

Wen Huang

✉ wenhuangholvan@gmail.com 🏠 holvan.github.io 🎓 [google scholar](https://scholar.google.com/) 🐙 github.com/holvan [in](https://www.linkedin.com/) [linkedin](https://www.linkedin.com/)

Research Interests

Speech and Audio Signal Processing, Speech Synthesis, Speech Deepfake Detection, Audio Classification and Detection, Speaker Verification

Education

Shanghai Jiao Tong University

Shanghai, China

M.E. in Electronic and Information Engineering, GPA: 3.94/4.0

Sept. 2023 – Present

B.E. in Information Engineering, GPA: 3.85/4.0

Sept. 2019 – Jun. 2023

Relevant Coursework: Machine Learning, Deep Learning, Intelligent Speech Technology, Probability and Statistics, Linear Algebra, Mathematical Analysis, Graph Theory, Optimization, Numerical Analysis, Information Theory and Coding, Digital Signal Processing, Data Structure and Algorithm, Programming Languages Theory, Computer Organization and Architecture, Computer Networks, Cloud Computing, Parallel Data Processing

Research Experience

National Institute of Informatics

Tokyo, Japan

Research Intern, advised by Prof. Junichi Yamagishi

Oct. 2024 – Jan. 2025

Speech Deepfake Detection | *domain generalization*

- Proposed and validated sharpness as a diagnostic metric and implemented Sharpness-Aware Minimization (SAM) to enhance robustness in speech deepfake detection, achieving significant improvements in generalization across diverse models and unseen test sets.

Speech Trait Prediction | *subjective MOS modeling*

- Developed predictive models to estimate subjective MOS scores for 26 speech traits using listening test data, gaining experience in modeling subjective metrics and analyzing human evaluation data.

Ant Group

Shanghai, China

Research Intern in the Speech Algorithms Department

Jun. 2024 – Oct. 2024

Speech Deepfake Detection | *domain generalization, dataset construction*

- Enhanced the generalization ability of a speech deepfake detection system by applying refinement and augmentation strategies in the latent space, matching or surpassing state-of-the-art performance.
- Contributed to the development of SpeechFake, a large-scale multilingual speech deepfake dataset featuring 40 different speech generation methods.

AudioCC Lab, SJTU

Shanghai, China

Research Assistant, advised by Prof. Yanmin Qian

Jun. 2022 – Present

Audio Classification and Detection | *data-efficient, semi- and self-supervised learning*

- Implemented large-scale pre-trained speech and audio models to enhance anomaly sound detection tasks, diverging from conventional reconstruction-based methods for improved detection accuracy.
- Investigated semi-supervised strategies and adaptation techniques for acoustic scene classification to address challenges associated with label scarcity and domain shift.
- Developed a data-efficient and low-complexity acoustic scene classification system utilizing knowledge distillation, progressive pruning, and reparameterization techniques.

Speaker Verification | *self-supervised learning, domain adaptation and generalization*

- Explored self-supervised contrastive learning methods for speaker verification tasks, enhancing system performance with limited labeled data to achieve parity with fully supervised systems.
- Proposed and developed an unsupervised domain adaptation framework using prototype-level and instance-level contrastive learning strategy for speaker verification, yielding consistent improvements across various domain adaptation scenarios.
- Designed a domain-specific adaptable module to mitigate domain variances and thus bolster the performance of speaker verification systems in multi-domain environments.

Selected Publications

- Generalizable Audio Deepfake Detection via Latent Space Refinement and Augmentation.
W. Huang, Y. Gu, Z. Wang, H. Zhu, Y. Qian. accepted to ICASSP2025 [\[paper\]](#)
- Data-Efficient Low-Complexity Acoustic Scene Classification via Distilling and Progressive Pruning.
B. Han, W. Huang, Z. Chen, A. Jiang et al. accepted to ICASSP2025 [\[paper\]](#)
- Unified Audio Event Detection.
Y. Jiang, R. Tao, W. Huang, Q. Chen, W. Wang. accepted to ICASSP2025 [\[paper\]](#)
- Prototype and Instance Contrastive Learning for Unsupervised Domain Adaptation in Speaker Verification.
W. Huang, B. Han, Z. Chen, S. Wang, Y. Qian. in ISCSLP2024 [\[paper\]](#)
- Robust Cross-Domain Speaker Verification with Multi-Level Domain Adapters.
W. Huang, B. Han, S. Wang, Z. Chen and Y. Qian. in ICASSP2024 [\[paper\]](#)
- Exploring Large Scale Pre-Trained Models for Robust Machine Anomalous Sound Detection.
B. Han, Z. Lv, A. Jiang, W. Huang, Z. Chen, Y. Deng et al. in ICASSP2024 [\[paper\]](#)
- Semi-Supervised Acoustic Scene Classification with Test-Time Adaptation.
W. Huang, A. Jiang, B. Han, X. Zheng, Y. Qiu et al. in ICME2024W [\[paper\]](#)
- Improving Dino-Based Self-Supervised Speaker Verification with Progressive Cluster-Aware Training
B. Han, W. Huang, Z. Chen, and Y. Qian. in ICASSPW2023 [\[paper\]](#)

Challenges

First Place, DCASE2024 Task1: Data-Efficient Low-Complexity Acoustic Scene Classification	2024
Second & Third Place, ICME2024 Acoustic Scene Classification Grand Challenge	2024

Honors and Awards

Dean's Scholarship of the SJTU Paris Elite Institute of Technology	2024
ISCSLP 2024 Best Student Paper Award	2024
ICASSP 2024 IEEE SPS Travel Grant	2024
Outstanding Graduates in Shanghai Jiao Tong University	2023
Huatai Securities Science & Technology Scholarship	2022
SJTU Paris Elite Institute of Technology Academic Second-class Scholarship	2021
A Class Scholarship in Shanghai Jiao Tong University	2020

Professional Affiliations

Institute of Electrical and Electronics Engineers (IEEE)	Graduate Student Member
IEEE Signal Processing Society	Member
IEEE Women In Engineering	Member

Programming Skills

Languages: C/C++, Python, Java, JavaScript, Matlab

Tools: Git/GitHub, Linux/Unix Shell, Docker, AWS

Frameworks: Pytorch, Tensorflow

Teaching Experience

Teaching Assistant, <i>English Speech and Techniques</i> , SJTU	2024
Teaching Assistant, <i>Practical English for Going Abroad</i> , SJTU	2024

Additional Activities

Volunteer at Shanghai Metro Stations	2023-2024
Head of Design Department, Volunteer Corps, SJTU	2020-2021
Volunteer at Shanghai K-11 Art Museum	2019-2020