Parthasaarathy Sudarsanam

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Education

Tampere University — Tampere, Finland
Doctoral Reseacrher — *Sep. 2023 – Present*

Tampere University — Tampere, Finland
Master of Science in Machine Learning — *Aug. 2020 – Jan 2023*

Anna University, Madras Institute of Technology — Chennai, India
Bachelor of Engineering in Electronics and Communication — *Aug. 2013 – May 2017*

Work Experience

Graduate research assistant — June 2021 – Aug 2023
Tampere University — *Tampere, Finland*

- Involved in data collection and organization of sound event localization and detection challenge in DCASE 2022.
- Developed machine learning models and dataset for audio question answering.

Senior software engineer - Deep learning — Aug 2017 – July 2020
Sony India Software Center — *Bangalore, India*

- Research engineer in auditory intelligence, worked in collaboration with the Audio Technology Department of Sony Corporation, Tokyo.
- Research domains include speech source separation, voice conversion, and music source separation.

RECENT PUBLICATIONS

1. *K. Shimada, A. Politis, P. Sudarsanam et al.,* **STARSS23: An audio-visual dataset of spatial recordings of real scenes with spatiotemporal annotations of sound events,** in Advances in Neural Information Processing Systems (NeurIPS), 2024.

2. *P. Sudarsanam, and T. Virtanen,* **Attention-Based Methods For Audio Question Answering,** in 30^{th} European Signal Processing Conference (EUSIPCO), 2023.

3. *S. Lipping, P. Sudarsanam, K. Drossos, and T. Virtanen,* **Clotho-AQA: A Crowdsourced Dataset for Audio Question Answering,** in 30^{th} European Signal Processing Conference (EUSIPCO), 2022.

4. *P. Sudarsanam, A. Politis, and K. Drossos,* **Assessment of self-attention on learned features for sound event localization and detection,** in 6^{th} workshop on Detection and Classification of Acoustic Scenes and Events (DCASE), 2021.

5. *N. Takahashi, M. K. Singh, S. Basak, P. Sudarsanam, Y. Mitsufuji, and S. Ganapathy,* **Improving Voice Separation by Incorporating End-to-end Speech Recognition,** in 45^{th} International Conference on Acoustics, Speech, & Signal Processing (ICASSP), 2020.

6. *N. Takahashi, P. Sudarsanam, N. Goswami, and Y. Mitsufuji,* **Recursive speech separation for unknown number of speakers,** in Interspeech, 2019.

Technical Skills

Languages: Python, C/C++, Matlab.
Frameworks: PyTorch, Tensorflow, Keras.
Developer Tools: Git, Pycharm, Visual studio.

Projects

Smart Camera using AI

- Developed a prototype of an intelligent camera that analyzes scenes and clicks photos automatically.
- Pre-trained object detection and image captioning models were used for scene analysis.
- It can automatically detect and click birthday parties, playing with pets, marriages, etc.

Selective active noise cancellation using deep learning

- Developed a prototype for noise-canceling headphones to selectively cancel ambient noise sources while allowing important sounds like sirens, fire alarms, etc, to pass through.
- The audio detection model was trained on Google's Audioset dataset.