

# 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