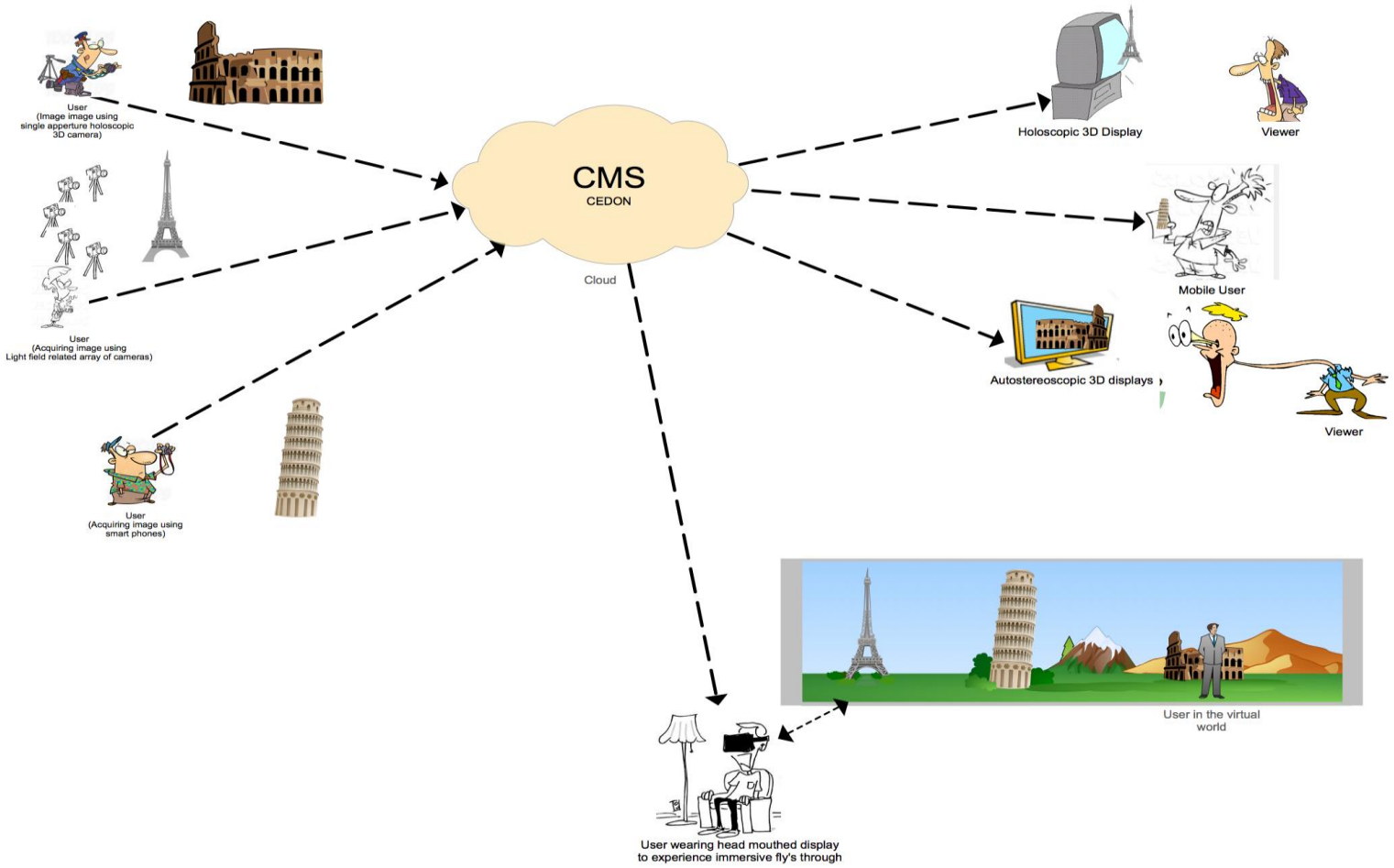
Cultural Heritage Preservation Using Holoscopic 3D Technology

Professor A H Sadka

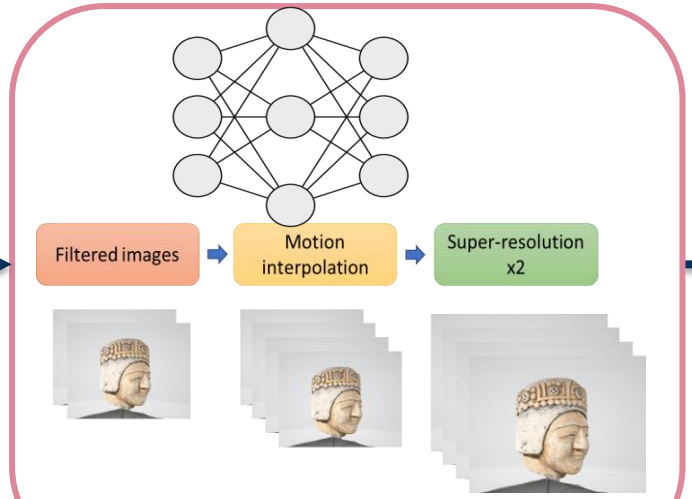
User Scenarios



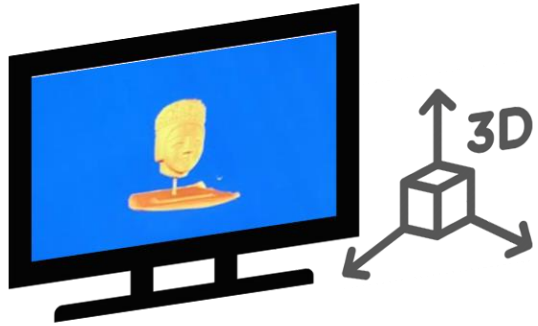
End to End Technology

Stages of 3D Image-Based CH Preservation System

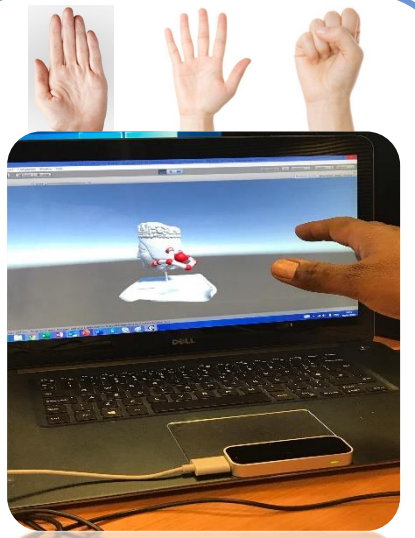
3D Image Acquisition



3D Image Enhancement



3D Adaptation & Visualisation



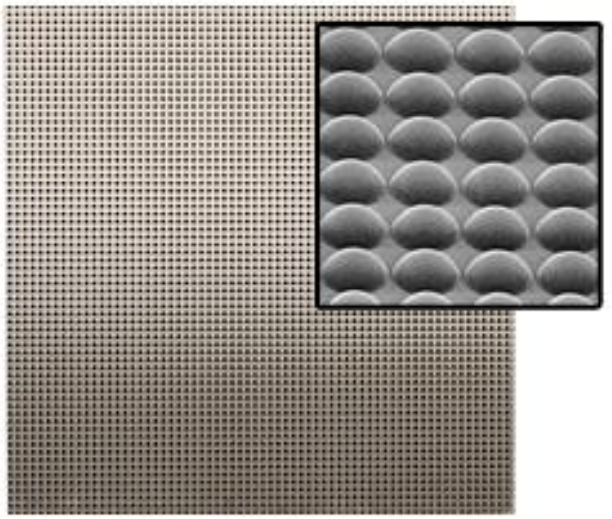
3D Interaction

H3D Image Acquisition

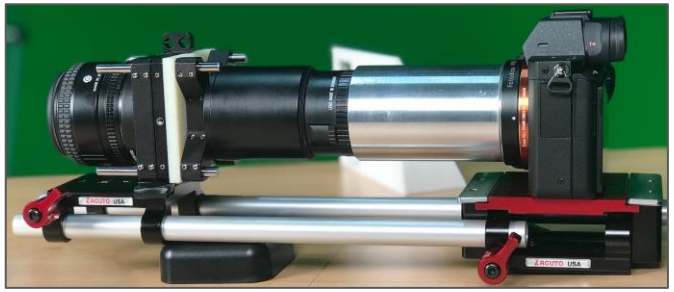
Holoscopic 3D Image Acquisition

The most common micro-vision system in nature

Fly's eye



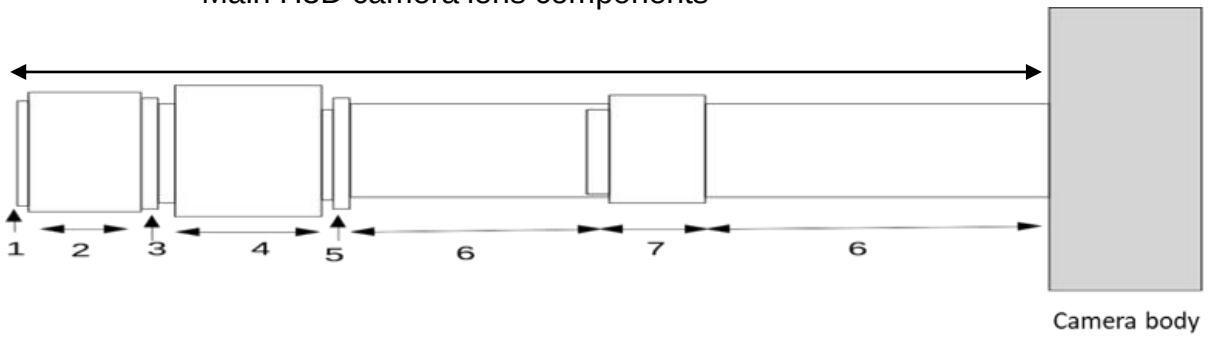
Macrolens Array (MLA)



H3D camera

Brunel H3D Camera Technology

Main H3D camera lens components



1: Square Aperture (SA)
2: Prime Lens
3: F-Mount
4: Adapter plate
5: MicroLens Array (MLA)
6: Extension tubes
7: Relay lens

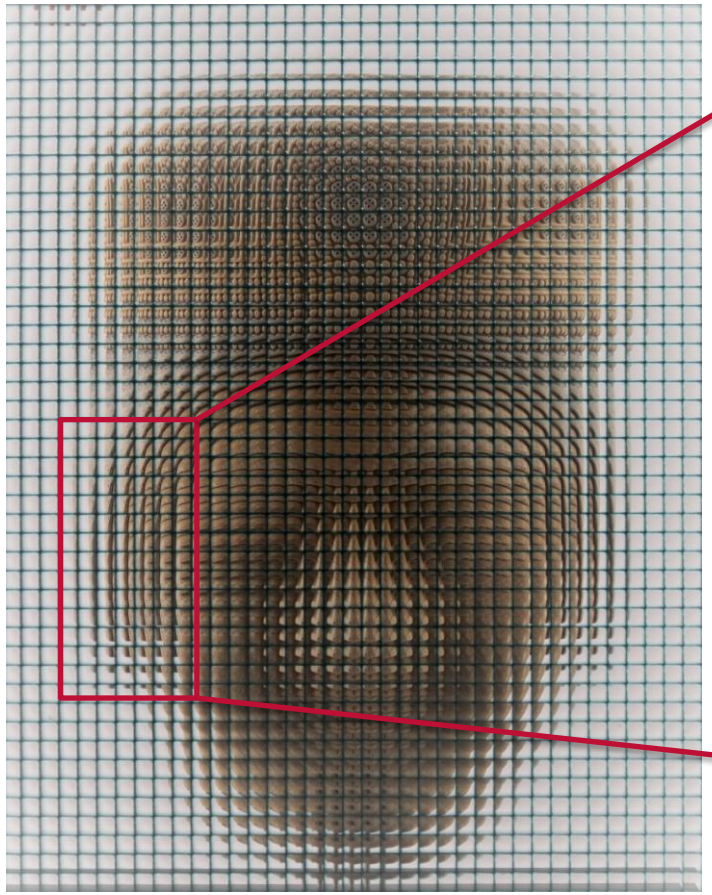
Brunel Holoscopic 3D camera Prototype

H3D CH Acquisition Setup

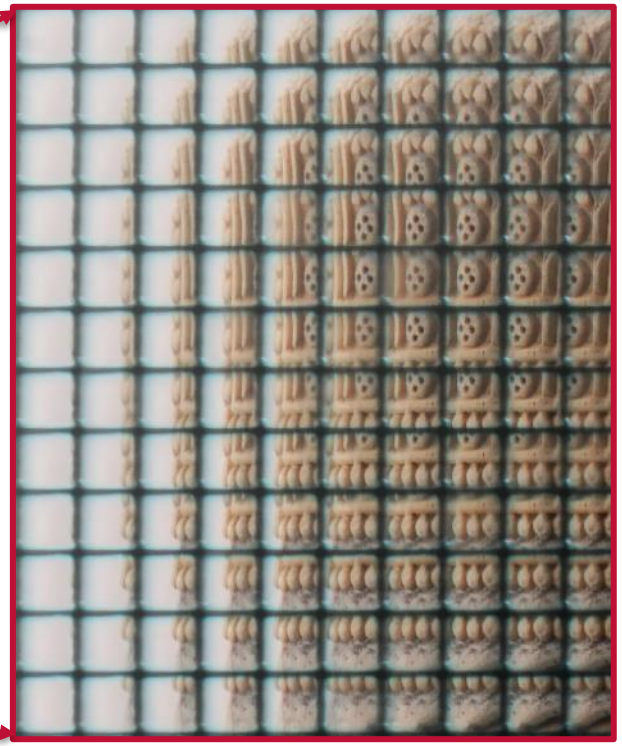
H3D camera Setup at Brunel University London

Holoscopic 3D Image

Capturing real Cultural Heritage Objects



H3D raw Image

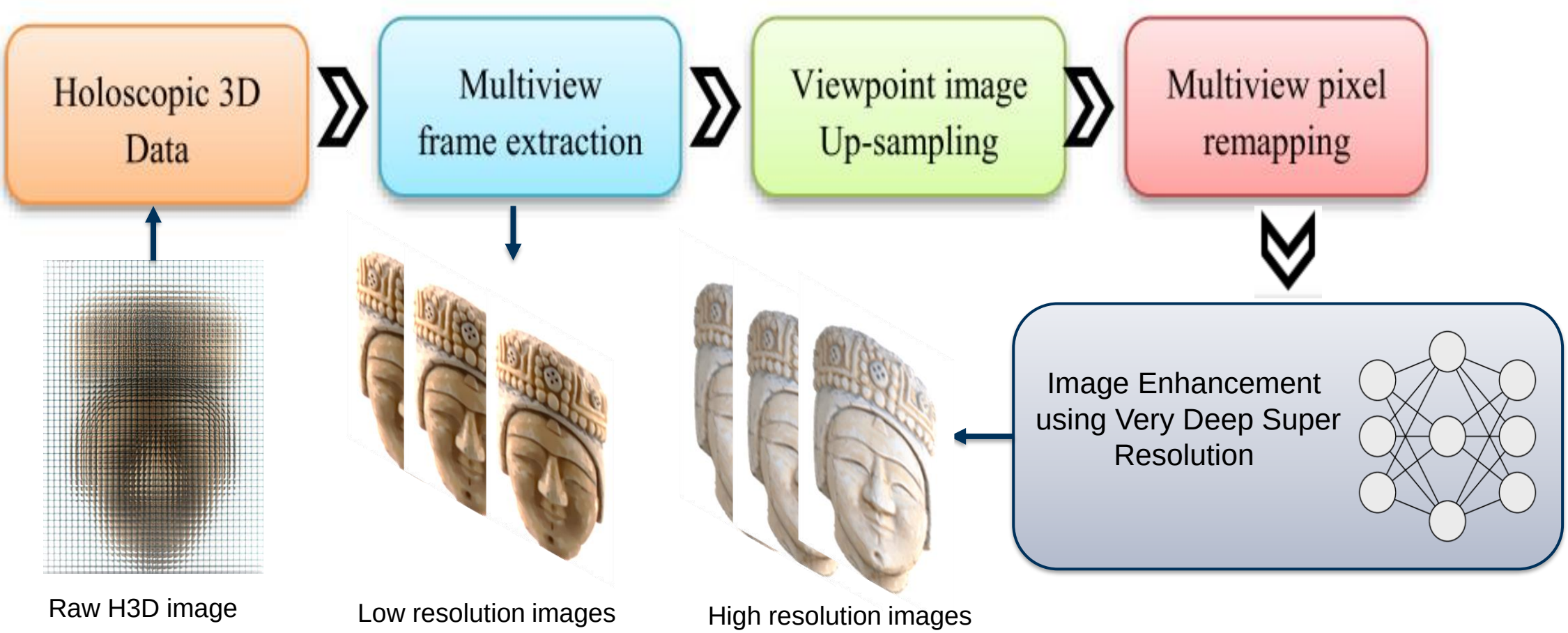


Zoomed H3D image area

Converted to 2D image

H3D Image Enhancement

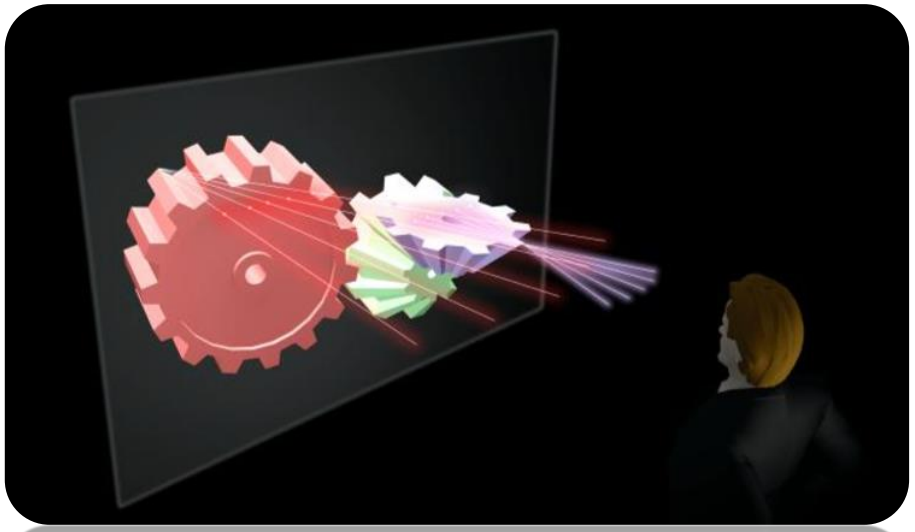
H3D Image Enhancement



3D Image Visualisation

Autostereoscopic Visualisation

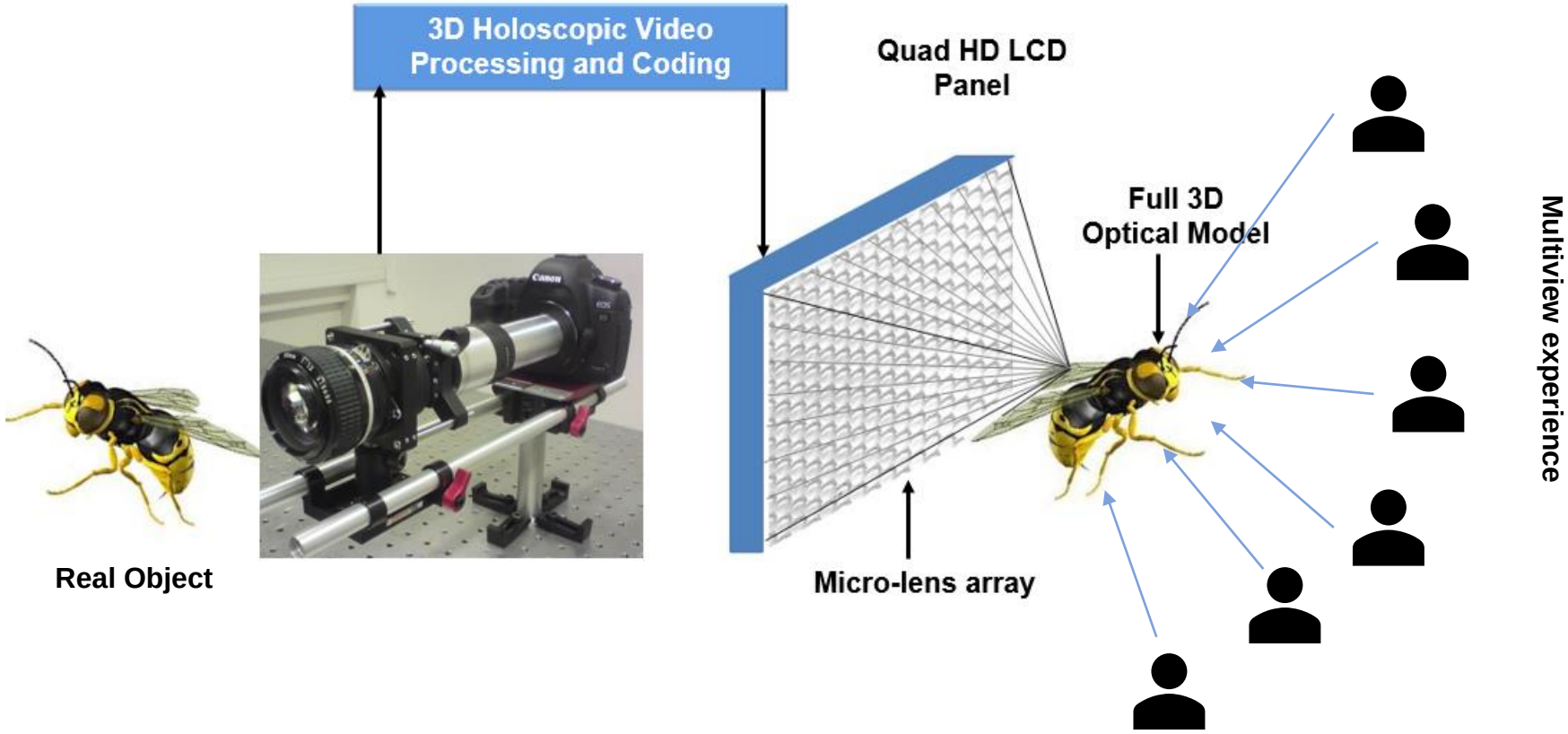
Parallax barrier display



Holoscopic display

Holoscopic 3D Visualisation

Working concept of Holoscopic 3D Technology

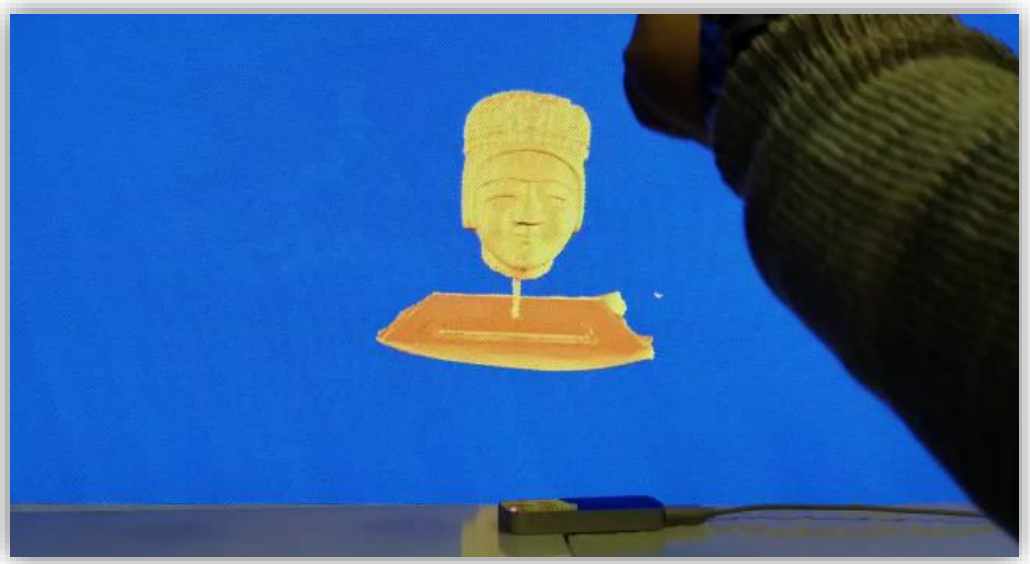


Interaction with 3D Content

3D Interaction Using Hand Gesture Recognition

- Interaction includes moving the object, scaling (up and down), stopping the object at a specific position to further explore it etc.

Three hand-gestures used



User interacting with a 3D model using hand gestures

Preserving World's Cultural Heritage

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THANK YOU

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