Yuanbo Hou Yuanbo.Hou@UGent.be
Full Scholarship Ph.D. Student, Ghent University

SCAN ME

Research Interests

Advancing machine listening: understanding acoustic scenes and events and the emotions they evoke. My research topics include environmental sound event detection, real-life audio-visual scene recognition, audio-visual singing voice detection, and sound-related affective computing.

Professional Experience

Research intern at Speech Research Group, Supervisor: Prof. Frank K. Soong Jul. 2018 – Jun. 2019
Microsoft Research Asia (MSRA) *Beijing, China*

- Microsoft XiaoIce is an AI system that loves to sing. To better interact with users, XiaoIce needs to evaluate people's songs and understand real-life acoustic scenes. My research aims to detect the endpoints of singing voice in polyphonic songs.
- Outcomes: one patent copyrighted by Microsoft (OBTAINING A SINGING VOICE DETECTION MODEL, patent ID: CN112309428A), and one paper accepted by INTERSPEECH 2020.

Research intern at Music Research Group, Supervisor: Dr. Bilei Zhu Nov. 2019 – Oct. 2020
ByteDance AI Lab *Shanghai, China*

- In live musical streams, an anchor is a person who speaks to the audience or sings in front of the camera, and plays other music at the same time. This internship aims to exploring the feasibility of audio-visual singing voice detection in live video streams.
- Outcomes: one paper accepted by ICASSP 2021, and another paper accepted by INTERSPEECH 2021.

Education

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

Ph.D. student in Computer Science Engineering Oct. 2020 — present
WAVES Research Group, Faculty of Engineering and Architecture, Ghent University, Belgium
Supervisor: Prof. Dick Botteldooren

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

Award

- China National Scholarship Oct. 2014
- BUPT Honorary Scholarship Feb. 2019
- BUPT Scholarship for Postgraduate Studies Oct. 2016; Oct. 2017; Oct. 2018

Publications

Journal

1. **IEEE TASLP**: **Y. Hou**, B Kang, A Mitchell, W Wang, J Kang, D Botteldooren, "Cooperative Scene-Event Modelling for Acoustic Scene Classification".
2. **IEEE SPL**: **Y. Hou**, S Song, C Yu, W Wang, D Botteldooren, "Audio Event-Relational Graph Representation Learning for Acoustic Scene Classification".

3. **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”.
4. **JASA**: A. Mitchell, E. Brown, R. Deo, **Y. Hou**, “Deep learning techniques for noise annoyance detection: Results from an intensive workshop at the Alan Turing Institute”.
5. **Sensors**: Q Ren, **Y. Hou**, D Botteldooren, T Belpaeme, “Behavioural Models of Risk-Taking in Human–Robot Tactile Interactions”.
6. **Applied Acoustics**: A. Talebzadeh, D. Botteldooren, T. Van Renterghem, P. Thomas, D. Van de Velde, P. De Vriendt, **Y. Hou**, P. Devos, “Sound augmentation for people with dementia: Soundscape evaluation based on sound labelling”.

Selected Conference

1. **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”.
2. **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”.
3. **IEEE ICASSP 2023**: **Y. Hou**, Y. Wang, W. Wang, D. Botteldooren, “GCT: Gated Contextual Transformer for Sequential Audio Tagging”.
4. **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”.
5. **ACM/IEEE HRI 2023**: Q Ren, **Y. Hou**, T. Belpaeme, “Low-latency Classification of Social Haptic Gestures Using Transformers”.
6. **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”.
7. **IEEE MMSP 2022**: **Y. Hou**, B. Kang & D. Botteldooren, “Audio-visual scene classification via contrastive event-object alignment and semantic-based fusion”.
8. **INTERSPEECH 2022**: **Y. Hou**, Z. Liu, B. Kang, Y. Wang & D. Botteldooren, “CT-SAT: Contextual Transformer for Sequential Audio Tagging”.
9. **INTERSPEECH 2022**: **Y. Hou**, & D. Botteldooren, “Event-related data conditioning for acoustic event classification”.
10. **IJCNN 2022**: **Y. Hou**, B. Kang, W. Hauwermeiren, & D. Botteldooren, “Relation-guided acoustic scene classification aided with event embeddings”.
11. **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”.
12. **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”.

REVIEWER

- IEEE/ACM Transactions on Audio Speech and Language Processing (TASLP)
- IEEE Transactions on Systems, Man, and Cybernetics: Systems (SMC: Systems)
- Journal of the Acoustical Society of America (JASA)
- 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)