Yu-chun Lin

Email: enid.hugh@gmail.com | Tel: +886-988907711 | Website |Taichung, Taiwan

Education

Chung Shan Medical University *Sept.2023 – Jun.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 JAMIA* (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

International Academia of Biomedical Innovation Technology Dr. Hsiang-Wei Hu

· 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

· Collaborated with Tainan Branch, Kaohsiung Veterans General Hospital (TBKVGH) on a TBKVGH-funded clinical project focused on hemodialysis patients

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

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

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*
ITRI – Summer Intern, Taiwan *Jul.2024 – Aug.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**, E.-Chuang, H.-C. Chang, C.-R. Yang, H.-W. Hu., (2024)"Enhancing Personalized Dementia Care Through Integration of Large Language Models," —*AMIA Conference* (Under review)
[2] **Y.-C. Lin***, (2024) "Securing Healthcare in the Era of AI: Risks and Challenges for Improving Cybersecurity During Systems Upgrades, "—*IEEE CNS Conference* (Under review)
[3] C.-Y. Cheng, **Y.-C. Lin***. I-C. Chang,(2024) "Evaluating Dialysate Flow and UFR Effects on Membrane Pressure Using Machine Learning, "—*ICEB Conference*
[4] **Y.-C. Lin***, S.-Y. Liang., (2024) "Interdisciplinary Approaches to Childhood Trauma: Machine Learning and Biomedical Monitoring in Predicting Domestic Violence Trends,"—*NWC Conference*
[5] **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*
[6] 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*
[7] **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*
[8] **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*
[9] **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, C++, 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