Soumitro **Chakrabarty**

Technical Lead · Research Scientist

Erlanger Str. 47, 90765 Fürth, Germany

(+49) 9131-776-6256 | soumitro.manipal@gmail.com | soumitrochak.netlify.com | soumitrochak | Soumitro Chakrabarty

Education

Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) — *Erlangen, Germany*

PhD. — *2013 - 2019*

- **PhD. Thesis**: Robust Direction-of-Arrival Estimation and Spatial Filtering in Noisy and Reverberant Environments.
- **Supervisor**: Prof. dr. ir. Emanuël A. P. Habets

Ecole Polytechnique Federale de Lausanne (EPFL) — *Lausanne, Switzerland*

M.Sc. in Computer Science — *2010 - 2013*

- **M.Sc. Thesis**: Automatic Positioning of Virtual Microphone in Multi-Speaker Acoustic Environments.
- **Supervisors**: Dr. Konrad Kowalczyk, Prof. dr. ir. Emanuël A. P. Habets

Manipal Institute of Technology — *Manipal, India*

B.E. in Electronics and Communication Engineering — *2006 - 2010*

Experience

Fraunhofer IIS — *Erlangen, Germany*

Technical Lead & Research Scientist — *Jan. 2019 - present*

- Lead the development of a deep learning based solution for single-channel speech enhancement capable of running on portable battery-powered embedded devices that is now part of upHear®VQE, a product offering from Fraunhofer IIS.
- Technical Lead for all Machine-learning for Acoustic Front-ends (ML-AFE) projects.
- Technical project manger for all publicly-funded projects with Communication Acoustics Group at Fraunhofer IIS.
- Research consultant for signal processing based R&D projects within Communication Acoustics group.
- 2 patent applications submitted. 1 patent application in preparation.

Perception and Neurodynamics Laboratory (PNL), Ohio State University — *Columbus, Ohio, USA*

Visiting Researcher | **Supervisor:** Prof. DeLiang Wang — *Oct. 2017 - Dec. 2017*

- Research work on multi-channel speech enhancement using deep learning based time-frequency masking.
- Lead to a conference publication, presented at IWAENC 2018.

International Audio Laboratories Erlangen — *Erlangen, Germany*

Research and Teaching Assistant — *Oct. 2013 - Dec. 2018*

- Research work on parametric spatial filtering and deep learning based direction estimation and capture of sound sources in adverse acoustic environments.
- 5 journal and 10 conference publications.
- Tutor for Speech Enhancement course and Audio Processing Lab (both Graduate Level courses)

Fraunhofer IIS — *Erlangen, Germany*

Research Intern — *Apr. 2013 - Oct. 2013*

- Research work on sound source localization and tracking of non-concurrent sources in reverberant and noisy environments.
- Lead to a conference publication, presented at ICASSP 2014

Technicolor SA — *Hannover, Germany*

Intern — *Feb. 2012 - Aug. 2012*

- Developed a user-interface for Higher order ambisonics(HOA) processing with the Eigenmike,a spherical microphone array

Honors & Awards

2017	**Best Student Paper Award,** IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)	*New Paltz, U.S.A*
2017	**IEEE Student Travel Grant,** IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)	*New Paltz, U.S.A*
2016	**Best Student Paper - Finalist,** IEEE Workshop on Acoustic Signal Enhancement (IWAENC)	*Xian, China*

Recent Publications (Full list: Google Scholar)

New insights on target speaker extraction

M. Elminshawi, W. Mack, **S. Chakrabarty** and E. A. P. Habets *2022*

arXiv preprint arXiv:2202.00733

An Empirical Study of Visual Features for DNN Based Audio-Visual Speech Enhancement in Multi-Talker Environments

S. Saha Shetu, **S. Chakrabarty** and E. A. P. Habets *2021*

IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)

Signal-aware broadband DOA estimation using attention mechanisms

W. Mack, U. Bharadwaj, **S. Chakrabarty** and E. A. P. Habets *2020*

IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)

Time-Frequency Masking Based Online Multi-Channel Speech Enhancement with Convolutional Recurrent Neural Networks

S. Chakrabarty and E. A. P. Habets *2019*

IEEE Journal on Selected Topics in Signal Processing

Multi-Speaker DOA Estimation Using Deep Convolutional Networks Trained with Noise Signals

S. Chakrabarty and E. A. P. Habets *2019*

IEEE Journal on Selected Topics in Signal Processing

Skills

Programming Python (Advanced), MATLAB (Advanced)

Frameworks Pytorch, Keras, Tensorflow

Languages English (Proficient), German (Basic), Hindi (Native), Bangla (Mother Tongue)

Academic Activities

Topic Editor Frontiers in Signal Processing: Advances in Speech Enhancement using Audio Signal Processing Techniques

Reviewer

Journals: IEEE/ACM Tansacations on Audio, Speech and Language Processing, IEEE Transactions on Aerospace and Electronic Systems, IEEE Signal Processing Letters, Journal of Acoustic Society of America, IEEE Journal of Selected Topics in Signal Processing

Conferences: ICASSP, Interspeech, EUSIPCO, IWAENC