

Voice Expert, Researcher, Designer, Technologist | Developing vocal technologies for connectedness

## SKILLS

**PROGRAMMING**

Prior Experience with C, C++, Python, Java, Matlab, R, VB.NET, SQL, HTML, JavaScript, PHP, G Code, Fortran

**SOFTWARE**

Audio and DAW (MaxMSP, Reaper, Ableton Live, Audacity, Praat, Modalsys) Adobe Creative Suite (After Effect, Illustrator, Photoshop) , CAD (CATIA, SolidWorks, Rhino, Maya, 3DS Max, Unity, OpenGL, Processing, Openframeworks), Microsoft Suite

**STATISTICAL & RESEARCH**

Experimental Design, Significance Testing, Bias Estimation, Inferential Statistics, Machine Learning, Data Collection, Correlation Computation, Database Management & Visualization

**FABRICATION**

Machining (milling, lathe, CNC, laser cutting, water jet), Forge, Casting (mold making, sand & die casting), 3D printing & scanning, Electronics, Robotics, CNC machine building, Musical instrument making, Ceramic, Sewing, Printmaking

**TED FEATURED TALK**

Why we don't like the sound of our own voice | 2017

**SPEAKING**

- Voice senses | *OtherAbilities (Netherlands)* | 2019
- Voice Tech | *VMware speaker series (USA)* | 2018
- HCI Vocal explorations | *Sorbonne (France)* | 2017

**TEACHING**

- Sonic Enrichment for Zoos | *Parson (USA)* | 2019
- Creative Workshops | *Panasonic (Japan)* | 2017
- Animal Music | *Colorado College (USA)* | 2016
- Electronic Workshop | *White House (USA)* | 2015
- Hyperscore | *Royal Opera House (UK)* | 2012

**EXHIBITS**

- Enchanted Wear | *Kulturhuset (Sweden)* | 2018
- Performing Science | *MFA Boston (USA)* | 2017-18
- Voice Reflections | *Harvard Divinity School* | 2017
- Dandelion Diptych | *SIGGRAPH Art (USA)* | 2015
- Vocal Vibrations | *Le Laboratoire (France)* | 2014

**PRODUCTION**

- Philadelphia Voices (Symphony by Tod Machover)  
**Voice Research, Creative Tools** Carnegie Hall | 2018
- Hyperstring Trilogy (Pieces by Tod Machover)  
**Electronics Preparation** Luzern Festival | 2015
- Death and the Powers (Opera by Tod Machover)  
**Robot Operator** Winspear Opera House | 2015

**SELECTED PUBLICATIONS**

- A Bird in Control: Designing Interspecies Experiences Mediated by Interactive Technology at the Zoo** | CHI to be published (*CHI 2020*)
- Fluency Effects of Novel Acoustic Vocal Transformations in People Who Stutter** | *Society for the Neurobiology of Language (SNL 2019)*
- Supporting Elder Connectedness through Cognitively Sustainable Design Interactions with the Memory Music Box** | *UIST (UIST 2019)*
- SNaSI: Social Navigation through Subtle Interactions with an AI agent** | *Research Through Design (RTD 2019)*
- Digitally Enchanted Wear: Novel Approach in the Field of Dresses as Dynamic Displays** | *Tangible, Embedded, Embodied Interaction (TEI 2018)*
- PHOX Ears: Parabolic, Head-mounted, Orientable, eXtrasensory Listening Device** | *New Interfaces for Musical Expression (NIME 2015)*
- Social agent or machine? The framing of a robot affects people's interactions and expressivity** | (HRI 2014)
- Human-Computer Music Performance: From Synchronized Accompaniment to Musical Partner** *Sound and Music Computing (SMCC 2013)*
- 3D-printing of non-assembly, articulated models** | (SIGGRAPH Asia 2012)
- Nanometre 551** Science Fiction short novel published in 2084, le meilleur ou le pire des mondes | (Broché 2010)

## EXPERIENCE

**RESEARCHER | MIT MEDIA LAB (USA) | 2012 - 2019**

PhD researcher in the Opera of the Future group with a unique expertise on the human voice as a means of expression, health assessment and assistive technology. Mixes HCI, neurology, cognitive sciences, biology, linguistics, communication theory and assistive tech to develop meaningful voice based systems and experiences.

- Developed projects and initiative as applied explorations of the potential of the voice for connection. This includes musical tools for people who stutter; novel platforms for Zoo animals; cognitively sustainable tools for Alzheimer's patients
- Ran all stages of the research and prototype process including ideation, development, fabrication, trouble shooting, iteration, evaluation, publication
- Managed small teams of students and interactions with funding institutions
- Continual communication, collaboration and thought leadership across disciplines and institutions through demos, workshops, writing and invited talks

**RESEARCH INTERN | MICROSOFT RESEARCH HXB (UK) | 2016**

Conceiving & Developing wearable AI system designed to help blind people with social navigation

- Definition of problem space and societal, technological and design challenges
- Design and Prototype a wearable system and the user interface for blind users
- Creation of novel *zipopotentiometer interaction* for intuitive textile user control

**INVITED RESEARCHER | MIT MEDIA LAB (USA) | 2010**

Worked on the LuminAR project directed by Natan Linder in the Fluid Interface Group , helped develop the interaction concept for a novel projected AR interface

- Software development, interactive design (python, OpenCV, html, javascript)
- Implementation of computer vision backend and front end for robotic arm

**ASSISTANT MANAGER INTERN | COLLEGE DE FRANCE | 2009**

Assisted in the Laboratory of Perception & Action Physiology directed by Alain Bertoz

- Design of a new 3D model and animated logo for the laboratory
- Assisted motion capture sessions, sensor calibration, actor fitting, data cleaning

## EDUCATION

**MIT MEDIA LAB (USA) | 2012 - 2019**

PhD and Masters in Media Arts and Sciences

**UNIVERSITY COLLEGE LONDON (UK) | 2011-12**

Master of Research in Virtual Environment Imaging and Visualization

**ENSAM PARIS TECH (FRANCE) | 2006-11**

Master in Mechanical Engineering Bachelor Degree in Mathematics and Physics

## COMMUNITY

**FELLOWSHIPS & AWARDS**

- Bill Mitchell Design Award | 2017
- Graduate Woman of Excellence Award, MIT | 2017
- Director's Grant from the Council for the Arts at MIT | 2016 & 2017
- International Fellow, MIT | 2013-19
- SOCE Grant, Paris | 2012
- Magnes Scholarship, ENSAM | 2011
- Prix d'Excellence Scientifique et Technique, ENSAM | 2010

**SERVICE**

- MIT Engineering Advisory Board for the MIT Maker Portfolios | 2016-19
- Reviewer for the NIME, CHI and DIS conferences | 2014-19

## COMMUNICATION

# Selected Projects (""(.>

Vocal Experience Design | Interaction Design | Music and Health | Cross-Species Communication

MUMBLE MELODY



**Wearable assistive system for adults who stutter** that musicalizes the vocal feedback in different ways. By training users to perceive their voice as music we effectively reshape brain pathways to improve fluency.

MEMORY MUSIC BOX



**Cognitively sustainable device for elderly with advanced Alzheimer's** to easily connect with family. We use the form-factor of a jewelry music box to embed a connected system controlled by simply opening the box.

ENCHANTED WEAR



**Novel approach to create technologically embellished augmented garment** containing a portable rear dome projection system that transforms the clothing fabric into a blank canvas displaying audiovisual content.

PHOX EARS



**Listening device that changes the user's experience of hearing.** A pair of articulated parabolic microphones and bone conduction transducers allow the wearer to sharply direct their attention to faraway sound sources.

ZOO SONIC ENRICHMENT



**Series of interventions at the San Diego Zoo** to provide animals with interactive vocal, sonic & musical enrichment experiences. Sound as a common ground for cross-species understanding using DSP, AI and interface design

SNASI



**SNASI (Social Navigation with Subtle Interactions)** is a wearable AI to help the blind with social navigation. The AI agent is subtle but not invisible and provides information while respecting human connection.

SIDR



**Deep learning-based, real-time system for speaker identification.** Resilient to room acoustic, noise and accents, the real-time system allows for automatic measure of turn taking or group emotional intelligence.

THE ORB



**Voice-based vibrating device, which maps the voice signal into a tactile vibrating sensation** to provide awareness of physical processes involved in vocal production.