Dr Krisztián Hofstädter

Creative technologist with technical, artistic and teaching skills

EDUCATION

2022 **PhD** in Music from the Anglia Ruskin University (ARU), Cambridge School of Creative Industries
2013 **MA** in Creative Music Technology for Media from ARU, Music and Performing Arts Department
2009 **BA** in Creative Music Technology from ARU, Music and Performing Arts Department
2004 **College Diploma** in Cultural Organising from Eötvös József Pedagogical Faculty, Baja, Hungary

Doctoral Research

Title: Developing Brain-Computer Music Interfaces for Meditation

This practice research developed two prototype brain-computer music interfacing (BCMI) systems to support meditation practices. The second, more advanced system, BCMI-2, was tested to help induce and maintain a specific meditative state, the shamanic state of consciousness (SSC), first with two trainees in a non-clinical neurofeedback training (NFT) setting and then with my own brain signals in an artistic performance setting. In both settings, the system generated soundscapes with two entrainment methods to support the meditation: (1) auditory rhythmic entrainment (ARE) generating drumming gradually decreasing in tempo and rhythmic complexity and (2) a neurofeedback protocol rewarding increased theta brainwaves at Fz with a reward sound embedded as an integral element within the computer-generated drumming. In addition to these techniques, the performance setting also mapped hemispheric coherence measurements to surround sound spatialisation to help increase my and the meditating audience's feeling of immersion. (The full abstract and thesis can be found at https://khofstadter.com.)

WORK EXPERIENCE

Research Assistant for Enhancing Audio Description

11/2021—ongoing University of York (post-doctoral)
01/2018—04/2019 University of York
04/2016—10/2017 ARU

My key responsibilities for this AHRC-funded project include conducting literature reviews, leading workshops, organising events, engaging with organisations and participants, conducting qualitative and quantitative data analysis, web design and maintenance, photography, audio-visual production, and co-authoring journal articles. The project documentation is available at http://enhancingaudiodescription.com.

I also worked as a research assistant at the StoryLab Research Institute at ARU from November 2017 to July 2021. In addition to my primary responsibilities as a webmaster, which included developing and maintaining the website for the research institute (http://storylabresearch.com), I was also responsible for event planning, social media engagement, data analysis, content editing, photography, and audio-video post-production.

Associate Lecturer Positions

Between 2011 and 2019, I taught music technology-related subjects as an associate lecturer at ARU and the University of Bedfordshire. In the Sonic Art module, my class discussed the theoretical and practical aspects of sonic art and created works based on these concepts. The Music for the Moving Image module enabled students to compose original music and sound design for poetry, short films, and video games using acoustic and computer-based methods of composition. In the Laptop Performance module, students honed their

understanding of digital audio and traditional music theory by composing and performing their own musical works with laptop computers as their primary musical instruments. The Sensor Technology unit focused on technological aspects that facilitate live performance and audio manipulation. This module guided students in the creation of musical installations and instruments and provided performance opportunities with these creations. The Audio Programming module introduced SuperCollider, a platform for audio synthesis and algorithmic composition used by musicians, artists and researchers working with sound. In 2021, I began teaching a module on digital identities, critical thinking, and multimedia content production at the University of Essex's Interdisciplinary Studies Centre, part of the university's School of Philosophy and Arts History department. During my time as a lecturer at the ARU, I served as a dissertation advisor on multiple occasions, organised research lectures, and helped shape the new Electronic Music pathway in the Cambridge School of Creative Industries.

In addition to the above research and teaching activities, I worked as a Music Technical Officer at ARU from March 2015 to April 2016, where my primary responsibilities included maintaining music, computer, and audio resources, providing efficient and flexible technical support to students and staff, and organising academic conferences and events. Since 2013, I have also worked as a freelancer, producing composition and sound design for short films, games, theatre plays, and various audio-video projects, as well as developing and maintaining websites. I also facilitated audio-video and music workshops, for instance, for Funky Flamingo, a Cambridge-based organisation supporting people with disabilities, and more recently, web design workshops for the Department of Language and Linguistics at the University of Essex.

Sole Trader at Tedör Tea

2015 – ongoing I have been operating an independent tea company set up in Cambridge that imports health-giving Chinese teas and combines it with a variety of artworks produced by local artists. More info at http://tedortea.com.

OUTPUTS

Peer-reviewed Publications

- López, M., Kearney, G. and Hofstädter, K. 2021. Enhancing Audio Description: Inclusive Cinematic Experiences Through Sound Design in *Journal of Audiovisual Translation*. DOI: 10.1177/0264619620935935
- López, M., Kearney, G. and Hofstädter, K. 2020. Seeing films through sound: Sound design, spatial audio, and accessibility for visually impaired audiences, *British Journal of Visual Impairment*, DOI: 10.1177/0264619620935935
- López, M., Kearney, G. and Hofstädter, K. & Balla, G. 2020. Enhancing audio description: accessible filmmaking, sound design and the importance of educating filmmakers. *Media Practice and Education*, 21:4, 289-304, DOI: 10.1080/25741136.2020.1832830
- López, M., Kearney, G. and Hofstädter, K. 2018. Audio Description in the UK: What works, what doesn't, and understanding the need for personalising access. *British Journal of Visual Impairment*, 36(3), pp. 274–291. DOI: 10.1177/0264619618794750

Selected Presentations, Demonstrations and Performances

- Hofstädter, K. 2019. NeuroMeditation with music (presentation and live performance with BCMI-2). In: *2019 Cambridge Festival of Ideas*. 14-27 October 2019, Cambridge. https://youtu.be/SdrYMDM7-Mg.
- Ryan, D. et al. 2019. *Aphorisms* (live sound design and engineering). 13 June 2019, Recital Hall, ARU, Cambridge. https://bcmi.khofstadter.com/aphorisms.

- Hofstädter, K. 2019. Demonstration of Brain-Computer Music Interfacing Soundscape with Generative Rhythmic Entrainment. In: *2019 Audio Engineering Society International Conference on Immersive and Interactive Audio*. 27-29 March 2019, University of York, York. https://bcmi.khofstadter.com/aes-york-conference-demo-2019.
- Hofstädter, K. 2018. Brain-Computer Music Interfacing for Meditation (presentation). In: *2018 Festival of Ideas, The Archive and the Contested Landscape*. 15-28 October 2019, ARU, Cambridge. https://bcmi.khofstadter.com/festival-of-ideas-2018-talk.
- Hofstädter, K. 2018. Brain-Computer Music Interfacing for Meditation (presentation). 18 April 2018, University of Qujing, Yunnan, China. https://bcmi.khofstadter.com/qujing-university-talk.
- Hofstädter, K., 2017. Introducing BCMI-1 for meditation and artistic performance (demonstration with on-line EEG). *Clip Sound Workshops*. 16 January 2017, Firstsite Art Gallery, Colchester. https://bcmi.khofstadter.com/firstsite-clip-sound-demo.
- Hofstädter, K., 2016. Brain-computer music interfacing software development (demonstration of BCMI-1 prototype with real-time EEG). In: *Musedelica Symposium. A Symposium for Researchers in the Field of Psychedelic Music and Related Areas*. 14-15 June 2016, The Sussex Humanities Lab, University of Sussex, Brighton. https://bcmi.khofstadter.com/musedelica-symposium-demo.
- Hofstädter, K., 2016. Compulsive music waves (screening and audio-video installation). In: *2016 Pint of Science Festival*. 22-26 April 2016, St Barnabas Church, Cambridge. https://bcmi.khofstadter.com/pint-of-science-installation.
- Hofstädter, K. 2011. Strophic Variables (installation). In: *FUTURE FLUXUS event (part of the 2011 Visualise Cambridge series)*. 17 January 2011, Recital Hall, ARU, Cambridge. https://khofstadter.com/strophic-variables.
- Hofstädter, K., 2009. Brain-computer music interface with the IBVA machine (installation). In: *HCI2009, Open House Festival of Interactive Technology*. 1-5 September 2009, Microsoft Research Centre, Cambridge. https://bcmi.khofstadter.com/HCI2009.