

**School of Arts & Media**

**Practice as Research Centre of Excellence**

Research Timeline**:** *Touch Crescent Moons*

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**UOA:** TBD

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| ***Date*** | ***Rationale of research activities and decisions undertaken*** |
| May 2000 to July 2000;  Dec 2010;  2012 | **Research Lineage: Applying Digital Curation to Interactive Media Information Systems for Performance and Production**  In 2000, I had a solo exhibition, *Voices in Ruins*, in Dorsky Gallery, SoHo, Manhattan, NYC. This installation was my first application of semantic networks to organise media content with graph traversal activated by sensors in the gallery, to retrieve and display media, based upon peoples’ movement in the gallery (media items 1 and 2).  Working with this framework I pursued the development of a platform combining digital curation with media authoring for interactive installation and performance. The progression of this research is marked in a journal article and a book chapter:  Choi, I. 2010. “From Tradition to Emerging Practice: A Hybrid  Computational Production Model for Interactive Documentary.” *Entertainment Computing*, Vol. 1 Issue 3-4. Amsterdam: Elsevier, December 2010, 105-117.  Choi, I. 2012. Media Authoring with Ontological Reasoning: Use Case for Multimedia Information Extraction. In Maybury, M., Ed., *Multimedia Information Extraction: Advances in Video, Audio and Imagery Analysis for Search, Data Mining, Surveillance, and Authoring.* Hoboken: Wiley & Sons. 385-400. |
| 11 June 2018 | **Research Challenge: Converting interactive performance system to support interactive engagement for public audience**  I met with Helen Wewiora, Director of Castlefield Gallery in Manchester, to discuss her plans for a ceramics exhibition. I was completing an interactive multimedia performance work (*Five Elements of Living Treasure*) and she was interested to include this in the exhibition. I assessed that a performance interface is a complex tool for a virtuoso (media item 3) and would not induce a good experience for public engagement. I introduced the challenge of bringing interactivity into a public art gallery, to create an accessible interactive experience that could succeed as an alternative to the traditional gallery protocol, “do not touch the objects.” We agreed that I would develop a prototype that could be tested as part of the Castlefield Gallery exhibition. |
| 11 July to 17 July 2018 | **Expert Consultation and Knowledge Elicitation for Developing installation subject material**  Castlefield Gallery connected me to visiting ceramic artists from Korea, to learn more about ceramic making and exhibition. Our consultation included an observation at Manchester Art Gallery of a traditional Korean moon vase nearly 500 years old. I conducted a week-long knowledge elicitation with Shin Hyun-Min, a ceramic artist sponsored by the British Council, representing JangAnYo Studio which uses pre-automation methods to produce Korean ceramic artworks. The elicited data was used to design a system of gallery audience interactions with digital media for digital play and exploration around the theme of ceramic materials and making processes (media items 4a, 4b, 4c, 4d, 4e). |
| 15 Aug to 10 Sept 2018 | **Adopting interactive performance system to gallery interaction system**  Following the premiere performance of my aforementioned multimedia work, I went through an iterative design and prototyping cycle through a series of interface modifications to transfer the lessons learned from the performance interface to an accessible and experiential interface for a general public. The new interface simplified representations and levels of detail while maintaining a highly responsive experience to engage with temporal streams of images and sounds (media item 5). |
| 13 Sept to  4 Nov 2018 | **Public Exhibition to test and refine the interaction paradigm**  The new interface and interactive experience design was tested during the Castlefield exhibition ***SUBI 수비***, presented with responsive multimedia as the installation *Living Treasure Rhythm Texture* (media item 6). During the exhibition period, anonymous data was gathered to measure levels of visitor interactions over time intervals, to gauge visitors’ interest and levels of exploration of the dynamic media repository. Also during the exhibition, a number of technical performance challenges were addressed to develop reliable digital systems for continuous operation during an extended exhibition. |
| 18 Nov to 4 Dec 2018 | **Field Study for formalizing traditional ceramic production processes: observation, knowledge elicitation, media documentation, and movement data capture**  Supported by an Arts Council England grant, I travelled to JangAnYo Studio in Korea to observe and work with Shin Gyung-Kyun, a UNESCO-honoured master ceramic artist. The decision to make observations at JangAnYo was to ensure that primary-source empirical data was obtained on site through systematic data capture. I determined that remote engagement such as a telephone interview or reading about Shin’s work and reviewing previous media from other sources, are insufficient data sources to develop insights for new work. During 3 weeks at JangAnYo I daily conducted observation, media production, and data capture (media item 7). This was possible because Master Shin and JangAnYo generously offered to run a full ceramic production cycle for this field study.  **Transformative Outcome:** From the JangAnYo experience going through an actual full ceramic production cycle, I wanted to explore audience experience with heightened sense of materiality beyond a digital touch screen interface. I made a design decision to remove the digital touch screen and introduce ceramic materials into the gallery, then use the ceramics as interfaces to the interactive media experience. To achieve this the ceramics are instrumented with invisible sensors to interpret audience touches on the ceramics and to send as input data to the media display system. This design decision results in objects interaction to activate media experience; the rules of “no-touch” in gallery space are overridden. |
| 22 Feb 2019 | **Installation Space Layout Planning and Object Curation**  The European Cultural Center invited me to participate in *Personal Structures,* the ECC’s Venice Biennale Exhibition*.*  In Venice, I selected a gallery space, which dimensions and construction provided criteria for the final realisation of the work, *Touch Crescent Moons*. A dedicated gallery with floor area of 4m x 5m and high ceiling provided space for three large wall-to-wall projections and floor space for 6 plinths, each presenting a ceramic object (media item 8). |
| 25 Feb to 15 April 2019 | **Sensor design for interaction**  A number of experiments were conducted with various sensor types. Infrared (IR) sensors were selected to be used in a sensor array mounted under the ceramics and out of sight just below a semi-opaque plastic plinth surface. To provide visitor feedback and encourage visitors to explore the touchability of ceramic fragments, the plinth houses LEDs which illuminate the plinth surface and ceramics when visitors touch (media item 9). We fine-tuned the sensitivity and response pattern of the digital electronics that measure touch data, to encourage further touching by maintaining visitors’ interest. When completed, the sensors were coupled to the interactive media display platform. Latency between visitor touch and media display was then optimised, with the LEDs providing immediate touch feedback in addition to the responsive media. |
| 3 April 2019 | **Testing views and flow-through using a full-scale installation model**  Using measurements from the gallery a full-scale model was assembled in Manchester, to test and finalise the image projection scale and flow paths for visitor movements among the plinths. These tests were used to finalise the positions of the plinths and the scale of media projections, and also to finalise the data structure of the media contents to take into consideration the media presence for different numbers of active visitors (media item 10). Media flow and density across the gallery walls is designed to reflect how many visitors are touching ceramic objects and which objects are touched. The relationship between activated ceramic objects is applied to determine the pathways in semantic data for selecting media sequences and montages. |
| 10 April to 15 April 2019 | **Ceramic Object Curation and Transformation into interactive touch points**  The ceramic objects used for touchable interfaces were carefully curated by Master Shin and I. Design decision was made to use only broken pieces from field study production cycle, that were deliberately destroyed due to imperfection. It entailed in enhancing the self-reference of visitor’s touch interaction with the objects and their appearances in videos showing Master Shin creating that very fragment.  In parallel to sensor system design the sensors were tested for suitable mounting at the ceramic objects, and requirements were identified to elevate the ceramic objects as if floating above the plinth surface. An elegant implementation was achieved in consultation with gallery technicians (media item 11). To simplify ease of transport, installation, and replacement in case of repair, all electronic and physical components were fabricated in Manchester for modular assembly on site in Venice. |
| 9 May to 23 Nov 2019 | **Anonymous Data Capture of Visitor Interactions for Future Study and Design of Touchable Gallery Experiences**  The exhibition opened 9 May and receives 500-1000 visitors a day on average (media items 12a, 12b, 12c, 12d, 12e). Initial observations reveal that some visitors are interested to touch the objects while others are reluctant to do so. To study the types and levels of interaction, anonymous data capture is enabled using the system tested in Castlefield Gallery. The data will enable analysis of the interaction patterns of visitors and look for data patterns that may indicate relationship between individual ceramic objects, variations in media content, the number of visitors engaged with interaction at a given time or in continuous stretch, and their level of interaction with the ceramics. |
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