Yu-chun (Enid) Lin

enid.hugh@gmail.com | Website | Google scholar | +886988907711, Taiwan

Education

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

Master of Science in Institute of Medicine

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

- Thesis: Examining the Correlation Between Osteoporosis and Sarcopenia in Elderly Women via Center of Pressure Variability Analysis
- Advisors: Kang-Ming Chang

Participating in rehabilitation and neurodevelopmental disorder research, along with clinical internships in cardiology. In Engineering, focusing on the development of DNN, 6G wireless healthcare and generative AI.

Relevant Courses:

Cloud Computing/A+, Machine Learning/A+, Biomedical Imaging System/A+, Seminar in Biomedicine/A

GPA: 4.19/4.3

Asia University *Sept.2019 – Jun.2023*

Bachelor of Science in Department of Medical Laboratory Science and Biotechnology

With minor in Computer Science *Taichung, Taiwan*

Relevant Courses:

Computer Programming and Artificial Intelligence Application/A+, Machine Learning/A

GPA: 3.13/4.0 (last 60 credits)

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 IEEE Sensors*

[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*

Research Experience

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

National Kaohsiung University of Science and Technology with Changhua Christian Hospital Prof.Kang-Ming Chang

- Developed balance signal filtering and analysis techniques, reducing detection time for sarcopenia and osteoporosis by immediate signal judgment through human balance signal
- Implemented EMD signal decomposition methods, achieving a reduction in noise using IMF and enhancing signal clarity for improved diagnostic accuracy
- Conducted comprehensive analyses in time, frequency, and entropy domains using Sample Entropy (SampEn), Shannon Entropy, and Mutual Information. By focusing on critical CoP signal features, the amount of data needed for accurate analysis is minimized, streamlining the diagnostic process

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

Tainan Branch, Kaohsiung Veterans General Hospital Dr. Hsiang-Wei Hu

- Engineered a predictive system for hypotension in hemodialysis patients, integrating DNN and LLMs, reducing response time by **30%** and achieving **83%** accuracy with real-time data integration and interpretable AI techniques (**Y.-C. Lin**., et al., Published in IEEE 2024 iWEM)
- Integrated real-time physiological data with **LIME** and **RAG** to enhance model interpretability and deliver actionable clinical insights. (**Y.-C. Lin**., et al., In progress for publication in IEEE 2024 ECBIOS)

Analysis on Neurodevelopmental Disorders and Early Diagnosis Trends

Chung Shan Medical University Prof. Cheng-Chung Wei

- Leveraged TriNetX network to analyze neurodevelopmental disorders children, revealing significant growth in ADHD, ASD, and AS cases from 2014 to 2023, with an 82.3% increase for boys and a 118% increase for girls.
- Increased detection rates for girls by 9.22% during the COVID-19 pandemic, surpassing boys' growth rates; emphasized the need for enhanced early diagnosis and timely clinical interventions.

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

Association Between Physiological Emotions and Heart Disease

Chung Shan Medical University Hospital Hsuan-Wei Chu, MD

- Deepening understanding of EKG waveforms to identify heart rate variability, improving precision in diagnosing cardiac abnormalities, particularly focusing on QRS waves.
- Enhancing diagnostic accuracy in differentiating cardiac murmurs and identifying arrhythmias through intensive training, ongoing until ***summer 2025***.
- Combining TriNetX network to analyze large-scale clinical data, investigating the correlation between emotional changes and heart disease.

Journal Commentary

[1] **Y.-C. Lin**, H.-W. Chu, C.-C. Wei*., (2025). "Comment on: Expert-level sleep staging using an electrocardiography-only feed-forward neural network" (Under review)

Conference Publications

[1] **Y.-C. Lin**, H.-M. Heshmati*, (2025) "The Effects of Psychological Interventions on the Quality of Life in Patients with Metabolic Diseases," —*Endocrine Society Conference, San Francisco* (In preparation)

[2] **Y.-C. Lin**, H.-M. Heshmati*, (2025) "The Impact of Endocrine Disorders on Mental Health," —*ECE/ESPE, Copenhagen* (In preparation)

[3] **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, San Francisco*

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

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

[6] **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, Taiwan*

[7] 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, Taiwan*

[8] **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, Taiwan* (In publication)

[9] **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, Taiwan*

[10] **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, Taiwan*

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*

Skills and Certificate

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

Certificate: NVIDIA DLI - CUDA

Professional and Community Services

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

Taiwan Medical Big Data Research Society *Jan.2024 – Present*
Member, Secretary, Research Website Manager

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