Yu-chun (Enid) Lin

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Education

Chung Shan Medical University *Sept.2023 – July.2025* (expected)

Master's degree in Institute of Medicine

With minor in Electrical Engineering, National Chung Hsing University *Taichung, Taiwan*

· Conduct rehabilitation research: Apply EMG signal analysis using DNN to diagnose osteoporosis and sarcopenia

· Study cardiology: Explore EKG, heart sound identification, cardiac ultrasound, and cardiac physics

· Investigate psychiatry: Focus on neurodevelopmental childhood disorders

· Develop DRQN models: Enhance real-time control of self-driving vehicles, ensuring superior accuracy

Asia University *Sept.2019 – Jun.2023*

Bachelor's degree in Department of Medical Laboratory Science and Biotechnology

With minor in Computer Science *Taichung, Taiwan*

Journal Publications

*Equal contribution †corresponding author

[1] **Y.-C. Lin***, P.-T. Liu*, T.-S. Wei, K.-M. Chang†, "Examining the Correlation Between Osteoporosis and Sarcopenia in Elderly Women via Center of Pressure Variability Analysis,"—*Submitted to Age and Ageing* (Under review)

[2] **Y.-C. Lin***, C.-Y. Cheng*, I.-C. Chang, K.-M. Chang†, "AI Prediction System on Intradialytic Hypotension, "—*Submitted to IEEE Journal of Translational Engineering in Health and Medicine* (Under review)

Research Experience

Detecting Correlation Between Sarcopenia and Osteoporosis Using EMG Signals via Stress Variation Analysis

National Kaohsiung University of Science and Technology Prof. Kang-Ming Chang

· Developed EMG signal filtering and analysis techniques for rapid detection of sarcopenia and osteoporosis.

· Implemented IMF and EMD signal decomposition methods to effectively remove signal noise

· Conducted time-domain, frequency-domain, and entropy analyses on muscle mass in elderly female populations to enhance diagnostic accuracy and speed

· Collaborated with Changhua Christian Hospital on an NSTC-funded project focusing on sarcopenia and osteoporosis patients

Predicting Hypotension in Hemodialysis and Early Detection of Alzheimer's Disease via Eye Movement Analysis

Tainan Branch, Kaohsiung Veterans General Hospital Dr.Chih-Yang Cheng

· Engineered a predictive system for detecting hypotension in hemodialysis patients, integrating DNN and LLMs to generate personalized case recommendation summaries

· Developed AI-assisted tools to alert medical staff about critical patient conditions in real-time

· On a TBKVGH-funded clinical project focused on hemodialysis patients (No.VHYK113-04).

Association Between Neurodevelopmental Disorders and Heart Disease in Children

Chung Shan Medical University Prof. Cheng-Chung Wei

· Leveraged TriNetX network to analyze large-scale clinical data, predicting and preventing heart disease in children (0-18 years) with developmental disabilities

· Examined clinical electrocardiograms to detect real-time physiological changes

Optimizing Parkinson's Disease Treatment with AI and Deep Learning.

Industrial Technology Research Institute and National Taiwan University Prof. Chii-Wann Lin

· Developed a Parkinson's Disease treatment and prediction system, integrating clinical practices with DNN.

· Optimized Deep Brain Stimulation (DBS) therapy through innovative AI-driven approaches

· Designed deep learning models using MobileNet v3 and ResNet-18 architectures to analyze full-spectrum LFP neural signals and PD symptom scale data

· Collaborated with ITRI and NTU on clinical trials. The project aims to identify PD symptoms by 2024 and achieve symptom prediction **by 2025**

Clinical Experience

Chung Shan Medical University Cardiology intern Hsuan-Wei Chu, MD.

· Conducted intensive training in differentiating cardiac murmurs and analyzing the etiology, progression, and clinical manifestations of common heart diseases
· Learning ECG waveform interpretation, recognizing its critical role in diagnosing cardiac abnormalities

Work Experience

National Science Talent Contest, – RA ,Taiwan *Jul.2023 – Present*
Chung Shan Medical University, – Cardiology Intern ,Taiwan *Mar.2024 – Present*
Industrial Technology Research Institute, – Intern ,Taiwan *Mar.2024 – Jun.2024*
Asia University, – Lab Intern, Taiwan *Oct.2022 – Jun.2023*
China Medical University, – Lab Summer Intern, Taiwan *Jun.2022 – Oct.2022*

Honors And Awards

Best Paper Award, IEEE 6th Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability *Taiwan,* 2024
The Chung Hwa Rotary Educational Foundation Taiwan Rotary Academic Scholarship *2024 and 2025*

Conference Publications

*Equal contribution †corresponding author

[1] **Y.-C. Lin**. L.-K. Huang, H.-W. Hu*, (2024) "Enhancing Personalized Dementia Care Through Integration of Large Language Models, "—*AMIA 2024 AI Evaluation Showcase*

[2] **Y.-C. Lin**. I-C. Chang, C.-Y. Cheng*****, (2024) "Evaluating Dialysate Flow and UFR Effects on Membrane Pressure Using Machine Learning, "—*MD Conference* (Under review)

[3] **Y.-C. Lin***, S.-Y. Liang., (2024) "Interdisciplinary Approaches to Childhood Trauma: Machine Learning and Biomedical Monitoring in Predicting Domestic Violence Trends,"—*NWC Conference.*

[4] **Y.-C. Lin**, L.-K. Huang, J.-C. Wu, T.-Y. Chang, H.-W. Hu*., (2024) "Early Detection of Alzheimer's Disease through Eye Movement Analysis: A Digital Diagnostic Approach," —*IEEE iWEM Conference*

[5] H.-W. Hu, **Y.-C. Lin**, H.-C. Chang, E. Chuang, C.-R. Yang., (2024) "Leveraging Large Language Models for Generating Personalized Care Recommendations in Dementia, " —*IEEE iWEM Conference*

[6] **Y.-C. Lin**, H.-W. Hu*, J.-A. Wang, M.-H. Lee., (2024) "Interpretability after Deep Learning Analysis of Intradialytic Hypotension Prediction Model with Recommendation Reports Utilizing Large Language Model, "—*IEEE ECBIOS Conference*

[7] **Y.-C. Lin,** P.-T. Liu, T.-S. Wei, K.-M. Chang*., (2024) "Sarcopenia Detection by Center of Pressure with Empirical Mode Decomposition Derived Entropy Features," —*SEMBA Conference*

[8] **Y.-C. Lin,** J.-Y. Huang, C.-C. Wei*., (2023) "The trend of prevalence in attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), and Asperger syndrome (AS) in the US from 2014 to 2023," —*TSBME Conference*

Skills and Certificate:

Programming Language and Experiment Skill: Python, R, Git, RT-PCR, Elisa

Certificate: NVIDIA DLI - CUDA

Professional and Community services:

Taiwan Medical Big Data Research Society *Jan.2024 – Present*
Member, Secretary, Research Website Manager
Chairman: Cheng-Chung (James) Wei, MD.,PhD.

Taiwanese Young Researcher Association (Tyra) *June.2023 – Present*
Mentor-Mentee Program

Rotary Club *Jan.2024 – Present*
Awarded students of Hui Lai Rotary Club