Zhao Shuyang

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EDUCATION

- **Ph.D. in Signal Processing**   **2015 - Present**
  University of Tampere
  Supervisor: Prof. Tuomas Virtanen

- **M.Sc. in Signal Processing**   **2010 - 2014**
  Tampere University of Technology (merged with Tampere University)
  Cumulative GPA: 4.03
  Supervisors: Prof. Tuomas Virtanen
  Curriculum: Speech recognition, Digital linear filtering,
                                      Pattern recognition, Digital image processing
                                      Algorithm analysis, Utilization of data structure

- **B.Sc. in Biomedical Engineering**   **2005 - 2009**
  Huazhong University of Science and Technology
  Curriculum: Introduction to the design of biomedical instruments,
                                      Signal and system, Biomedical image processing,
                                      Probability and Statistics, Programming in C

On-campus working positions

- **Researcher**   **June 2014 - Present**
- **Research Assistant**   **April 2013 – June 2014**

Research area and activities

- **Sound event detection:** Sound event detection is an emerging research field, which aims at automatically identifying sound events such as door closing and baby cry in audio signals. It has applications including environmental noise monitoring audio surveillance. Our research group has worldwide leading reputation in this field, organizing Detection and Classification of Acoustic Scene and Events (DCASE) challenge since 2013. In our research group, I have been conducting research in the field of sound event detection, and I have publications in top academic journals and conference proceedings in the field of audio signal processing. The main topic of my study is active learning for sound event detection.

- **Active learning:** Active learning is a special case of machine learning, where the learning algorithm is allowed to choose the data from which it learns. In most cases, active learning targets the situation where unlabeled data is abundant, but the amount of annotations that can be done is limited. This Is a typical situation when learning acoustic models from large-scale real-life recordings. A large amount of annotation effort can be saved by selecting the data most capable of improving the model performance.

- **Collaborative projects:** In addition to my own research topic, I have been working on a few collaborative Projects with partners including VTT, Nokia, and DSP Group. The main content of the projects is to develop prototype of sound event detection applications.

PUBLICATIONS

- **Conference Papers:**

    o **Active learning for sound event classification by clustering unlabeled data**
    Zhao S., T. Heittola, T. Virtanen

    IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP),
    New Orleans, pp. 751-755, doi: 10.1109/ICASSP.2017.7952256, 2017

    o **Learning vocal mode classifiers from heterogeneous data sources**

    Zhao S., T. Heittola, T. Virtanen

    IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA),
    New Paltz, pp. 16-20, doi: 10.1109/WASPAA.2017.8169986.2017, 2017

    o **An active learning method using clustering and committee-based sample selection
    for sound event classification**

    Zhao S., T. Heittola, T. Virtanen

    16th International Workshop on Acoustic Signal Enhancement (IWAENC),
    Tokyo, pp. 116-120, doi: 10.1109/IWAENC.2018.8521336, 2018

- **Journal Papers:**

    o **Active Learning for Sound Event Detection**
    Zhao S., T. Heittola, T. Virtanen

    IEEE/ACM Transactions on Audio, Speech, and Language Processing, vol. 28, pp. 2895-2905,
    , doi: 10.1109/TASLP.2020.3029652, 2020

    o **Environmental noise monitoring using source classification in sensors**
    Panu M., Zhao S., T. Heittola, T. Virtanen
    Applied Acoustics, volume 129, pp. 258-267, 2018

Others

- Graduation with distinction award with master degree
- Best student paper finalist in ICASSP 2017
- Peer-reviewer in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2020,
  Singal Processing Letters (SPL), and European Signal Processing Conference (Eusipco) 2021