

Dr. Frederik Bous

Résumé

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Research interest

AI for voice, music, sound and video: Controllable and interpretable generative models, self-supervised representation learning and scene understanding, source separation, multi-modal large language models.

Experience

Supertone Inc., Korea 2024 – today

Research Scientist

- Research related to Supertone's voice technology:
 - Improve quality and controllability on voice backbone model
 - Analysis and transformation of room acoustics, pitch, subharmonics, breathiness and intensity.
 - Self-supervised- and representation learning related to TTS
- Application development: Develop and maintain voice editing tool using Supertone's voice technology

IRCAM, France 2018 – 2024

Post-doc, Doctoral researcher, Intern

- Research on deep learning for voice
 - 6 peer reviewed publications including 5 as first author and 2 journal articles.
 - Topics: Neural vocoding and representation, self-supervised learning, voice attribute transformation.
- Technical support for film, music and art: Bespoke implementations of voice transformation.
- Application development: Implement research results into voice editing and live transformation app.

Siemens AG, Germany 2015

Intern

Education

Doctor of Philosophy (PhD) (Information and Communication) *Sorbonne Université, France* 2023

Master of Science (MSc) (Computational Engineering) *TU Darmstadt, Germany* 2019

Bachelor of Science (BSc) (Electrical Engineering) *TU Darmstadt, Germany* 2014

Skills

Machine learning Self-supervised learning, generative AI, AI for speech and audio

Signal processing Audio signal processing, speech processing, signal processing for AI

Voice and language Phonetics, source-filter model, physical voice production, voice acoustics

Programming languages Python (torch, tensorflow), Haskell, Unix Shell

Languages German (native), English (C2), French (B2), Polish (B1), Chinese (A2), Korean (basic)

Music Classical vocal training, classical composition techniques, live coding (Tidal Cycles), Piano

Other

Full PhD scholarship *EDITE de Paris (ED130)* 2019 – 2022

Full study scholarship *Studienstiftung des deutschen Volkes (SdV)* 2015 – 2019

Additional credits (Maths & Music) *TU Darmstadt, Germany* 2015 – 2018

Study exchange *Tongji University, Shanghai, China* 2014 – 2015

Deutschlandstipendium *TU Darmstadt, Inro Elektrotechnik, Siemens* 2013 – 2014

Teaching assistant (Stochastic signals and systems) *TU Darmstadt, Germany* 2014

Study exchange *AC Davis High School, Yakima, WA, USA* 2009 – 2010