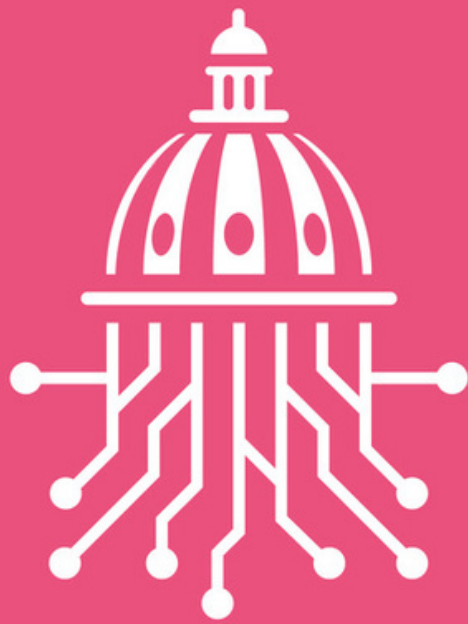Report
by Carolin Weiner

Digital Humanities @Oxford Summer School

DIGITAL CULTURAL HERITAGE COURSE

Keble College
University of Oxford
3-7 July

2023

OVERVIEW

The Digital Cultural Heritage week-long course introduces participants to methods for capturing, analysing, and digitally displaying cultural heritage.

This includes the digital capture of objects and the creation of 3D models using photogrammetry, the reconstruction of the past using SketchUp, as well as the creation of smartphone applications and virtual reality environments using the programme Unity.

The course encourages students to explore the potentials of using new technologies for the study, conservation, preservation, and display of cultural heritage sites and objects in the classroom as well as in the museum setting.

It showcases how technologies of the present can open new understandings of our shared past.

INSTRUCTORS & GUEST SPEAKERS

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SMARANDA COSTINER

Student assistant (remote)

PARTICIPANTS

Course attendees hailed from all corners of the world, as distant as Australia, Japan, China, various European countries, and Canada.

|	
📍 Melbourne, Australia	📍 Gothenburg, Sweden
📍 Tokyo, Japan	📍 Ghent, Belgium
📍 Suzhou, China	📍 Maidenhead, U.K.
📍 Paris, France	📍 Oxford, U.K.
📍 Leuven, Belgium	📍 Nairobi, Kenya
📍 Hedemora, Sweden	📍 Kingston, Canada

MONDAY

In the afternoon, students were introduced to the technologies with which audiences can engage with heritage. These focused on virtual and augmented reality. With the help of VR headsets, students immersed themselves in virtual exhibitions or explored reconstructions of remote cultural sites. They also explored AR applications through the use of mobiles or the Google cardboard, such as those offered by Google Art & Culture, Cosmote Chronos and Civilization AR.

The day closed with an introduction to 3D printing. This included a hands-on demonstration of the types of objects that can be created through the use of this technology.

On the first day of the Digital Cultural Heritage Summer School students were introduced to the ways in which digital techniques can capture cultural heritage. Dr. Lia Costiner started the first lecture on a somber note underscoring the fragility of cultural sites and the loss of many in recent decades, before proceeding to show how digital techniques can be used in their documentation and preservation. Various case studies and techniques were presented.

This was followed by a discussion on various topics touching digital cultural heritage such as ethics, and the longevity of digital formats.
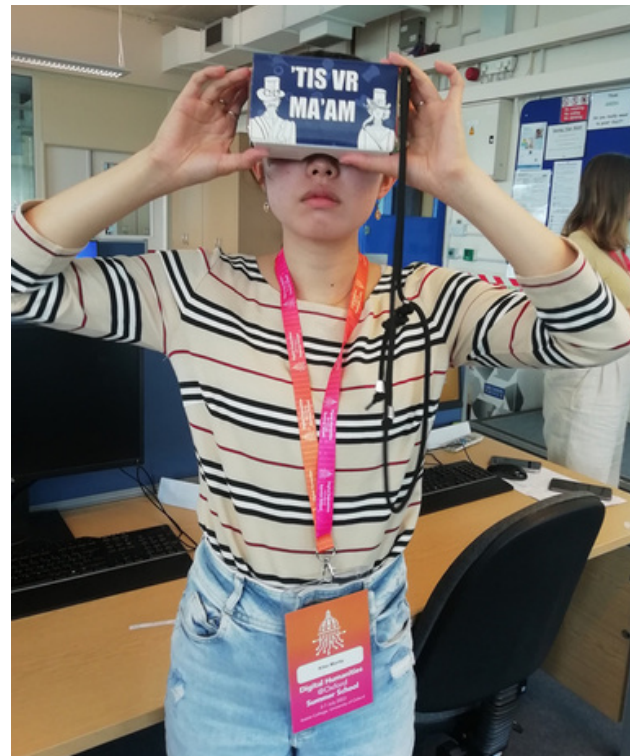
TUESDAY

The photographs were then input into the Agisoft Metashape software for the creation of a 3D point cloud, mesh, and finally a virtual object. Through this, students learnt about the difficulties of capturing objects, including those caused by light, and texture, and how to troubleshoot common problems.

The end of the day was dedicated to trialing mobile applications for scanning 3D objects and discussing their benefits and limitations.

The second day was dedicated to learning about the digital capture of 3D objects using photogrammetry.

It began with an introduction to the techniques and its applications, as well as best practices, given by Dr. Carlotta Carpurro. Students were then tasked with capturing an object of their choice. They did this by taking photographs using their mobile phones.

WEDNESDAY

The third day was dedicated to digital modelling using the program, SketchUp. Professor Matthew Nicholls introduced the class to his long-running project 'Virtual Rome', which is a 3D reconstruction of ancient Rome. Using this example, he highlighted the key questions which a researcher should consider when devising a digital project. These include: What is the purpose of your work? How do you want users to engage with your reconstruction? Which view do you wish to show (aerial/street view etc.)? Which point in time are you capturing and how do you deal with historical uncertainties? Do you wish to accurately represent sunlight/ shadows? Do you wish your model to be populated?

He spoke not only about the possibilities, but also about the challenges that such reconstructions present, including flaws, uncertainties and the creation of false impressions. Technical limitations should likewise be considered, computational power being a crucial component.

Participants were guided through a SketchUp tutorial and instructed on the initial phases of building a model using that platform. They were also introduced to the creation of a model using a base plan.

The day concluded with the opportunity to explore a 3D model of ancient Rome in virtual reality.

THURSDAY

The afternoon session focused on deploying the scene and exploring it using a VR headset. Through this hands-on tutorial, students were introduced to the entire life cycle of creating a virtual reality environment, from its creation to its deployment and exploration.

On Thursday, Richard Smith of the Oxford X-Reality Hub gave a lecture introducing immersive technologies. This was followed by a hands-on tutorial on the game engine, Unity, used in the creation of virtual and augmented reality applications. He guided the class through the basics of working with the programme, creating and animating game objects and setting up a VR environment.

FRIDAY

The class first visited the Pitt Rivers Museums and its ethnographic collection. Here researchers from the Oxford Internet Institute developed an augmented reality application which allows visitors to view and interact with objects in museum cabinets in the round, using mobile phones.

Next on the list was the Ashmolean Museum, where the temporary exhibition, 'Labyrinth: Knossos, Myth and Reality' showcased a virtual reconstruction of the ancient site within a video game. The summer school ended with a discussion of how students could harness these technologies in their own projects.

Having learnt about digitally capturing objects and creating a virtual environment for their exploration, on Friday, students were introduced to the use of digital technologies in museums. Technologies used to create immersive museum experiences and successful case studies were discussed.

The students then visited museums in Oxford, which made use of digital experiences, to assess their impact.

DIGITAL CULTURAL HERITAGE COURSE

The Oxford Digital Humanities Summer School welcomes hundreds of participants in the historic city of Oxford, each year.

Over the course of one week, experts in the field of digital humanities share their knowledge and experience with students.

This year, the Digital Cultural Heritage strand trained 14 students who came to Oxford from Europe, North America, Africa, Asia and Australia.. Backgrounds of participants were diverse, ranging from professionals, to university support staff, digital specialists, to graduate students (PhDs, and Masters). The group was also diverse in terms of age, some being at the start, other mid-career, and a few seasoned professionals. In terms of gender, the group was composed of 13 women and 1 man.

The course served to share knowledge from academia to other sectors. International participants will further take and disseminate this knowledge in their respective home countries, where it will continue to bear fruits.

As importantly, the course created new connections and opportunities for future collaboration. We hope that the friendships and networks that were created over these five days will continue to grow and develop for years to come.

PARTICIPANT FEEDBACK

"I liked that it gave a good beginner's overview of the digital tools and how they can be applied to different cultural heritage projects."

"It was great to practically learn how to use the tools; to learn about the theories of 3D and experiences behind the process of managing projects, especially what you need to take into account. Also just interacting with softwares and practical tutorials!"

"It was really helpful to be able to see a lot of different approaches to digital cultural heritage."

"I really liked getting an insight into some of the key tools of DCH and to experience what it is like to actually try to use the tools. Also I appreciated to start understanding some of the practices (e.g my photogrammetry effort failed badly, and it was helpful to learn from it, I know now what I should have done to improve the results). I appreciated learning about what tools can be used for which purposes, and some ideas of how they can be put together."

"I was fascinated by the possibility of trying so many different softwares and technologies."

RESOURCES
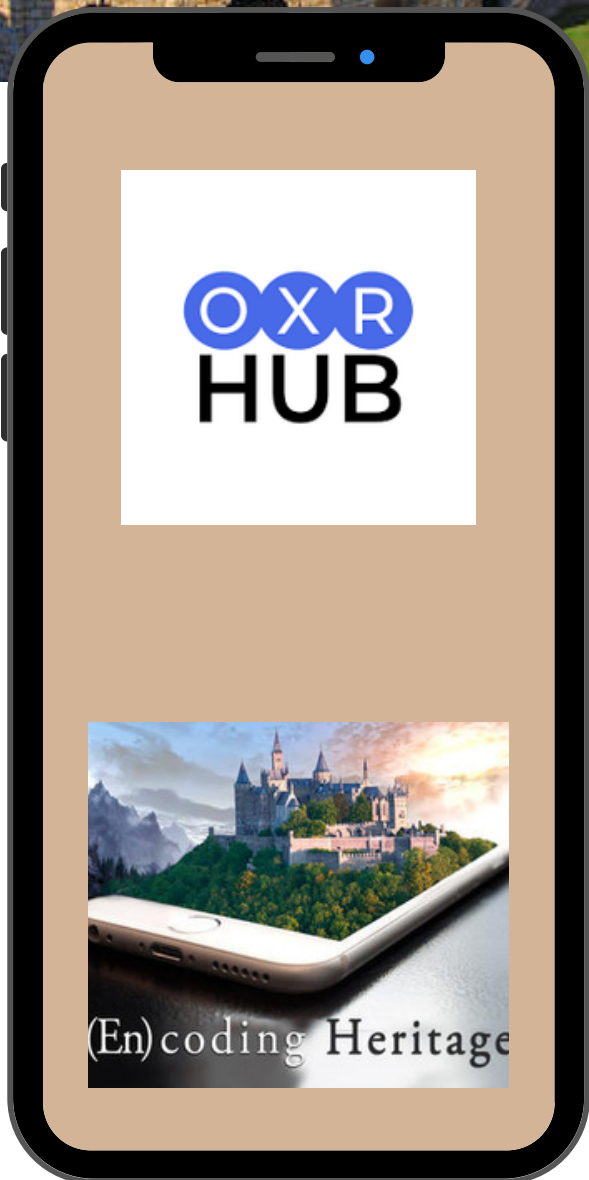
OXFORD X-REALITY HUB

The OXR Hub harnesses the power of immersive technologies for innovation in research, teaching and outreach at the University of Oxford. It provides: project support, access to equipment, training and engagement activities, both locally and internationally.
oxr.eng.ox.ac.uk

(EN)CODING HERITAGE NETWORK

The aim of this network is to connect scholars interested in harnessing the power of 3D mapping, photogrammetry and virtual environments in the study of cultural heritage.
torch.ox.ac.uk/encoding-heritage