

PERSONAL INFORMATION

MIT Media Lab & McGovern Institute 8572539292
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Cambridge/MA/02139 French

SUMMARY

- Innovation, research, and design expertise in the future of voice technology
- 8 years of experience leading data-driven projects with multidisciplinary collaborators
- Mentored 100+ engineering students
- Skilled in all stages of research & prototyping: concept, development, fabrication, validation, deployment, publication and exhibitions

EDUCATION

2014 - 2020 **Doctor of Philosophy in Media Arts and Sciences**
MIT Media Lab
Pr. Tod Machover

2012 - 2014 **Master of Science in Media Arts and Sciences**
MIT Media Lab
Pr. Tod Machover

2011 - 2012 **Master of Research in Virtual Environment Imaging and Visualisation (CS)**
University College London
Pr. Antony Steed

2010 - 2011 **Master in Mechanical Engineering**
Ecole Nationale Supérieure des Arts et Métiers ParisTech Graduate School

2010 **Bachelor Degree in Mathematics and Engineering**
Ecole Nationale Supérieure des Arts et Métiers ParisTech

WORK EXPERIENCE

2020 - present Postdoctoral Researcher
MIT McGovern Institute for Brain Research - Massachusetts Institute of Technology, 77 Massachusetts Ave, Cambridge, 02139, MA, USA

- Research and Innovation in Voice Technology
- Develop new system for people who stutter results of 50-100% fluency increase: 25% better than state-of-the-art (patent pending)
- Explore commercialization, market research, A/B testing, fundraising

2012 - 2020 Research Assistant
MIT Media Lab, Opera of the Future Group - Massachusetts Institute of Technology, 77 Massachusetts Ave, Cambridge, 02139, MA, USA

- Ph.D. researcher with unique expertise on the voice as a means for expression, interaction, health assessment & assistive tech. Mixes CS, ML, HCI, neurology, cognitive sciences, biology, linguistics to create innovative voice experiences.
- Led teams of 10+ collaborators, interactions with funding institutions
- Consulted in 50+ innovation workshops with companies leading to international consulting and workshop requests
- Continual communication and thought leadership across disciplines & institutions (demos, workshops, publication & invited talks)
- Managed project strategy and lead multidisciplinary collaboration (2 pending patents) through the successful deployment of several projects/products
→ The Orb: hand-held device that maps the voice into vibrations, 6 international exhibitions, from concept to manufacturing

- The Memory Music Box: cognitively sustainable device for late-stage memory loss, concept, prototyping, exhibition
- Sonic Enrichment at the San Diego Zoo, led multidisciplinary project of 10+ experts, deployed interventions for 5 animals
- Mumble Melody: music-based technology for people who stutter, science, engineering, design, and product development

- 2016 Research Intern,
Microsoft Research, HXB group - 21 Station Rd, Cambridge CB1 2FB, United Kingdom
- Conceived & developed voice-based wearable AI to help the blind and visually impaired with social navigation
 - Research & definition of the problem space: social, tech and design challenges
 - Design & prototype RL-based wearable and audio UI for blind users & creation of novel zippotentiometer for intuitive textile UI
- 2010 Invited Researcher, worked on the LuminAR project directed by Natan Linder
MIT Media Lab, Fluid Interface Group - Massachusetts Institute of Technology, 77 Massachusetts Ave, Cambridge, 02139, MA, USA
- 2010 Internship as project manager assistant (3D Modelisation and animation)
College de France; Laboratory of perception and action physiology directed by Alain Bertoz, 11 Place Marcelin Berthelot, 75005 Paris, France
- 2005 - 2006 Performer with a professional theater troupe
Madani Compagnie, 20 Rue Rouget de Lisle, 93500 Pantin, France

**TALKS,
 WORKSHOPS &
 EXHIBITIONS**

- 2019 **Talk at the OtherAbility Festival**
 Voice and all the senses
 Amsterdam, Netherlands
- 2019 **Guest lecture at Parson School of Design**
 Sonic and Vocal Enrichment at the Zoo
 New York, NY
- 2018 **TED featured talk**
 Why we don't like the sound of our own voice
- 2018 **Keynote at VMware**
 Future of Voice Technology
 Boston, MA
- 2018 **Seminar at the Sorbonne University**
 Voice and HCI
 Paris, France
- 2018 **Exhibit of Enchanted Wear at Kulturhuset**
 Digitally Enchanted Dress
 Kulturhuset, Stockholm, Sweden
- 2017 **Talk at TedXBaconStreet**
 Your Three Voices
 Lincoln School, Brookline, MA
- 2017 **Cat Caffee: Pop-Up Exhibition at the MFA**
 Performing Science at the Museum
 Museum of Fine Art, Boston, MA
- 2017 **Demo at Hacking Consciousness Event**
 Self Refleciton and the voice

- Harvard Divinity School, MA
- 2017 **Digital Spa: Pop-Up Exhibition at the MFA**
Performing Science at the Museum
Museum of Fine Art, Boston, MA
- 2017 **Exhibition for the Opening of OpenMind:OpenArt Gallery**
I is plural wearable projection piece
MIT, MA
- 2017 **Series of Workshop in Tokyo**
Toyota, DENSO, Panasonic, Dentsu
Tokyo, Japan
- 2016 **Partition: Pop-Up Exhibition at the MFA**
Performing Science at the Museum
Museum of Fine Art, Boston, MA
- 2016 **Talk at Colorado College**
Animal and Music
Colorado Springs, CO
- 2016 **Talk at the MIT Museum for Girl's day series**
Robotics and life choices
MIT Museum Cambridge, MA
- 2016 **Talk at the EMF camp 2016**
Inside the MIT Media Lab
Loseley Park, UK
- 2015 **Workshop at the EMF camp 2016**
Loseley Park, UK
- 2015 **Exhibition at SIGGRAPH Art Gallery**
Dandelion Diptych
Collaborators: Jie Qi and Nicole Teeny
Los Angeles Convention Center, CA
- 2015 **Workshop at the White House**
Circuit stickers for "Take Our Daughters and Sons to Work Day"
White House, Washington, DC
- 2015 **Presentation at the Acera Innovator Symposium**
"Changing minds: a craft of perception?"
Acera School in 5 Lowell Ave, Winchester
- 2015 **Talk at the MIT Museum Second Fridays Series**
"Good Vibrations: From Music To Medicine"
MIT Museum Cambridge, MA
- 2015 **Multisensory exhibition at Le Laboratoire Cambridge**
Vocal Vibrations
Collaborators: Tod Machover, Neri Oxman, Charles Holbrow
Le Laboratoire Cambridge, 650 E Kendall St, Cambridge, MA
- 2014 **Multisensory exhibition at Le Laboratoire Paris**
Vocal Vibrations
Collaborators: Tod Machover, Neri Oxman, Charles Holbrow, Elly Jessop
Le Laboratoire, 4 Rue du Bouloi, Paris, France
- 2012 **The Other Festival, Interactive Installation**
Migration project

Collaborators: Jon Fergusson
MIT Media Lab

2012 **Hyperscore Workshop**
Royal Opera House, London, UK

**PERFORMANCES
& PRODUCTION
WORK**

March 2018 Voice Research and Creative Tools
Philadelphia Voices (Symphony for full orchestra, 300 singers and electronics from Tod Machover)
Philadelphia Orchestra, Kimmel Center, Philadelphia, PE
Philadelphia Orchestra, Carnegie Hall, New York, NY

August 2015 Electronics Restoration and Preparation
Hyperstring Trilogy (Pieces for hyperinstruments from Tod Machover and his team at the Media Lab in 1986)
Luzern Festival, Switzerland

May 2015 Conceptual and Textual Research
De L'Experience (Piece for narrator, organ and electronics from Tod Machover)
Maison Symphonique de Montreal, Canada

February 2014 Robot Operator
Death and the Powers and global multicast (Robotic Opera, music from Tod Machover, story and lyrics from Robert Pinsky)
Winspear Opera House, Dallas TX

December 2013 Hardware and Software Design, Author, Performer
Babel or not Babel (performance for WOOD-WATER-WHISPER-WILD)
MIT Media Lab, Cambridge MA

**TECHNICAL
SKILLS**

Coding skills Prior Experience with C, C++, Python, Java, SQL, JavaScript, MATLAB, R, Processing, openFrameworks

Software Audio and DAW (MaxMSP, Reaper, Ableton Live, Audacity, Praat, Modalys) Adobe Creative Suite (After Effect, Illustrator, Premiere Pro, Photoshop) , CAD /Animation (CATIA V6, Virtools, SolidWorks, Rhino, Maya, 3DS Max, Unity)

Stat & Research Machine Learning, Experimental Design, Significance Testing, Data Collection/Management/Visualization, DSP

Fab skills Machining (milling machines, lathe, CNC, laser cutting, water jet cutting), Forge (deep drawing, swaging), Casting (mold making, sand casting, die casting), 3D printing, 3D scanning, Electronics, Robotics, CNC machine building, Musical instrument making, Ceramic, Egg Carving, Sewing, Printmaking

Languages French (Fluent), English (Fluent), German (Intermediate), Japanese (Beginner)

**SELECTED
AWARDS**

2018 First Prize in the Technical Usability category at MIT ATHACK (Assistive Technology Hackathon) for the Cipods project

2017 Director's Grant from the Council for the Arts at MIT, Digital Spa project

2017 Bill Mitchell Design Award 2017, 1st place winner of Connected Care Hackathon, sponsored by BNP Paribas Cardiff, MIT

2013 - 2020 International Fellow, MIT

2017 Graduate Woman of Excellence Award, MIT

2016	Director's Grant from the Council for the Arts at MIT, Fablur project
2016	Audience award, Virtual Reality Hackathon, PitchPaint project
2016	2nd Prize for Entertainment, Virtual Reality Hackathon, PitchPaint project
2012	Magnes Scholarship, Paris
2011	SOCE Grant, Paris
2010	First Prize "2084 a brave new world?" ENSTA-ParisTech writing contest organised by the CEA (Commissariat à l'Energie Atomique), Paris
2010	Prix d'Excellence Scientifique et Technique, from Ecole Nationale Supérieure des Arts et Métiers ParisTech Graduate School, Lille

PUBLICATIONS

THESES

Vocal Connection: Rethinking the voice as a medium for personal, interpersonal, and interspecies understanding

R. Kleinberger, Ph.D. Thesis. Massachusetts Institute of Technology 2020

Singing about Singing: Using the Voice as a Tool for Self-Reflection

R. Kleinberger, MS Thesis. Massachusetts Institute of Technology 2014

Musical virtual environment: an interactive machine vision tool for live performance

R. Kleinberger, UCL VEIV program. Virtual Environment, Imaging and Visualisation 2013

CONFERENCE PAPERS

Interspecies Interactions Mediated by Technology: An Avian Case Study at the Zoo

R. Kleinberger, A. Harrington, L. Yu, A. van Troyer, D. Su, J. Baker, G. Miller

CHI'20: ACM Conference on Human Factors in Computing Systems, Honolulu, USA, 2020

Fluency Effects of Novel Acoustic Vocal Transformations in People Who Stutter: An Exploratory Behavioral StudyR. Kleinberger, G. Stefanakis¹, S. Ghosh, T. Machover, M. Erkkinen

SNL'19: Society for the Neurobiology of Language, Helsinki, Finland, 2019

Supporting Elder Connectedness through Cognitively Sustainable Design Interactions with the Memory Music Box

R. Kleinberger, A. Rieger, J. Sands and J. Baker

UIST'19: User Interface Software and Technology, New Orleans, LA, USA, 2019

From Mondrian to Modular Synth: Rendering NIME using Generative Adversarial Networks

A. Van Troyer and R. Kleinberger

NIME'19: New Interface for Musical Expression, Porto Alegre, Brazil, 2019

SNaSI: Social Navigation through Subtle Interactions with an AI agent

R. Kleinberger, J. Huburn, M. Grayson and C. Morrison

RTD'19: Research Through Design, Delft, Netherlands 2019

Vocal Musical Expression with a Tactile Resonating Device and its Psychophysiological Effects

R. Kleinberger

NIME'18: New Interface for Musical Expression, Blacksburg, VA, USA 2018

Digitally Enchanted Wear: A Novel Approach in the Field of Dresses as Dynamic Displays

R. Kleinberger, A. Panjwani

TEI'18: International Conference on Tangible, Embedded, and Embodied Interactions, Stockholm, Sweden 2018

Learning from Lullabies: A Cognitive-Behavioral Exploration of the Role of Lullabies in Infant and Adult Well-Being

A. Rieger, R. Kleinberger

GAPS'17: Global Arts and Psychology Seminar, Tufts, Somerville, US, 2017

Dooremi: a Doorway to Music

R. Kleinberger, A. van Troyer

NIME'16: New Interfaces for Musical Expression, Brisbane, Australia, 2016

KinéPhone: Exploring the Musical Potential of an Actuated Pin-Based Shape Display

X. Xiao, D. D. Haddad, T. Sanchez, A. van Troyer, R. Kleinberger, P. Webb, J. Paradiso, T. Machover, H. Ishii

NIME'16: New Interfaces for Musical Expression, Brisbane, Australia 2016

PHOX Ears: Parabolic, Head-mounted, Orientable, eXtrasensory Listening Device

R. Kleinberger, G. Dublon, T. Machover, J. A. Paradiso

NIME'15: New Interfaces for Musical Expression, Baton Rouge, LA 2015

V3: an Interactive Real-Time Visualization of Vocal Vibrations

R. Kleinberger

SIGGRAPH'15: Computer Graphics and Interactive Techniques, Los Angeles, CA 2015

Vocal Vibrations: A Multisensory Experience of the Voice

C. Holbrow, E. Jessop, and R. Kleinberger

NIME'14: New Interfaces for Musical Expression, London, UK, 2014

Social agent or machine? The framing of a robot affects people's interactions and expressivity

J. Kory and R. Kleinberger

HRI 2014: ACM/IEEE International Conference on Human-Robot Interaction, 2014

PAMDI Music Box Primarily Analog-Mechanical, Digitally Iterated Music Box

R. Kleinberger

NIME'13: New Interfaces for Musical Expression, Daejeon + Seoul, Korea Republic 2013

Human-Computer Music Performance: From Synchronized Accompaniment to Musical Partner

NE. Gold, OE Sandu, PN Palliyaguru, RB. Dannenberg, Z. Jin, A. Robertson, A. Stark, R. Kleinberger

SMCC'13: Sound and Music Computing Conference, Stockholm, Sweden 2013

3D-printing of non-assembly, articulated models

C. Jacques, D. Calian, C. Amati, R. Kleinberger, A. Steed, J. Kautz, T. Weyrich

SIGGRAPH Asia'12, Singapore 2012

ORGANISER

Underware: Aesthetic, Expressive, and Functional On-Skin Technologies

J. Paradiso, et al. ACM UbiComp/ISWC'16 workshop

OTHER

Nanometre 551

R. Kleinberger

Science Fiction short novel published in a short story collection, "2084, le meilleur ou le pire des mondes", broche, 2010

SERVICES

2015 - present

MIT Engineering Advisory Board for the MIT Maker Portfolios

2014 - present

Reviewer for the NIME, CHI, UIST and DIS conferences