Digital Scores

**I**nvestigating the technological transformation of the music score

Performance Participant (musician):

recording of performance/ sharing & post-performance roundtable/ interview

Participant Information Sheet

Dear Participant

We are inviting you to participate in a research project as a musician. An important aspect of this project is the reflection on the nature of digital score musicianship. In order to reflect on this experience, we invite you to work with a digital score composition, complete a few questionnaires, and perform the work in front of an audience (live or telematic), or some other form of public sharing of the work. Following the performance, we will conduct a closed roundtable (without the audience) or a 1-2-1 interview, whichever is deemed most appropriate. This is part of a series of such activities across the planet. The roundtable/ interview will be semi-structured and aims to expand the subjective and objective perspective of creativity and musicianship with the digital score. We will be concentrating on 4 key areas:

1. **Connections** with the digital score – for example, your connections to the materials that form the parts of the digital score (sounds, images, game-worlds). Also, how you formed relationships with the active materials such as pre-recorded melodies, machine intelligence, creative media, evoked music-worlds, or the other musicians.

2. The **flow** in the moment of performing – for example, what journeys were you taken on, how involved in the music you became.

3. Your digital **musicianship** - what skills, knowledge, and approaches did you use to facilitate a creative engagement with the piece.

4. Transformative experiences and **impact** – for example, did the score communicate innovative music ideas, new music experiences, novel compositional approaches, new performance opportunities, music-making engagements, or broader accessibility/ inclusivity for musicians. Has this experience changed your outlook on music-making in general? Will the impact of this experience carry over to other future projects?

**What is your role?**

Aside from working with the composer in the realisation of their digital score, you will perform the piece at key points in the process. The final performance/ realisation will be recorded using video and audio equipment. Throughout the process, we will invite you to complete a few questionnaires. Following the performance, we will conduct a roundtable discussion/ interview. This will be conducted using pre-defined questions in a semi-structured way to enable a greater flow of dialogue and reflection. It will be audio recorded and stored on the project research repository. Speech-to-text software will transcribe the interview, from which we will copy edit and make public an edited transcription of critical moments on the project website.

In some experiments, we will want to collect physiological data to help develop insights. The labelling of this data will be anonymized, and securely stored as stated below. This data will include eye gaze tracking, body motion, heart rate, breathing, electromyogram (muscle movement), and electro-dermal activity (arousal). The sensors for these will be placed next to your skin using sensor pads; no invasive techniques will be used. Specifically:

* Eye-gaze tracking will use a lightweight pair of spectacles (without glass) that record what you are looking at (using a small video camera), and what your eyes are focused on (dot or cross-hair superimposed onto the glasses video).
* Heart rate, body motion and breathing will use a lightweight vest that you would wear under your clothes.
* The sensors for muscle movement and arousal will use lightweight straps on your arms and wrist.

In experiments involving this type of data capture, we will orientate you with each piece of equipment, explain its function and help you put it on your body correctly; except the body vest, which we will ask you to wear under your clothing, and provide you with an appropriate private and secure changing room. While you perform the music we will record the data as well as the audio and video of your performance. Once you have completed a performance we may ask you to watch the video recording of your eye-tracking camera and recall what it is that you were focusing on (marked by an in-screen dot or cross-hair). After the experiment, we will help you remove the sensors safely.

**Project Outline**

The “Digital Scores” project comprises an ambitious programme of practice-based research interwoven with an innovative theoretical investigation into the transformation of the music score being wrought by new computational technologies. A core objective is to investigate the shifts in creativity and musicianship that digital scores have on musicians: composers, performers, makers, designers and coders. A parallel objective is to innovate the music score as an inclusive creative space for musicians of traditional and non-traditional backgrounds. The benefits of the research extend beyond music studies into computer science, new media research and performance practice. It is real “frontier research”, which sits at the intersections of art, technology, cultural studies and creative practice. It investigates new phenomenologies of the experience of digital creativity, and new creative processes in a digital and post-digital world. The PI will lead a collaborative research network across four continents, which will create a series of case studies each addressing new computational technologies such as *artificial intelligence, machine learning, virtual reality, gaming, telematic networks* and *robotics*. These are interwoven with a transdisciplinary theoretical study that aims to situate digital scores within the wider fields of digital humanities and media studies. It will engage professional and community musicians, music researchers and students in a longitudinal scientific study of digital musicianship. All aspects of the work will be created and stored in an interactive website which will be publicly accessible. The project will conclude with an academic conference and the publication of two books and numerous articles on digital scores.

**What are the objectives of the Digital Scores project?**

The objectives of the Digital Score project are to:

* determine how new computational technologies, integrated as innovative music score systems, can lead to the communication of innovative music ideas, new music experiences, novel compositional approaches, new performance opportunities and music-making engagements, and broader accessibility for musicians of traditional and non-traditional backgrounds.
* develop a transdisciplinary theoretical framework that situates digital scores within the wider field of digital humanities and media studies, in order to understand the deep creative experiences of musicking (the act of music-making (Small 1989)) with digital scores built around *artificial intelligence, machine learning, internet networking, robotics, virtual and augmented reality, gaming* and *physical computing*.
* discover how digital scores stimulate new relationships between musicians and how these profoundly influence the nature of the digital musician.

**Who is organising this research?**

The research for this study is being undertaken by Professor Craig Vear at University of Nottingham (UoN). This is part of a European Research Council funded research project in partnership with Professor Cat Hope at Monash University (AUS), Professor Sandeep Bhagwati at Concordia University (CAN), Professor Kenneth Fields at University of California Santa Barbara (US) and Professor Xiaobing at the Central Conservatory of Music, Beijing (China). University of Nottingham (UoN) Research Ethics Committee has reviewed and approved this research.

**Who is funding the research?**

European Research Council, grant number ERC-2020-COG – 101002086 – DigiScore

**Contact Details:**

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**Your Data (For Full Privacy Notice for Research Participants see separate paper)**

**Overview**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **What is recorded?** | **How is it recorded?** | **Lawful basis** | **Where will the data be stored** | **Who will it be shared with** | **How will it be shared securely** | **Will/can it be anonymised or pseudonymised** | **How will the data subject’s rights be communicated** | **how will they action them** | **How data used** | **Flowed into** |
| T2.1 A – Case Studies - practice | The live music performances from each case study | Audio and Video.  Optional physiological data e.g. eye gaze tracking, body motion, heart-rate, breathing, electroencephalogram (EEG), electro-dermal activity (EDA). | Public task | Vimeo, Secure server, UON and secure backup HD in lab | Public facing | ZendTo between international centres. Then securely stored according to the original country’s legal protocols, or deleted. | Optional | Performance  Participation  information sheet & Consent form | Right to withdraw (delete all media) | Reference for theoretical study | T3.1 |
| T2.1 B – case study - analysis | Recorded round table discussions with musicians following performance of the digital score | Audio and Video | Public task | Secure server, UON and secure backup HD in lab | Project team | ZendTo between international centres. Then securely stored according to the original country’s legal protocols, or deleted. | Optional | Performance  Participation  information sheet & Consent form | Right to withdraw (delete all media) | Reference for theoretical study | T3.4 |

**What is being recorded?**

The live music performance will be recorded using audio and video equipment. The roundtable discussion will be recorded using audio equipment. In some experiments we will want to collect physiological data to help develop insights. These will include eye gaze tracking, body motion, heart-rate, breathing, electroencephalogram (EEG), electro-dermal activity (EDA).

**Where will the data be stored?**

The audio recording and the full transcription, and the music performance (audio and video) will be stored in three places:

* in a secure section of the project website, which has password protection and is only accessible by the project team
* on an encrypted hard-drive, accessible by only the PI and UON team. This will not be connected to a network and will be stored in a locked office space.
* In UON cloud-based repository for open access data sharing

**Will/can it be anonymised or pseudonymised?**

You can instruct us to make your contribution anonymous or use a pseudonym at any point.

**How will the data be used?**

The roundtable discussion will inform the development of the theoretical framework of this project. This framework will be used to build an understanding of digital musicianship. To this end, the project team will use these recordings as reference, and may include quotes in the academic output from the project.

The optional collection of physiological data will be used to analyse bodily responses to the music, this will then be used to evaluate physiological reactions to musical responses in order to build new insights. This data will form a corpus that may be used later in big-data analysis and experiments.

**You can withdraw at any point.**

At any time you can choose to withdraw. You can also withdraw your data at any point after the collection, without giving any reason. If you withdraw, your data will be removed from the study and will be destroyed, or your participation from a recorded event will be edited out.

**Who owns the IP of the Digital Score?**

The composer/ technologist will hold the Intellectual Property of the created work and all its materials, including the relevant mechanical, publishing and compositional rights. The performers will retain rights to the recording. However, as part of the commissioning contract the performers will grants the University the right to share these materials on the project website (in whole or in part, transcribed or otherwise) in perpetuity throughout the world for educational, research, commercial and promotional purposes at the University. The performer can request these materials to be anonymised or pseudonymised at any point in time.

Yours sincerely

Professor Craig Vear

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