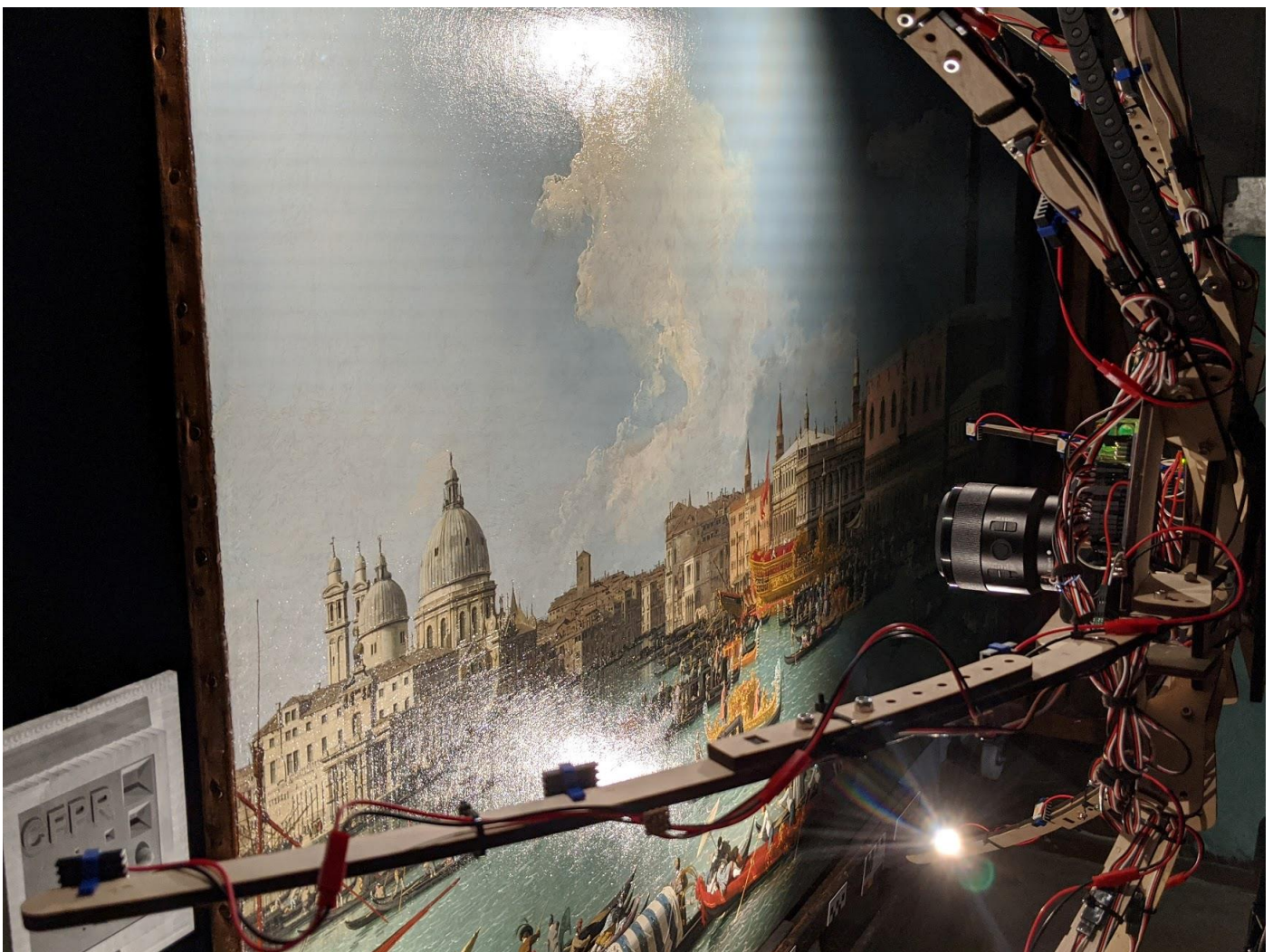




# Gorffennol Digidol Digital Past - 2021

## AN AFFORDABLE AUTOMATED 3D SURFACE SCANNER: The case of Canaletto's 'The Grand Canal, Ascension Day'

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From the Woburn Abbey Collection

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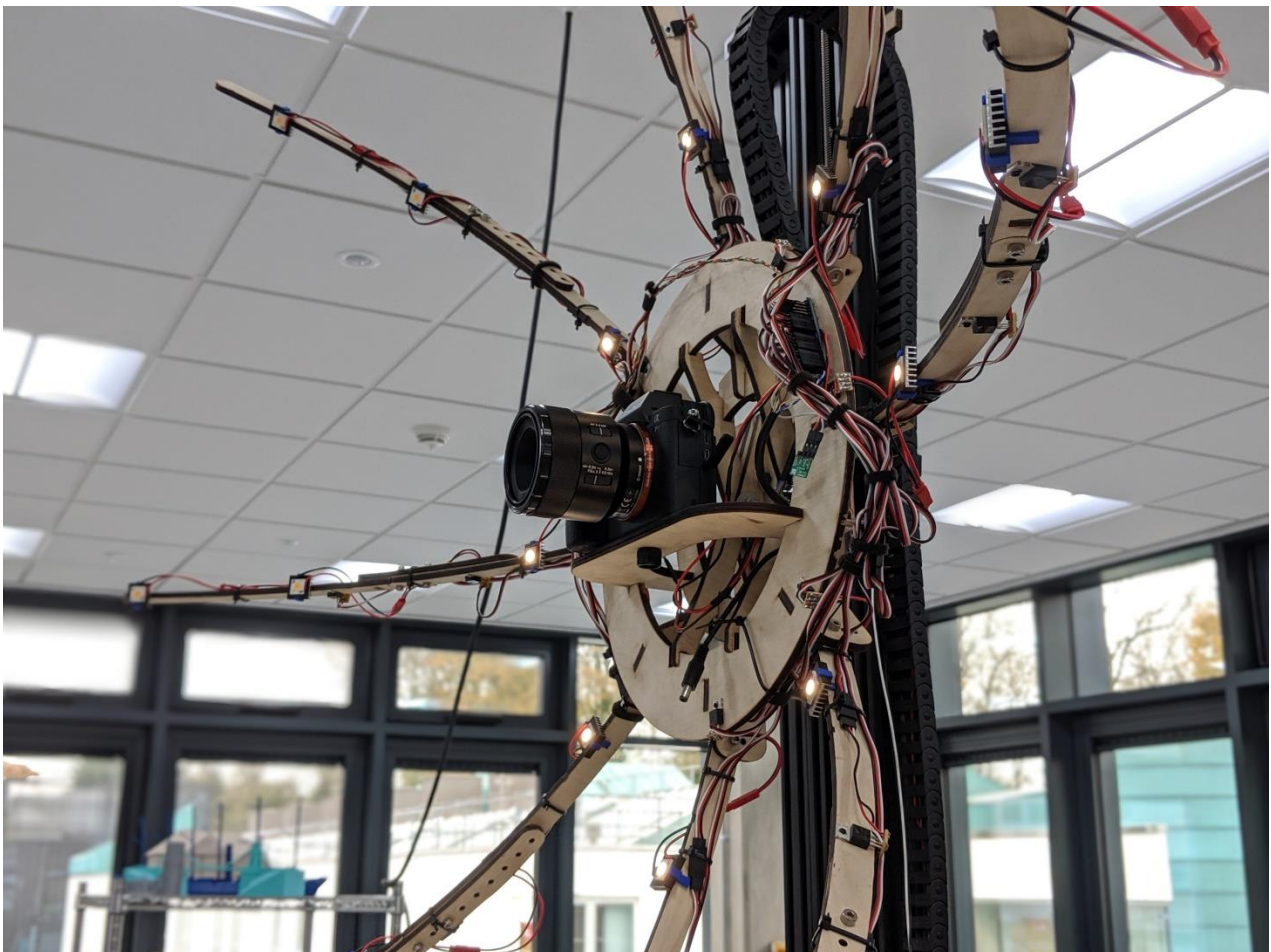
Mae'r ddogfen hon hefyd ar gael yn y Gymraeg | This document is also available in Welsh.

We have designed an automated system to capture the colour and structure of planar surfaces. The design offers an affordable and simple solution to acquire image data of cultural heritage objects and to produce digital reproductions with high surface detail. The system uses a digital camera coupled to x-y linear guides and combines photogrammetric capture with Reflectance Transformation Imaging (RTI). The system takes advantage of the metric accuracy of photogrammetry and the high-resolution data obtained with Reflectance Transformation Imaging.

The scanner is controlled by intuitive custom software. Given the size of an area to scan, it automatically calculates the number of photographs for each imaging method with a specified overlap. The obtained images are then processed externally and combined with the photogrammetry software of choice.

The goal is to combine the resulting data sets to generate accurate and high-resolution 2D and 3D data for scientific documentation of artworks, for example to record brushwork, damages to the surface or to monitor surface changes over time and for reproduction purposes such as the generation of photorealistic 3D digital models and 3D printed outputs.

We present some initial results from the recording of the painting 'The Grand Canal, Ascension Day' (c.1730-31) by the Italian artist Canaletto from the Woburn Abbey collection comprising a selection of images, 3D renders and video animation.



## Biography

Xavier Aure is a Research Fellow at the Centre for Fine Print Research, University of the West of England, in Bristol. His background is in conservation of paintings and decorative historic interiors. His PhD research investigated the use and applications of 2.5D and 3D technologies applied to the study, documentation and presentation of paintings. Currently, he is working on the development of affordable custom scanning systems to record surface texture information and material appearance for cultural heritage applications.