Yu-Wen Chen

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RESEARCH INTERESTS

Speech Processing, Natural Language Processing, Human-Computer Interaction, Digital Health, Multimodal Learning, Machine Learning

EDUCATION

National Taiwan University (NTU) **Taipei, Taiwan**

M.S.** in Electrical Engineering, Computer Science, **GPA: 4.11/4.3 **Sep 2017 - Jun 2019**

- Taiwan Evolutionary Intelligence Laboratory, Advisor: Prof. Tian-Li Yu
- Coursework: Artificial Intelligence, Computer Vision, Digital Speech Processing, Genetic Algorithms, Machine Learning, Natural Language Processing
- Master's thesis: 3D Facial Model Synthesis: Aid for Face Recognition
  - ♦ Researched on data augmentation for infrared light and 3D facial recognition.

National Cheng Kung University (NCKU) **Tainan, Taiwan**

B.S.** in Electrical Engineering, **GPA: 92.05/100, Class Rank: 2/37 **Sep 2013 - Jun 2017**

- **Outstanding student for the academic achievement in the school year 2013-2014, 2014-2015, 2015-2016**
- Coursework: Algorithm, Computer Networks, Computer Organization, Database, Data Structures, Data Mining, Image Processing, Operating System, Probability and Statistics, Software Engineering

WORK EXPERIENCE

Research Center for Information Technology Innovation, Academia Sinica

Research Assistant, Biomedical Acoustic Signal Processing Lab **Taipei, Taiwan**

- Principal Investigator: Prof. Yu Tsao **Feb 2020 - Present**
- Research Areas: Speech Enhancement, Speech Assessment, Speech Processing, Human-Computer Interaction, Multimodal Learning, Machine Learning

Industrial Technology Research Institute **Hsinchu County, Taiwan**

Intern, Electronic and Optoelectronic System Research Laboratories **Nov 2017 - Jun 2019**

- Research Areas: Computer Vision, Health Care Applications, Machine Learning

RESEARCH

- **EMA2S: An End-to-End Multimodal Articulatory-to-Speech System**

  Accepted by IEEE ISCAS 2021 as 1st author

  - Proposed an end-to-end multimodal articulatory-to-speech system that directly converts articulatory movements to speech signals. The results show that the proposed joint loss of spectrogram, mel-spectrogram, and the deep feature can effectively improve system performance.

- **A Study of Incorporating Articulatory Movement Information in Speech Enhancement**

  Accepted by EUSIPCO 2021 as 1st author

  - Proposed to use articulatory movements as additional features for speech enhancement. The results show that the usage of articulatory movements greatly enhanced the speech signal in both quality and intelligibility.

- **InQSS: A Speech Intelligibility Assessment Model Using a Multi-task Learning Network**

  Submitted to IEEE ICASSP 2022 as 1st author

  - Proposed an Intelligibility and Quality assessment model using Spectrogram and Scattering coefficients as input features and released a Chinese speech dataset that contains the quality and intelligibility scores of clean, noisy, and enhanced speech signals.

- **CITISEN: A Deep Learning-Based Speech Signal-Processing Mobile Application**
  Submitted to IEEE Access 2021 as 1st author
  - Developed a mobile app (CITISEN) that supports speech enhancement, background noise conversion, and model adaptation. The CITISEN can potentially serve as a front-end processor for various speech-related services.
- **Multi-Performance Estimation for Deploying Bank Branches Based on a Multi-task Attentive Tree-enhanced Model**
  Submitted to IEEE TETCI 2021 as 3rd author
  - Proposed a multi-task attentive tree-enhanced model for bank location recommendation. The model has been used to assist the banker in deploying optimal branch locations in several cities in Taiwan in 2020.

TERM PROJECTS

Graduate studies

- **Depth Map Generation on More Realistic Scenes**
  Computer Vision: from Recognition to Geometry ・Python
  - Used traditional and neural network-based approaches for stereo matching on real-world conditions.
- **Metric learning: Triplet-loss-based Autoencoder for Handwriting Recognition**
  Artificial Intelligence ・Python
  - Investigated and implemented a triplet-loss-based autoencoder for handwriting recognition.
- **Genetic Algorithm (GA) for Social Influence Maximization**
  Genetic Algorithms ・Python
  - Researched on simple GA and model building GA for the social influence maximization, which uses an independent cascade model and a linear threshold model.

Undergraduate studies

- **Exploration of Articles in PTT**
  Data Mining and Social Network Analysis ・Python
  - Used recurrent neural networks to predict the popularity of articles and data mining to analyze user behavior in a bulletin board system.
- **Restaurant Recommendation Chatbot**
  Database ・HTML/CSS, Python
  - Used NoSQL database for a restaurant recommendation chatbot. The chatbot will recommend restaurants based on the conditions given by users.
- **Mobile Monitoring Monster**
  Introduction to Software Engineering ・Java
  - Developed a mobile game that helps users monitor their usage habits of mobile apps. The game is a simulation game, and the monster in the game will grow based on the apps used by the users.
- **Video Recommendation System**
  Undergraduate Project for Computer and Communication ・HTML/CSS, Java
  - Designed an emoticon-based video recommendation system, which recommends according to users' current emotions.

SKILLS

- Programming: **Python, C++, Java**
- Toolkits/Software: **PyTorch, TensorFlow, Scikit-learn, OpenCV, NLTK, LaTeX**
- Language:
  - TOEFL iBT: 107 (R:28, L:29, S:24, W:26)