YEN-CHENG CHANG

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EDUCATION

University of Michigan-Ann Arbor Ph.D. in Electrical and Computer Engineering Sep, 2023 - Present

- Advisor: Prof. Pei Zhang
- Coursework: Embedded System, Computer Vision
- Current project: Leveraging General-Purpose Audio for Vibration-based Crowd Monitoring in Stadiums
  - utilizing vibration signals to monitor crowd behaviors
  - leveraging YouTube's audio signals to address label shortages from vibration signal
  - keywords: embedded system, signal processing, crowd monitoring, machine learning

National Taiwan University M.S. in Electrical Engineering and Computer Science Sep, 2018 - Sep, 2020

- Advisor: Prof. Tian-Li Yu
- Coursework: Genetic Algorithms, Mathematical Principles of Machine Learning, Optimization Algorithm
- Master's thesis: Verifiability Enhanced Active Learning Using Multi-armed Bandit.
  - proposed a pool-based active learning technique
  - using a simulated instance space as an indicator to do active learning
  - keywords: active learning, multi-armed bandit, verifiability, machine learning

National Taipei University B.S. in Computer Science and Information Engineering Sep, 2014 - Sep, 2018

- Coursework: Algorithm, Linear Algebra, Probability and Statistics, Computer Vision, Data Mining

EXPERIENCE

Graduate Student Instructor Sep, 2024 - Jan, 2025
Teaching Assistance, Introduction to Electronic Circuits, University of Michigan-Ann Arbor *Michigan, USA*

Machine Learning Researcher Sep, 2020 - Sep, 2023
Research & Develop team, Deputy Chief Engineer, E.SUN Financial Holding Company *Taipei, Taiwan*

Artificial Intelligence Researcher, Intern Jul, 2019 - Sep, 2020
Intelligence Document Layout team, AI researcher, Cinnamon AI Taiwan Inc. *Taipei, Taiwan*

PUBLICATIONS

FloHR: Ubiquitous Heart Rate Measurement using Indirect Floor Vibration Sensing Jesse R. Codling, Jeffrey D. Shulkin, **Yen-Cheng Chang**, Jiale Zhang, Hugo Latapie, Hae Young Noh, Pei Zhang, and Yiwen Dong. Buildsys, 2024.

- developed a non-contact system for monitoring heart rate using floor vibrations.
- achieved high accuracy near subjects and reliable performance at a distance.
- keywords: heart rate monitoring, floor vibration, data-driven method

Context-aware crowd monitoring for sports games using crowd-induced floor vibrations Yiwen Dong, Yuyan Wu, **Yen-Cheng Chang**, Jatin Aggarwal, Jesse R. Codling, Hugo Latapie, Pei Zhang, and Hae Young Noh. Data-Centric Engineering (DCE), 2024.

- designed a privacy-friendly crowd monitoring system using floor vibrations.
- enhanced accuracy by incorporating temporal and spatial context.
- keywords: crowd monitoring, floor vibration, deep learning

SMILE: Sequence-to-Sequence Domain Adaption with Minimizing Latent Entropy for Text Image Recognition Yen-Cheng Chang, Yi-Chang Chen, Yu-Chuan Chang, and Yi-Ren Yeh. ICIP, 2022.

- proposed a new Unsupervised Domain Adaptation method for sequence-to-sequence models
- tackled the sequential labeling in OCR with class-balanced self-paced learning
- keywords: optical character recognition, domain adaptation, convolution neural networks

g2pW: A Conditional Weighted Softmax BERT for Polyphone Disambiguation in Mandarin. Yi-Chang Chen, Yu-Chuan Chang, **Yen-Cheng Chang**, and Yi-Ren Yeh. INTERSPEECH, 2022.

- proposed learnable softmax-weights to condition the outputs of BERT
- using the polyphonic character and POS tagging to solve polyphone disambiguation
- keywords: natural language processing, polyphone disambiguation, constraint learning

Traditional Chinese Text Recognition Dataset: Synthetic Dataset and Labeled Data. Yi-Chang Chen, Yu-Chuan Chang, **Yen-Cheng Chang**, and Yi-Ren Yeh. ICPR Workshop, 2022.

- presenting a framework for a Traditional Chinese synthetic data engine
- over 20 million synthetic data and collected over 7,000 manually labeled data
- keywords: optical character recognition, synthetic data, data augmentation

AWARDS & HONORS

Awards

- Best Paper Award: Runner-up: Buildsys 2024, as a co-author, 2024
- Best Master's Thesis Award, National Taiwan University, 2020
- T-Brain AI Competition: AICUP 2021 Traditional Chinese Scene Text Recognition, 2nd Place, 2020

Honors

- Attended IPSN 2024 and serving as a poster presenter, 2024
- Attended ICIP 2023 and serving as a poster presenter, 2023
- Attended INTERSPEECH 2023 and serving as a poster presenter, 2023
- Serving as booth personnel at PyCon, 2023
- Deputy Chief Machine Learning Researcher in E.SUN FHC, 2022
- Technical Manager Assistant Machine Learning Researcher in E.SUN FHC, 2020
- Developer, working on the "AI Document Reader", Cinnamon AI, 2019

personal website