

Woan-Shiuan Chien (Winnie)

PhD Candidate, EE, National Tsing Hua University

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PROFESSIONAL INTERESTS

Speech · Physiology · Affective Computing · Trustworthy AI

EDUCATION

- 2019/09 – Present
National Tsing Hua University (NTHU)
PH.D IN DEPARTMENT OF ELECTRICAL ENGINEERING; GPA: 3.88/4.3
Advisor: Professor [Chi-Chun Lee](#), Behavior Information & Interaction Computation LAB (BIIC Lab)
- 2015/09 – 2017/07
National Chung Cheng University (CCU)
M.S IN DEPARTMENT OF ELECTRICAL ENGINEERING; GPA: 4.02/4.3
Thesis Advisor: Professor [Sung-Nien Yu](#), Biomedical Signal Processing & System Design Lab (BSP Lab)
- 2011/09 – 2015/06
Chung Yuan Christian University (CYCU)
B.S IN DEPARTMENT OF ELECTRICAL ENGINEERING
Special Research Topic Advisor: Professor [Kang-Ping Lin](#)

RESEARCH EXPERIENCES

- 2019/07 – Present
Behavioral Information & Interaction Computation Lab, NTHU
GRADUATE RESEARCHER working with Professor [Chi-Chun Lee \(Jeremy\)](#)
My research interests center around the integration of *Affective Computing*, *Machine Learning*, and *Multimodal Signal Processing*, focusing on speech and physiological signals. I am dedicated to advancing the field of *Trustworthy AI*, ensuring that emotion recognition technologies adhere to ethical standards involving privacy, fairness, and bias mitigation. My work includes developing systems that are transparent, fair, and trusted by all users, particularly in diverse demographic contexts. Specifically, my work can be summarized:
- Research in Trustworthy AI and Emotion Recognition**
- Explore *Speech Emotion Recognition (SER)* by developing models that emphasize fairness, transparency, and trust. This involves understanding and mitigating biases from various perspectives, including group/individual and speaker/rater biases in SER systems.
 - Focus on enhancing the perception of fairness in emotion recognition by identifying and rectifying biases, ensuring equitable treatment across diverse user groups. This contributes significantly to the reliability and credibility of affective computing applications.
 - Construct robust frameworks for cross-corpus and multilingual SER, leveraging phonetic anchors and creating comprehensive databases like a large-scale Taiwanese Mandarin SER database.
 - Manage a centralized platform facilitating collaboration among researchers within an affective database consortium, aiming to streamline resource sharing and innovation in the field.
- Research in Physiological-based Healthcare**
- Employ innovative methods such as hypergraph neural networks and federated learning strategies to advance stress detection and emotion recognition, utilizing constraints like media content and demographic attributes.
 - Developing novel machine learning and deep learning models for in-the-wild physiological-based stress detection.
 - A significant focus is placed on understanding the impact of missing data bias in healthcare, investigating how incomplete data can skew outcomes and mitigate these effects in health monitoring.
- Research in Group & Team Dynamics**
- Analyze small-group interactions by quantifying physiological and acoustic features to predict group performance and emotional states. This includes proposing new measures of physiological synchrony to assess group belonging and satisfaction.
- 2015/07 – 2017/07
Biomedical Signal Processing & System Design Lab, CCU
GRADUATE RESEARCHER working with Professor [Sung-Nien Yu](#)
Research in Biomedical Signal Processing
- Convolutional Neural Networks for arrhythmia electrocardiogram classification.
 - Developing blood pressure algorithm using the heart rate extracted from smart watches.
 - Myocardial ischemic and infarction episode detection based on ST level and beat type re-attribution method.

COOPERATED RESEARCH PROJECTS

- 2022/02 – Present
National Science and Technology Council: AI Innovation Research Center Project
COLLABORATOR: Professor [Yao-Win Peter Hong](#) (DEPT. OF EE, NTHU), [Ming-Chun Hu](#) (DEPT. OF CS, NTHU), [Hung-Yu Chuang](#) (DEPT. OF LAW, NCCU)
 - Advanced Technologies for Designing Trustable AI Services.
 - Toward Realizing Into-Life Emotion AI through Robust, Scalable, and Trustworthy Affective Signal Modeling.
- 2021/03 – Present
Multimodal Signal Processing Laboratory (MSP Lab.), UT Dallas
COLLABORATOR: Professor [Carlos Busso](#) (DEPT. OF ELECTRICAL AND COMPUTER ENGINEERING, UT DALLAS)
 - Propose the design of the affective naturalistic database consortium (AndC) with a customizable-standard framework for intelligently-controlled emotional data collection.
 - Present as a case study the development of a naturalistic large-scale Taiwanese Mandarin podcast corpus using the customizable-standard intelligently-controlled framework.
- 2022/01 – 2024/06
Qualcomm Incorporation, USA
COLLABORATOR: Professor [Cheng-Hsin Hsu & Jerry Chi-Yuan Chou & Wei-Yu Chiu](#) (NTHU)
 - In-Vehicle Automatic Speech Recognition System
 - Distributed learning for edge AI applications.
 - Developing in-car automatic speech recognition and driver behavior recognition to enhance vehicle safety.
- 2022/01 – 2022/10
Qualcomm Incorporation, USA
 - Stress prediction using bio-signals with federated learning.
- 2020/07 – 2021/01
C-Media Electronics Incorporation (C-Media Inc.), Taiwan
 - Implement AI de-reverberation de-noise algorithm based on deep noise suppression.
- 2020/05 – 2020/11
Institute for Information Industry (III)
 - Develop a computer vision-based video retrieval system speeding up the fakenews screening process.
 - The system would be deployed by two NGO fakenews checkers [Taiwan FactCheck Center](#) and [MyGoPen](#).

WORKING EXPERIENCES

- 2024/01 – 2024/03
National Institute of Advanced Industrial Science and Technology (AIST), Artificial Intelligence Research Center (AIRC)
AI STUDENT INTERN @ INTELLIGENT MEDIA PROCESSING RESEARCH TEAM
 - Develop CLAP Models and Task Vectors on Fair Speech Emotion Recognition
- 2021/06 – 2021/08
Industrial Technology Research Institute (ITRI)
AI MEDICAL IMAGING ALGORITHM INTERN
 - Implement Graph Neural Networks on Electric Health Records
- 2017/10 – 2019/09
Nuvoton Technology Corporation (Nuvoton Crop.)
MICROCONTROLLER SYSTEM APPLICATION ENGINEER
 - Mini-PCIe Expansion Adapter Boards (NB-IoT, LTE, LoRa Gateway)
 - Key Word Spotting (Speech Recognition) featuring the NuMicro M480 series microcontroller
 - Digital Image Recognition System featuring the NuMicro M480 series microcontroller

HONORS AND AWARDS

AWARD

- Merry Electronics Co., Ltd.: Electroacoustics Thesis Award Finalist, Taiwan (2024)
- The Rising Stars Women in Engineering Workshop – Shorted Listed Candidate of Asian Deans' Forum, National University of Singapore, Singapore (2024)
- Industrial Patent Analysis and Strategy Competition – Second Place, Taiwan Intellectual Property Office, Taiwan (2024)
- Merry Electronics Co., Ltd.: Electroacoustics Thesis Award – Bronze Award (2nd round presenter, co-author), Taiwan (2021)

FELLOWSHIP

- NSTC Outstanding Doctoral Students Scholarship, National Science and Technology Council (NSTC), Taiwan (2022-2023)

SCHOLARSHIP

- NTHU International Visiting Scholarship, National Tsing Hua University, Taiwan (2024, 2023)
- Google Conference Scholarships (APAC), Google (2024, 2023)
- Rotary Education Scholarship, Chung Hwa Rotary Educational Foundation 2021-2022 (2021-2022)
- Academic Excellence Scholarship (Taiwan Life, Cathay Life, Shin Kong Life), Taiwan (2022, 2021, 2016)

Nuvoton Corp. Scholarship, Taiwan (2016-2017)

TRAVEL GRANT

IEEE BSN Travel Awards, IEEE Engineering in Medicine and Biology Society (EMBS) (2024)

ACLCLP Outstanding Students Conference Travel Grant, The Association for Computational Linguistics and Chinese Language Processing (ACLCLP) (2024, 2023)

ACII 2023 Travel Bursary, The Association for the Advancement of Affective Computing (AAAC) (2023)

ICASSP 2023 Conference Travel Grant, IEEE Signal Processing Society (SPS) (2023)

PROGRESS Student Travel Awards, IEEE PROMotInG DiverSity in Signal ProcESSing (2023)

NSTC Outstanding Students Conference Travel Grant, National Science and Technology Council (NSTC), Taiwan (2024, 2023, 2022)

NTHU Outstanding Students Conference Travel Grant, National Tsing Hua University, Taiwan (2023, 2022)

TEACHING EXPERIENCES

Future Learn, Massive Open Online Course (MOCC)

TEACHING MATERIAL DESIGNING ASSISTANT

- Deconstructing Research Articles: How to Read and Write a Research Paper (2023, 2024)
 - LECTURER: Professor [Yun-Yin Huang](#) (CENTER FOR LANGUAGE EDUCATION, NTHU)

National Tsing Hua University, Taiwan

TEACHING ASSISTANT

- THC1024 Reliable Industrial Wireless Network Technology and Application (2023)
- EE 3700 Introduction to Machine Learning (2022)
- EE 3660 Introduction to Digital Signal Processing (2022)
- EE 3900 Special Topic on Implementation (2021, 2022, 2023, 2024)
- EECS 3010 Industry Internship (2021, 2022, 2023, 2024)
- EE 3662 Digital Signal Processing Laboratory (2020)

National Chung Cheng University, Taiwan

TEACHING ASSISTANT

- EE 4156114 Biomedical Signal Processing (2017)
- EE 4151004 Introduction to Computers (2016)
- EE 4153013 Digital Signal Processing Laboratory (2016)
- EE 4153213 Introduction to Digital Signal Processing (2016)

TECHNICAL SKILLS

DATA COLLECTION: Emotion Database (BIIC-Podcast), In-the-wild Workplace Stress Database (Firefighters)

MULTIMODALITY PROCESSING: Speech Signal Processing (Praat, openSMILE, librosa, Fairseq), Physiological Signal Processing (Neurokit)

MACHINE/DEEP LEARNING: Supervised learning methods (scikit-learn, Pytorch, Tensorflow (Keras))

PROGRAMMING: Python, MATLAB, C, C++, HTML

OTHER TOOLS & FAMILIAR OS: LaTeX, Git (Github and Gitlab), Linux (Ubuntu), Windows

REVIEW SERVICES

CONFERENCE, IEEE ICASSP (2025, 2024, 2023), IEEE ICME (2025), IEEE ACII (2023), Interspeech (2024, 2023)

JOURNAL, IEEE Transactions on Affective Computing, International Journal of Epidemiology

INVITED TALKS

Industrial Technology Research Institute (ITRI), Taiwan

Nuvoton Microcontroller Development, Implementation and Design for Smart Image Recognition (2019)

PUBLICATIONS ([GOOGLE SCHOLAR PROFILE](#))

Patent

- [1] Pin-Jhao Chen, **Woan-Shiuan Chien**, Chi-Chun Lee “Contrastive-based Identity Bias Disentanglement Using ADF Detrending”, (*Submit applications for TW, CN and US, April, 2025*)
- [2] Po-Chen Lin, Jeng-Lin Li, **Woan-Shiuan Chien**, Chi-Chun Lee “Method and System for Physiological-based Stress Detection”, (*Submit applications for TW and US, July, 2024*)
- [3] **Woan-Shiuan Chien**, Chi-Chun Lee “Method and System for Fair Speech Emotion Recognition”, *US Patent App. US18380847 (issued Dec 5, 2022), TW Patent App. TW1859906 (issued Oct 21, 2024) (Submission of applications for CN, May, 2023)*

- [4] **Woan-Shiuan Chien**, “Microcontroller updating system and method”, *CN Patent App. CN112925533A (issued Jun 8, 2021), TW Patent App. TW202123091A (issued Jun 16, 2021)*
- [5] **Woan-Shiuan Chien** and Tzu-Lan Shen, “Recognition system and recognition method”, *US Patent App. US11216729B2 (issued Jan 4, 2022), CN Patent App. CN111292764A (issued Jun 16, 2020), TW Patent App. TW1682325B (issued Jan 11, 2020)*

International Journal

- [1] Luz Martinez-Lucas, Ali Salman, Seong-Gyun Leem, **Woan-Shiuan Chien**, Shreya G. Upadhyay, Chi-Chun Lee and Carlos Busso, “Affective Priming in Emotional Annotations and its Effect on Speech Emotion Recognition” in *IEEE Transactions on Affective Computing*, 2024. (Under Review, Manuscript Submitted in Aug, 2024)
- [2] **Woan-Shiuan Chien**, Shreya G. Upadhyay, Wei-Cheng Lin, Carlos Busso and Chi-Chun Lee, “Differential Impacts of Monologue and Conversation on Speech Emotion Recognition.” in *IEEE Transactions on Affective Computing*, 2024. (Accepted)
*Impact Factor: 9.6
- [3] Shreya G. Upadhyay, **Woan-Shiuan Chien**, Bo-Hao Su and Chi-Chun Lee, “Learning with Rater-Expanded Label Space to Improve Speech Emotion Recognition.” in *IEEE Transactions on Affective Computing*, vol. 15, no. 3, pp. 1539–1552, 2024.
*Impact Factor: 9.6
- [4] **Woan-Shiuan Chien** and Chi-Chun Lee, “Achieving Gender Neutrality in Speech Emotion Recognition by Balancing Fairness Between Speakers and Raters.” in *International Journal of Computational Linguistics and Chinese Language Processing*, 2024. (Under Review)
- [5] **Woan-Shiuan Chien** and Chi-Chun Lee, “A Two-Stage Learning Strategy for Fair Speech Emotion Recognition.” in *International Journal of Computational Linguistics and Chinese Language Processing*, vol. 29, no. 1, pp. 1–25, 2024.

International Conference

- [1] Huan-Yu Chen, **Woan-Shiuan Chien**, Ching-Heng Lin and Chi-Chun Lee, “Leveraging Foundation Models for Clinically Instructed Tumor Image Synthesis in Renal Cell Carcinoma.” in *Proceeding of the 22nd IEEE International Symposium on Biomedical Imaging (ISBI '25)*, 2025.
- [2] Pin-Jhao Chen, **Woan-Shiuan Chien** and Chi-Chun Lee, “Disentangle Heart Rate Signals for Improved Stress Detection.” in *Proceeding of the 50th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '25)*, 2025.
- [3] Jing-Chun Wang, **Woan-Shiuan Chien** and Chi-Chun Lee, “A Dynamic Edge-Selection Mechanism in HRV Hypergraph Learning for Improved Stress Detection.” in *Proceeding of the 50th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '25)*, 2025.
- [4] Shreya G. Upadhyay, **Woan-Shiuan Chien** and Chi-Chun Lee, “Is It Still Fair? Investigating Gender Fairness in Cross-Corpus Speech Emotion Recognition.” in *Proceeding of the 50th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '25)*, 2025.
- [5] **Woan-Shiuan Chien** and Chi-Chun Lee, “Understanding Missing Data Bias in Longitudinal Mental Stress Detection.” in *Proceedings of IEEE 20th International Conference on Body Sensor Networks (BSN '24)*, 2024.
- [6] Pin-Jhao Chen, **Woan-Shiuan Chien**, Huan-Yu Chen and Chi-Chun Lee, “Stress Detection Using HRV Features Augmentation Based on Heart Rate Signal Transformation.” in *Proceedings of IEEE 20th International Conference on Body Sensor Networks (BSN '24)*, 2024.
- [7] Jing-Chun Wang, **Woan-Shiuan Chien**, Huan-Yu Chen and Chi-Chun Lee, “In-The-Wild HRV-Based Stress Detection Using Individual-Aware Metric Learning.” in *Proceedings of IEEE 20th International Conference on Body Sensor Networks (BSN '24)*, 2024.
- [8] **Woan-Shiuan Chien** and Chi-Chun Lee, “An Investigation of Group versus Individual Fairness in Perceptually Fair Speech Emotion Recognition.” in *Proceeding of Conference of the International Speech Communication Association (Interspeech '24)*, 2024, pp. 3205–3209.
- [9] Hsing-Hang Chou, **Woan-Shiuan Chien**, Ya-Tse Wu and Chi-Chun Lee, “An Inter-Speaker Fairness-Aware Speech Emotion Regression Framework.” in *Proceeding of Conference of the International Speech Communication Association (Interspeech '24)*, 2024, pp. 3190–3194.
- [10] **Woan-Shiuan Chien**, Shreya G. Upadhyay and Chi-Chun Lee, “Balancing Speaker-Rater Fairness for Gender-Neutral Speech Emotion Recognition.” in *Proceeding of the 49th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '24)*, 2024, pp. 11861–11865.
Merry Electro-Acoustic Thesis Award Finalist
- [11] Po-Chen Lin, Jeng-Lin Li, **Woan-Shiuan Chien** and Chi-Chun Lee, “In-the-wild Physiological-based Stress Detection Using Federated Strategy.” in *Proceeding of the 49th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '24)*, 2024, pp. 1681–1685.
- [12] Shreya G. Upadhyay*, **Woan-Shiuan Chien***, Bo-Hao Su, Lucas Goncalves, Ya-Tse Wu, Ali N. Salman, Carlos Busso and Chi-Chun Lee, “An Intelligent Infrastructure Toward Large Scale Naturalistic Affective Speech Corpora Collection.” in *Proceeding of the 11th International Conference on Affective Computing & Intelligent Interaction (ACII '23)*, 2023, pp. 1–8.
- [13] **Woan-Shiuan Chien** and Chi-Chun Lee, “Achieving Fair Speech Emotion Recognition via Perceptual Fairness.” in *Proceeding of the 48th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '23)*, 2023, pp. 1–5.

- [14] Shreya G. Upadhyay, Luz Martinez-Lucas, Bo-Hao Su, Wei-Cheng Lin, **Woan-Shiuan Chien**, Ya-Tse Wu, William Katz, Carlos Busso and Chi-Chun Lee, “Phonetic Anchor-Based Transfer Learning To Facilitate Unsupervised Cross-Lingual Speech Emotion Recognition.” in *Proceeding of the 48th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP ‘23)*, 2023, pp. 1-5.
- [15] **Woan-Shiuan Chien**, Shreya G. Upadhyay, Wei-Cheng Lin, Ya-Tse Wu, Bo-Hao Su, Carlos Busso and Chi-Chun Lee, “Monologue versus Conversation: Differences in Emotion Perception and Acoustic Expressivity.” in *Proceeding of the 10th IEEE International Conference on Affective Computing & Intelligent Interaction (ACII ‘22)*, 2022, pp. 1-7.
Invited for Extension in “Best of ACII” of IEEE Transactions on Affective Computing
- [16] **Woan-Shiuan Chien**, Huang-Cheng Chou and Chi-Chun Lee, “Self-assessed Emotion Classification from Acoustic and Physiological Features within Small-group Conversation.” in *Companion Publication of the 23rd ACM International Conference on Multimodal Interaction (ICMI ‘21)*, 2021, pp. 230-239.
- [17] **Woan-Shiuan Chien**, Huang-Cheng Chou and Chi-Chun Lee, “Belongingness and Satisfaction Recognition from Physiological Synchrony with A Group-Modulated Attentive BLSTM under Small-group Conversation.” in *Companion Publication of the 23rd ACM International Conference on Multimodal Interaction (ICMI ‘21)*, 2021, pp. 220-229.
- [18] Huang-Cheng Chou, **Woan-Shiuan Chien**, Da-Chen Juan and Chi-Chun Lee, ““Does it Matter When I Think You Are Lying?” Improving Deception Detection by Integrating Interlocutor’s Judgements in Conversations.” in *Findings of the Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP ‘21)*, 2021, pp. 1846-1860.
Merry Electro-Acoustic Thesis Bronze Award
- [19] **Woan-Shiuan Chien**, Hao-Chun Yang and Chi-Chun Lee, “Cross Corpus Physiological-based Emotion Recognition Using a Learnable Visual Semantic Graph Convolutional Network.” in *Proceedings of the 25th ACM International Conference on Multimedia (MM ‘20)*, 2020, pp. 2999-3006.
Acceptance Rate: 27.8 %
- [20] **Woan-Shiuan Chien** and Sung-Nien Yu, “Identification of Myocardial Ischemic and Infarction Episodes Based on ST Level and Beat Type Re-attribution Method.” in *Proceedings of the 2nd International Conference on Biomedical Signal and Image Processing (ICBIP ‘17)*, 2017, pp. 81-84.

Abstract Paper

- [1] Tzu-Jai Liu, Chao-Jhun Yang, Yi-Chen Lee, **Woan-Shiuan Chien**, Chi-Chun Lee and Yen-Ping Chang, “Clicked! Advanced Quantifications of Couple Emotional Synchrony Using Electrodermal Data and Their Effects on Relationship Quality” in *Proceeding of the 10th European Conference on Positive Psychology (ECP ‘22)*, Reykjavík, Iceland, 2022.