YUANBO HOU ✉ YUANBO.HOU@ENG.OX.AC.UK

Homepage   Google Scholar   ResearchGate

Post-doctoral Researcher, University of Oxford, UK.

RESEARCH INTERESTS

Advancing machine listening: understanding acoustic scenes and events and the emotions they evoke.
Topics include: computational auditory scene analysis, environmental sound detection and affective computing, audio-visual scene and event recognition, bioacoustic monitoring and analysis, LLM-based automated soundscape affective analysis, and enhancing robot intelligibility through sounds.

ACADEMIC APPOINTMENTS

Post-doctoral Researcher in the Machine Learning Research Group   Dec. 2024 — Present
Department of Engineering Science, University of Oxford, UK
Supervisor: Prof. Stephen Roberts (Engineering), Prof. Kathy Willis (Biology)

Post-doctoral Researcher   Oct. 2024 — Dec. 2024
WAVES Research Group, FEA, Ghent University, Belgium
Supervisor: Prof. Dick Botteldooren

Honorary Research Assistant   Nov. 2022 — Mar. 2023
The Bartlett School of Environment, Energy and Resources, University College London (UCL), UK
Supervisor: Prof. Jian Kang

EDUCATION

Full scholarship Ph.D. in Computer Science Engineering   Oct. 2020 — Sep. 2024
WAVES Research Group, Faculty of Engineering and Architecture (FEA), Ghent University, Belgium
Supervisor: Prof. Dick Botteldooren

Master of Electronics Science and Technology   Sept. 2016 — Jun. 2020
Beijing University of Posts and Telecommunications (BUPT), China   *Supervisor:* Prof. Shengchen Li, Prof. Ming Liu

AWARDS & SCHOLARSHIPS

- Doctor of Computer Science Engineering, Ghent University, Belgium   Sept. 2024
- **Chinese Government Award for Outstanding Self-financed Students Abroad**   July. 2024
  (Recipients are chosen worldwide among all Chinese overseas graduate students for their outstanding accomplishments in academia; only up to 600 are awarded each year.)
- **China National Scholarship**   Oct. 2014
- BUPT Honorary Scholarship   Feb. 2019
- BUPT Scholarship for Postgraduate Studies   Oct. 2016; Oct. 2017; Oct. 2018

TEACHING & SUPERVISION

Teaching Assistant
Department of Computer Science, University of Oxford, Oxford, UK   2025

Course: Uncertainty in Deep Learning.
Responsibilities: marking individual course projects.

Supervisor & counsellor
1. **Master's thesis**: Machine Learning to Detect Invasive Species.   2025
   Department of Computer Science, University of Oxford, Oxford, UK

2. **Master's thesis**: Enhancing Environmental Sound Classification and Dataset Annotation Through Geospatial Data Analysis with Large Language Models.   2024
   Master of Science in Computer Science, Ghent University, Belgium
3. **Master's thesis**: Audio-based Environmental Monitoring for Edge Devices.   2024
   Master of Information Engineering Technology, Ghent University, Belgium

Professional Experience (Industry internships)

Research intern at Speech Research Group, Supervisor: Prof. Frank K. Soong   Jul. 2018 – Jun. 2019
Microsoft Research Asia (MSRA)   *Beijing, China*
- Singing voice detection for XiaoIce AI
- 1 patent (OBTAINING A SINGING VOICE DETECTION MODEL, patent ID: CN112309428A) + INTERSPEECH 2020 paper

Research intern at Music Research Group, Supervisor: Dr. Bilei Zhu   Nov. 2019 – Oct. 2020
ByteDance AI Lab   *Shanghai, China*
- Audio-visual singing voice detection in live musical streams This internship explores the feasibility of in live video streams.
- ICASSP 2021 + INTERSPEECH 2021 papers

Selected Publications   [Google Scholar]

Journals
1. **IEEE Transactions on Multimedia (IEEE TMM)**
   Y. Hou, Q. Ren, A. Mitchell, W. Wang, J. Kang, T. Belpaeme, D. Botteldooren, "Soundscape captioning using sound affective quality network and large language model".
2. **IEEE/ACM transactions on audio, speech, and language processing (IEEE/ACM TASLP)**
   Y. Hou, B Kang, A Mitchell, W Wang, J Kang, D Botteldooren, "Cooperative Scene-Event Modelling for Acoustic Scene Classification".
3. **IEEE Signal Processing Letters (IEEE SPL)**
   Y. Hou, S Song, C Yu, W Wang, D Botteldooren, "Audio Event-Relational Graph Representation Learning for Acoustic Scene Classification".
4. **The Journal of the Acoustical Society of America (JASA)**
   Y. Hou, Q Ren, H Zhang, A Mitchell, F Aletta, J Kang, D Botteldooren, "AI-based soundscape analysis: Jointly identifying sound sources and predicting annoyance".
5. **IEEE Robotics and Automation Letters (IEEE RA-L)**
   Q Ren, **Y. Hou**, D Botteldooren, T Belpaeme, "No More Mumbles: Enhancing Robot Intelligibility Through Speech Adaptation".
6. **IEEE Signal Processing Letters (IEEE SPL)**
   Z Liu, **Y. Hou**, W. Wang, S. Michiels, D. Hughes, "SCAN: Selective Contrastive Learning Against Noisy Data for Acoustic Anomaly Detection".
7. **Sensors**:   Q Ren, **Y. Hou**, D Botteldooren, T Belpaeme, "Behavioural Models of Risk-Taking in Human–Robot Tactile Interactions".
8. **Applied Acoustics**:   J. Xie, J. Kang, Z. Zhao, **Y. Hou**, "Effects of audiovisual information and its perception on the sense of culture in everyday heritage"
9. **Poultry Science**:   P. Soster, T. Grzywalski, **Y. Hou**, P. Thomas, A. Dedeurwaerder, M. Gussem, F. Tuyttens, P. Devos, D. Botteldooren, G. Antonissen, "Automated detection of broiler vocalizations a machine learning approach for broiler chicken vocalization monitoring"

Conferences
1. **IEEE ICASSP 2025**:   **Y. Hou**, Q Ren, Y Song, W Wang, & D. Botteldooren, "Sound-Based Recognition of Touch Gestures and Emotions for Enhanced Human-Robot Interaction".
2. **IEEE ICASSP 2024**:   **Y. Hou**, Q Ren, S Song, Y Song, W Wang, & D. Botteldooren, "Multi-level graph learning for audio event classification and human-perceived annoyance rating prediction".

3. **AAAI 2024:**   Q Lin, C Luo, Z Niu, X He, W Xie, **Y. Hou**, L Shen, S Song, "Boosting Adversarial Transferability across Model Genus by Deformation-Constrained Warping".
4. **IEEE ICASSP 2023:**   **Y. Hou**, Y. Wang, W. Wang, D. Botteldooren, "GCT: Gated Contextual Transformer for Sequential Audio Tagging".
5. **INTERSPEECH 2023:**   **Y. Hou**, S Song, C Luo, A Mitchell, Q Ren, W Xie, J Kang, W Wang, D. Botteldooren, "Joint Prediction of Audio Event and Annoyance Rating in an Urban Soundscape by Hierarchical Graph Representation Learning".
6. **ACM/IEEE HRI 2023:**   Q Ren, **Y. Hou**, T. Belpaeme, "Low-latency Classification of Social Haptic Gestures Using Transformers".
7. **ICONIP 2023:**   Z Liu, **Y. Hou**, H Tang, Á López-Chilet, S Michiels, D Botteldooren, "CLF-AIAD: A Contrastive Learning Framework for Acoustic Industrial Anomaly Detection".
8. **IEEE MMSP 2022:**   **Y. Hou**, B. Kang & D. Botteldooren, "Audio-visual scene classification via contrastive event-object alignment and semantic-based fusion".
9. **INTERSPEECH 2022:**   **Y. Hou**, Z. Liu, B. Kang, Y. Wang & D. Botteldooren, "CT-SAT: Contextual Transformer for Sequential Audio Tagging".
10. **INTERSPEECH 2022:**   **Y. Hou**, & D. Botteldooren, "Event-related data conditioning for acoustic event classification".
11. **IJCNN 2022:**   **Y. Hou**, B. Kang, W. Hauwermeiren, & D. Botteldooren, "Relation-guided acoustic scene classification aided with event embeddings".
12. **IEEE ICASSP 2021:**   **Y. Hou**, Y. Deng, B. Zhu, Z. Ma, & D. Botteldooren, "Rule-embedded network for audio-visual voice activity detection in live musical video streams".
13. **INTERSPEECH 2021:** **Y. Hou**, Z. Yu, X. Liang, X. Du, B. Zhu, Z. Ma, & D. Botteldooren, "Attention-based cross-modal fusion for audio-visual voice activity detection in musical video streams".

Academic Services

Journal reviewer
- IEEE/ACM Transactions on Audio Speech and Language Processing (TASLP)
- EURASIP Journal on Audio, Speech, and Music Processing (JASM)
- IEEE Internet of Things Journal (IoT)
- IEEE Transactions on Systems, Man, and Cybernetics: Systems (SMC: Systems)
- Journal of the Acoustical Society of America (JASA)
- Computers, Environment and Urban Systems (CEUS)
- Signal, Image and Video Processing

Conference reviewer
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
- Conference of the International Speech Communication Association (INTERSPEECH)
- IEEE International Workshop on Machine Learning for Signal Processing (MLSP)
- IEEE International Joint Conference on Neural Networks (IJCNN)
- IEEE Conference on Artificial Intelligence (IEEE CAI)
- International Conference on Neural Information Processing (ICONIP)
- ACII Workshop on Affective Human-Robot Interaction (AHRI)
- National Conference on Man-Machine Speech Communication (NCMSC)

Invited Talks

1. Topic: **Deep learning-based Soundscape research and analysis**   Dec. 2024
   Organizer: Harbin Institute of Technology, Shenzhen, China

2. Topic: **Understanding Acoustic Scenes and Events and the Emotions They Evoke**   Oct. 2024
   Organizer: China Electronic Audio Industry Association

INTERVIEW

1. Unlocking the World of Sounds: Machines that Hear and Feel
   Ghent University   Dec. 2024

2. **Chinese Government Award for Outstanding Self-financed Students Abroad (A Category)**
   Education Section of the Embassy of the People's Republic of China in the Kingdom of Belgium
   Sept. 2024