



Gorffennol Digidol Digital Past - 2020

AN AUGMENTED REALITY CASE STUDY OF BRYN CELLI DDU

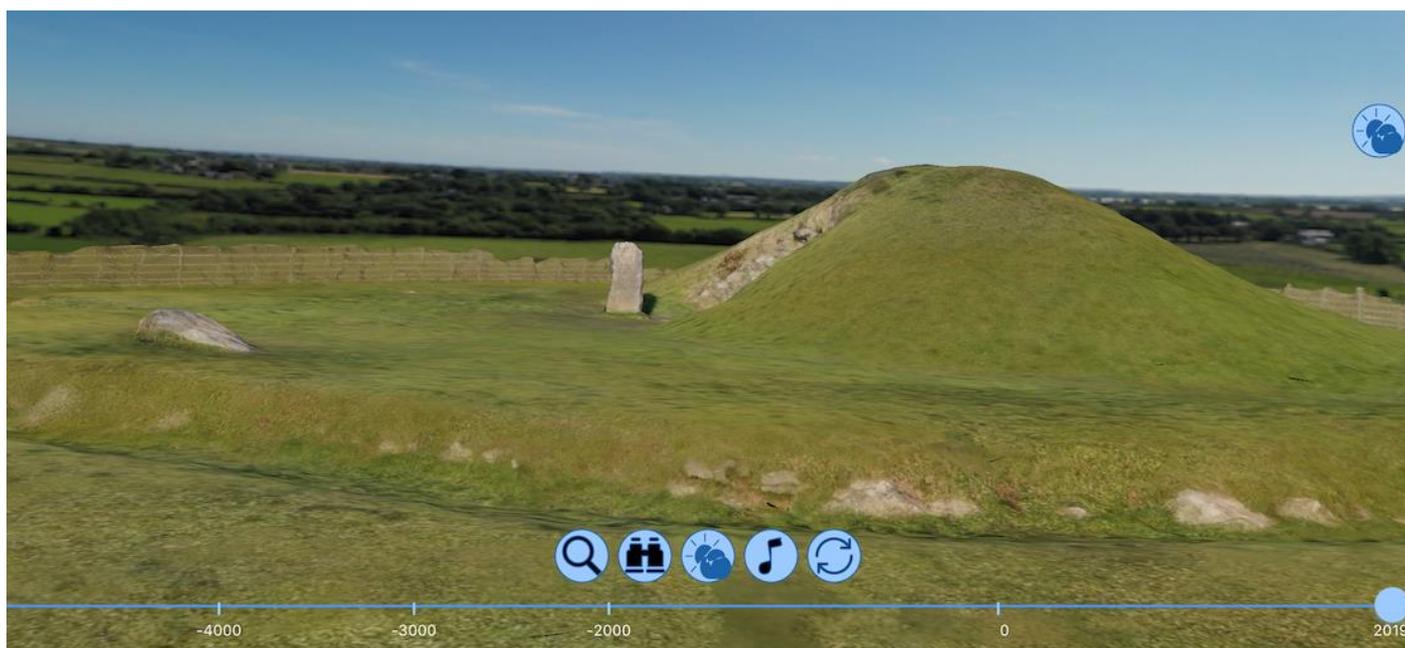
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The Bryn Cellu Ddu AR app allows users to immerse themselves in the history of one of the most important prehistoric sites in Britain. The app covers four stages of the sites development: the earliest recorded human activity - a row of five postholes radiocarbon dated to the Mesolithic period (6th millennium BCE); a 31st century BCE henge and stone circle; 31st-30th century BCE passage tomb and earth mound; and, the modern (1920s) reconstruction of a smaller earth mound and henge.

The app operates in two modes, an onsite mode allowing visitors to the site to understand the history of the site in context, and offsite, allowing “desktop” visualisation of the site and its history at a scale appropriate for indoor viewing. In onsite mode, the models are rendered at full scale in registration with the current site.

We have investigated a range of options for registration, such as GPS/compass based, a manual registration step, and automated image-based registration. The final app uses an automated image-based registration. High resolution 3D scans of artefacts including an axehead, a Beaker and a piece of Grooved Ware pottery are embedded in the visualisations and can be viewed and interacted with separately. A soundscape has been included, based on vocal and percussive music likely to have been available to the users of the site. The soundscape makes use of positional sounds to provide a more immersive experience. In addition to issues of registration, the design has had to deal with a number of other issues including: how to deal with the user being “underground”, as the current site is smaller than the original earth mound; how to deal with foreground objects (e.g. people), that should be rendered in front of the mound, but appear behind it; issues around memory constraints, particularly for mobile download.



Biography

The authors represent a team of computer scientists, archaeologists, specialists in heritage, experts in 3D graphics and modelling and a sound artist:

Bernard Tiddeman (Reader in Computer Science, Aberystwyth University)

Jason Cox (AR App Developer, Aberystwyth University)

Helen Miles (Lecturer in Computer Science, Aberystwyth University)

Ben Edwards (Senior Lecturer in Archaeology, Manchester Metropolitan University)

Seren Griffiths (Lecturer in Archeology, University of Central Lancashire)

Ffion Reynolds (Heritage & Arts Manager, Cadw)

Chris Marshall (Director of Graphics and VFX, Mint Motion)

Jon Hughes (Composer and Sound Artist, Freelance composer and performer)