of Outstanding Students	National Chiao Tung University	NTD $ 200,000	*2016*

Research Interests

- Biomedical Informatics
- Time-series Data Analysis
- Information Analysis & Management
- Explainable Artificial Intelligence
- Intelligent Healthcare Application

Publications

Published

Hao Dai, Hsin-Ginn Hwang, & Vincent S. Tseng, (2023). PoEMS: Policy Network-based Early Warning Monitoring System for Sepsis in Intensive Care Units. **IEEE Journal of Biomedical and Health Informatics**, Early Access. (SCI/EI 2021 IF=7.021)

Hao Dai, Hsin-Ginn Hwang, & Vincent S. Tseng, (2021). Convolutional Neural Network-based Automatic Screening Tool for Cardiovascular Diseases Using Different Intervals of ECG Signals. **Computer Methods and Programs in Biomedicine**, 203, 106035. (SCI/EI 2021 IF=7.027)

Yu Huang, **Hao Dai (Co-first author)**, Vincent S. Tseng, (2022). Periodic Attention-based Stacked Sequence to Sequence Framework for Long-term Travel Time Prediction. **Knowledge-based Systems**, 258, 109976.(SCI/EI 2021 IF=8.139)

Hao Dai, Hsin-Ginn Hwang, & Vincent S. Tseng, (2023). Enhancing Interpretability with Explainable Artificial Intelligence for Sepsis Early Prediction. UHIMA 2023, In Proceedings of the 18th International Symposium on Healthcare Information Management.

Hao Dai, Han-Lin Li, Hon-yu Ma & Chia-Hui Shih, (2017). Visual presentation of TCM syndrome types and symptoms—taking cervical spondylosis as an example. UHIMA 2017, In Proceedings of the 12th International Conference on Healthcare Information Management.

Submitted Manuscripts

Tien-Yu Chang, **Hao Dai**, & Vincent S. Tseng, (2023). Class-dependent Automatic Data Augmentation Based on Adaptive Policies for Time Series. In Proceedings of the 32nd Conference on Information and Knowledge Management, **CIKM 2023**. Manuscript submitted.

Works In Progress

Ming-En Hsieh, **Hao Dai**, & Vincent S. Tseng. 'Enhancing Multi-Task Learning through Task Label Combination: Based on Diverse Classes among Similar Tasks.' This is an extended work based on our previous work, which was published in the Proceedings of the AAAI Conference on Artificial Intelligence, 2021. DOI:https://doi.org/10.1609/aaai.v35i9.16949

Crystal T Wei, **Hao Dai**, Ming-En Hsieh, Chien-Liang Liu, & Vincent S Tseng. 'Revealing Patterns in ECG Signals: Contrastive Learning for Enhanced Multilead Representation and Phenotyping.' This is an extended work based on our previous work, which was published in the Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2022. DOI: 10.1109/ICASSP43922.2022.9746887

Tien-Yu Chang, **Hao Dai**, & Vincent S. Tseng. 'Towards Equity: a Flexible Knee-guide Neuroevolution-based Module for Mitigating Class-wise Bias in Automatic Data Augmentation.' This is an extended work based on our previous work, which was submitted to the CIKM 2023.

Research Project Experience

Development of Precise, Adaptive, and Context-aware Long-term Spatiotemporal Prediction Techniques *Advisor: Dr. Vincent S. Tseng*

Ministry of Science and Technology, R.O.C. *2023*

Role: Researcher

Contributions: Methodology Design, Data Curation, Methodology Implementation, Academic Paper Writing

- Proposed and Implemented a sequence-to-sequence prediction algorithm for addressing the travel time prediction.
- Evaluated the method with other State-of-the-art methods on large-scale highway traffic data from Taiwan.
- The details of this proposed framework can be found in the paper: 'Periodic Attention-based Stacked Sequence to Sequence Framework for Long-term Travel Time Prediction'.

Development of Advanced Time Series Machine Learning Core Techniques and Integrated Tools *Advisor: Dr. Vincent S. Tseng*

Ministry of Science and Technology, R.O.C. *2022*

Role: Researcher

Contributions: Methodology Design, Data Curation, Methodology Implementation, Academic Paper Writing

- Proposed and Implemented an early time-series prediction algorithm for addressing the sepsis prediction problem.
- Evaluated the method with other State-of-the-art methods on large-scale real-world medical data.
- The details of this proposed framework could be found in the paper: 'PoEMS: Policy Network-based Early Warning Monitoring System for Sepsis in Intensive Care Units'.

Dementia Stage Identification of Alzheimer's Disease *Advisor: Dr. Vincent S. Tseng*

Kaohsiung Medical University, Kaohsiung City, R.O.C. *2022*

Role: Technical staff

Contributions: Proposal & Report Writing, Conceptualization, Methodology Design, Validation

- Proposed a framework for predicting the MMSE Score based on EEG segments.
- Evaluated the method with other State-of-the-art methods on real-world data.

Study of Individuals' Concern for Health Information Privacy to the Intention to Provide Their Personal Health Information in the EMR Exchange Context *Advisor: Dr. Hsin-Ginn, Hwang*

Ministry of Health and Welfare, R.O.C. *2016*

Role: Researcher

Contributions: Data Collection & Data Analysis, Report Writing

- Collected the questionnaires from the mainland of China for the project.
- Analysed the collected data to evaluate the proposed research framework.

Professional Skills

- Expertise in programming languages, such as Python, R
- Proficient in different machine learning and deep learning frameworks, such as Sciki-Learn, Pytorch, and Keras
- Experienced in applied machine learning and data mining algorithms for developing different applications
- Experienced in interdisciplinary collaborations with different institutes
- Good communication skills, strong motivation, respect for laboratory members, ability to advance a project productively and work independently

Mentoring

Lin, Hong-Yang	Master Student	National Chiao Tung University	*2017-2018*
Cheng, Ya-Wen	Master Student	National Chiao Tung University	*2018-2019*
Wang, Li-yun	Master Student	National Chiao Tung University	*2018-2019*
Chang, Tien-yu	Master Student	National Yang Ming Chiao Tung University	*2022-2023*

Professional Service

Service

Role	**Journal/Conference**
Reviewer	IEEE Journal of Biomedical and Health Informatics
Reviewer	Elsevier- Information Sciences
Reviewer	Springer- Soft Computing
Reviewer	Springer- Artificial Intelligence Review
Reviewer	Springer- Journal of ambient intelligence and humanized computing
Reviewer	Taylor & Francis - International Journal of Modelling and Simulation
Reviewer	European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD)

References

Vincent S. Tseng

Chair Professor, IEEE Fellow

- Department of Computer Science
- National Yang Ming Chiao Tung University, R.O.C.
- Email: vtseng@cs.nycu.edu.tw

Hsin-Ginn, Hwang

Professor

- Institute of Information Management
- National Yang Ming Chiao Tung University, R.O.C.
- Email: hghmis@gmail.com