
EDUCATION

- **Fraunhofer IIS and University of Erlangen-Nürnberg** Germany
PhD/ Dr.-Ing. (Summa cum laude / Primi Ordinis) 2019
 - **PhD Thesis:** “Separation and Count Estimation for Audio Sources Overlapping in Time and Frequency”, International Audio Laboratories Erlangen, Examiners: Prof. Dr.-Ing. Bernd Edler (AudioLabs), Prof. Gaël Richard PhD. (ParisTech)
- **University of Hannover** Germany
Diplom Ingenieur/Master of Science in Electrical Engineering. 2012
 - **Master thesis:** “Low Delay Error Concealment for Audio signals”, Institute for Information Processing, Examiner: Prof. Dr.-Ing Jörn Ostermann.
 - **Study Project/Bachelor Thesis:** “Image Segmentation Using Graph-Cuts”, Institute for Information Processing in Hannover, Examiner: Prof. Dr. Bodo Rosenhahn.

EXPERIENCE

- **Audioshake.ai** San Francisco, USA
Head of Research Present
 - **State-of-the-art machine learning models:** Leading team on music separation, audio tagging, automatic transcription.
- **Sony Europe, Sony Japan** Summer 2021
Visiting Researcher
 - **Self-supervised learning:** Representation learning for audio. Submission to HEAR challenge.
 - **Workshop Chairing:** Organization and chairing of Music Demixing Challenge (MDX) and Workshop.
- **Inria and LIRMM** Montpellier, France
Postdoctoral Researcher / Research Engineer 2017 - 2021
 - **Kamoulox Project (French ANR):** Research on AI based audio restoration techniques on big data.
 - **COS4CLOUD/Pl@ntNet (EU Horizon 2020):** Large scale computer vision research on biodiversity data.
- **International Audio Laboratories Erlangen** Erlangen, Germany
Research and Teaching Assistant 2012 - 2017
 - **Research Interests:** audio signal processing, machine learning and deep learning, signal representations, auditory filter banks and modulations, perceptual evaluation for music and speech, speaker count estimation.
 - **Teaching:** *Seminars:* Reproducible Audio Research Seminar. *Courses:* Statistical Methods for Audio Experiments in R and Python (2013-2016)
- **Dolby Inc.** Nuremberg, Germany
Engineering Intern: Testing and Productization, Professional Licensing 2011
- **FAROIT.COM** Germany
Entrepreneurship: Web Services for various PR-companies, private banks and marketing companies. 2001 - 2014

FULLY SUPERVISION OF STUDENTS AND EARLY-STAGE RESEARCHERS

- **Laura Ibáñez Martínez:** Master Student, Co-Supervision: Master thesis Generative Audio, Summer 2023
- **Johannes Imort:** Master student, RWTH Aachen (Germany), Internship on activity detection. Winter 2022
- **Yeong-Seok Jeong, Jinsung Kim:** Master students, Korea University, Internship on unsupervised music separation (Summer 2022)
- **Michael Tänzler:** PhD student, Fraunhofer IDMT, Germany, Internship on audio tagging (Summer 2021)
- **Lucas Mathieu:** Master student, AgroParistech (France), Master thesis “Listening to the Wild” (03/2020)
- **Clara Jacintho, Delton Vaz:** Bachelor, PolyTech Montpellier (France), Research Project, “Machine Learning for Audio on the Web” (12/2019)
- **Wolfgang Mack:** Master student, University of Erlangen-Nuremberg (Germany), Master thesis “Investigations on Speaker Separation using Embeddings obtained by Deep Learning” (05/2017)
- **Nils Werner:** Master student, University of Erlangen-Nuremberg (Germany), Master thesis titled “Parameter Estimation for Time-Varying Harmonic Audio Signals” (02/2014)

- **Jeremy Hunt:** DAAD funded Scholarship, Rice University (USA), Research Internship, “Fast implementation of ND Non-Negative-Tensor Factorisation” (04/2016)
- **Erik Johnson:** DAAD funded Scholarship, Carleton University (Canada), Research Internship, “Open-Source Implementation of Multichannel BSSEval in Python” (03/2014)
- **Berkan Ercan:** Master student, Bilkent University (Turkey), Master thesis “Music Instrument Source Separation” (03/2013)

ACADEMIC RESOURCES AND CHALLENGES

- **Chair: 2023 Music Demixing Challenge** in collaboration with Sony Inc. Japan. Challenge targeted machine learning researchers and was hosted on AICrowd. Challenge received over 1500 submissions.
- **Task Leader: Professionally Produced Music Demixing** for SiSEC (Signal Separation Evaluation Campaign) 2016 and 2018) SiSEC is the reference international challenge for signal processing researchers to benchmark their methods.
- **Task co-chair: BirdCLEF challenge** since 2019, happening in the context of the CLEF conference and the SIGIR.
- **Co-Organizer: LifeClef challenge** since 2020, happening in the context of the CLEF conference and the SIGIR.
- **Principal coordinator: sigsep**, (<https://sigsep.github.io/>), a popular resource for researchers in source separation. It comprises one of the most popular music datasets in academia – MUSDB18 – as well as many software tools and teaching resources.

EDITING AND CHAIRING

- **Technology-Chair:** International Conference on Music Information Retrieval (ISMIR 21)
- **Program Chair and General Co-Chair:** “2021 and 2023 Music Demixing Workshop”: <https://sdx-workshop.github.io> with over 300 participants
- **Topic Editor:** Audio Machine Learning for the “Journal of Open Source Software”

REVIEWING

- **Journals:** “EURASIP” and “Journal of Open Source Software”.
- **Conferences:** EUSIPCO, ISMIR

INTERNATIONAL COLLABORATIONS

- **Simon Chamaille-Jammes:** (CNRS, France, Team Leader). Biodiversity research in ecoacoustics of wild mammals.’
- **Zafar Rafii:** (Audible Magic, USA, senior scientist). Community service for researchers working on audio source separation.
- **Roland Badeau:** (Telecom Paris, France, prof.). Probabilistic models for signal processing.
- **Antoine Liutkus:** (Inria, France, CRCN). Probabilistic models for signal processing and optimal transport, leading to the conference papers.
- **Mark Plumbley:** (Univ. Surrey, UK, prof.). Perceptual evaluation for large scale audio processing.
- **Yuki Mitsufuji:** (Sony, Japan, Deputy manager of science). Baseline system for music demixing and international challenge.

GRADUATE PROGRAMS

I gave over 120 hours of classes between 2014 and 2016 in the, divided into practical work on computers and tutorials. I also taught distinct subjects in computer science and signal processing:

- **Guest Lecture (2h):** 2021, “Music Source Separation”, class by Meinard Müller and Emanuel Habets, University of Erlangen-Nürnberg, Germany
- **Introduction to Deep Learning (6h):** 2018, 2019, Master 2, PolyTech Montpellier
- **Reproducible Audio Research Seminar (12h):** (2016), international master in signal processing, University of Erlangen (Germany)
- **Statistical Methods for Audio Experiments:** 2013-2016, (60h), international master in signal processing, University of Erlangen (Germany).

SELECTED INVITED TALKS/TUTORIALS/SUMMER SCHOOLS

- **Invited Talk (1h) at AES Virtual Symposium: Applications of Machine Learning in Audio:** ”Current Trends in Audio Source Separation”. (Video)
- **Tutorial (3h):** »Music Separation with DNNs: Making It Work«, ISMIR, 2018 (Paris, September 4th, 2018)
- **Invited Talk (1h):** »Deep Learning for Music Unmixing«, Deep Learning: from theory to applications, Technicolor (Rennes, September 23th, 2018)

PRIZES/AWARDS/PRESS

- **Interview:** Deutschlandfunk (German public radio): Recycling von Songs: Wie KI neue Musik generiert, 12/2021
- **Global summer PyTorch Hackathon 2020:** Winner with DeMask See PyTorch Website
- **Global summer PyTorch Hackathon 2019:** Winner with Open-Unmix See ANR Website

SKILLS AND TOOLS

- **Programming Languages:** Python, Javascript, Matlab, R, C, Java, Julia, SQL
- **ML-Ops/Deployment Tools:** Docker, tf-serving, ONNX, tfjs, AWS, HPC
- **Machine Learning Frameworks:** PyTorch, Tensorflow, Keras, NNabla, Scikit-Learn, statsmodels, pandas

SELECTED PEER-REVIEWED PUBLICATIONS

- O. Cífka, C. Dimitriou, C. Wang, H. Schreiber, L. Miner, **F.-R. Stöter**, Jam-ALT: A Formatting-Aware Lyrics Transcription Benchmark
- Y. Mitsufuji, G. Fabbro, S. Uhlich, **F.-R. Stöter** et al., “Music Demixing Challenge 2021,” Journal, Frontiers in Signal Processing, vol. 1, 2022
- M. Pariente, S. Cornell, J. Cosentino, S. Sivasankaran, E. Tzinis, J. Heitkaemper, M. Olvera, **F.-R. Stöter**, et al. “Asteroid: the PyTorch-based audio source separation toolkit for researchers”, Proc. Interspeech. 2020.
- **F.-R. Stöter**, S. Uhlich, A. Liutkus, and Y. Mitsufuji. *Open-Unmix - A Reference Implementation for Music Source Separation*, Journal of Open Source Software, 2019
- A. Liutkus, U. Simsekli, S. Majewski, A. Durmus, and **F.-R. Stöter**. *Sliced-Wasserstein Flows: Nonparametric Generative Modeling via Optimal Transport and Diffusions.*, Proc. ICML 2019.
- E. Cano, D. FitzGerald, A. Liutkus, MD. Plumbley, and **F.-R. Stöter**. *Musical Source Separation: An Introduction* IEEE Signal Processing Magazine, 36, 2019.
- **F.-R. Stöter**, S. Chakrabarty, B. Edler, and E. A. P. Habets. *CountNet: Estimating the Number of Concurrent Speakers Using Supervised Learning*. IEEE/ACM Transactions on Audio, Speech, and Language Processing, Nov. 2018.
- **F.-R. Stöter**, S Chakrabarty, B. Edler, and E.A.P. Habets. *Classification vs. Regression in Supervised Learning for Single Channel Speaker Count Estimation*. Proc. ICASSP, 2018.
- Z. Raffi, A. Liutkus, **F.-R. Stöter**, S. I. Mimilakis, D. FitzGerald, and B. Pardo. *An Overview of Lead and Accompaniment Separation in Music*. In: IEEE/ACM Transactions on Audio, Speech, and Language Processing, Aug. 2018.
- **F.-R. Stöter**, A. Liutkus, and N. Ito, *The 2018 Signal Separation Evaluation Campaign*. International Conference on Latent Variable Analysis and Signal Separation, 2018.
- M. Schoeffler, S. Bartoschek, **F.-R. Stöter**, M. Roess, S. Westphal, B. Edler and J. Herre, *webMUSHRA—A Comprehensive Framework for Web-based Listening Tests* Journal of Open Research Software, 2018.
- A. Liutkus, **F.-R. Stöter**, Z. Raffi, D. Kitamura, B. Rivet, N. Ito, N. Ono, and J. Fontcave *The 2016 Signal Separation Evaluation Campaign* Proc. of Latent Variable Analysis and Signal Separation, Grenoble, France, 2017.
- **F.-R. Stöter**, A. Liutkus, R. Badeau, B. Edler, and P. Magron *Common Fate Model for Unison Source Separation* Proc. ICASSP, Shanghai, China, 2016.
- **F.-R. Stöter**, M. Müller, and B. Edler *Multi-Sensor Cello Recordings for Instantaneous Frequency Estimation*. Proc. of the ACM Multimedia, Brisbane, Australia, 2015.
- **F.-R. Stöter**, N. Werner, S. Bayer, and B. Edler *Refining Fundamental Frequency Estimates using Time Warping*. Proc. of EUSIPCO, Nice, France, 2015.
- **F.-R. Stöter**, S. Bayer, and B. Edler *Unison Source Separation* Proc. DAFx, Erlangen, Germany, 2014.
- **F.-R. Stöter**, M. Schoeffler, B. Edler and J. Herre *Human ability of counting the number of instruments in polyphonic music*. Proc. ICA, Montreal, Canada, 2013
- M. Schoeffler, **F.-R. Stöter**, H. Bayerlein, B. Edler and J. Herre *An experiment about estimating the number of instruments in polyphonic music: a comparison between internet and laboratory results*. Proc. ISMIR, Curitiba, Brazil, 2013.

LANGUAGES

- **German:** native **English:** fluent (C1) **French:** basic (B1)