# CREAMS

## Scaffolding Creativity of Arts Students: Framework, Toolchain, and Educational Material on how to Create their Own Virtual Exhibitions

## Manual for the CREAMS Mixed Reality App

# CREAMS Project Consortium

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# Executive Summary

This document provides a guide manual for the CREAMS mixed reality application.

## Mixed Reality (MR) Application

*Launch and Navigate*

- Open the MR app on your HoloLens.
- Use the Navigation Menu to choose between (Figure 1):
    o   Artwork Gallery Viewer
    o   Physical-Digital Artwork Matcher.
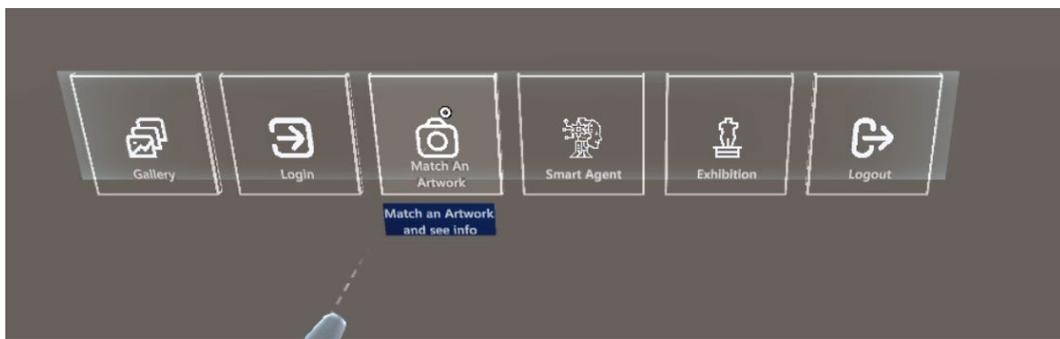    o   Cognitive Agent
    o   MR Exhibitions



Figure 1. Navigation menu items of the MR application.

*Artwork Gallery Viewer*

- Select Gallery Viewer from the menu.
- Browse thumbnail grid of all CREAMS artworks (Figure 2).
- Tap any thumbnail to open its Single Artwork View (Figure 3).
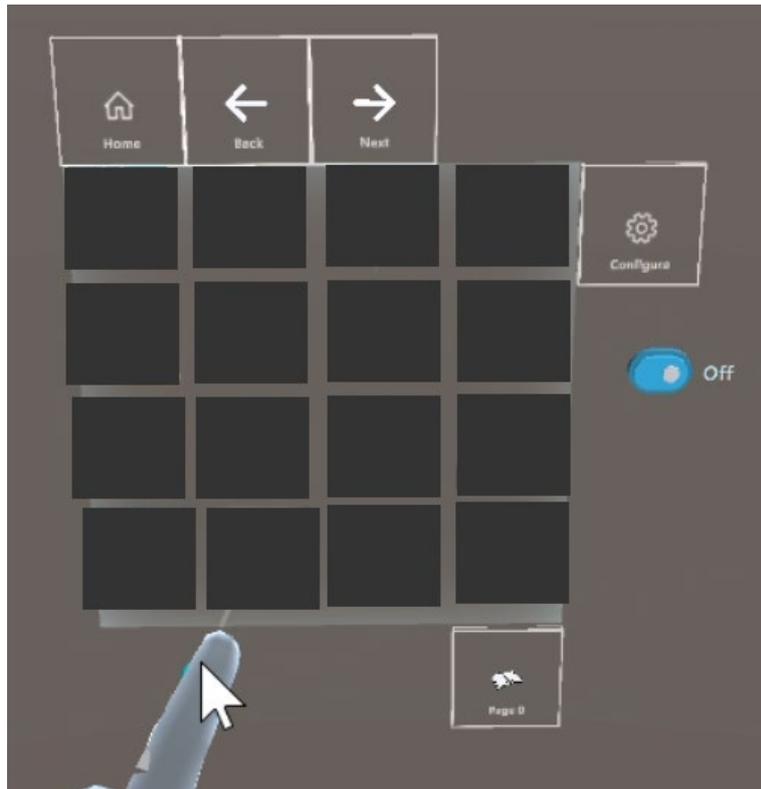- In Single View, tap associated media (e.g., video) to play.

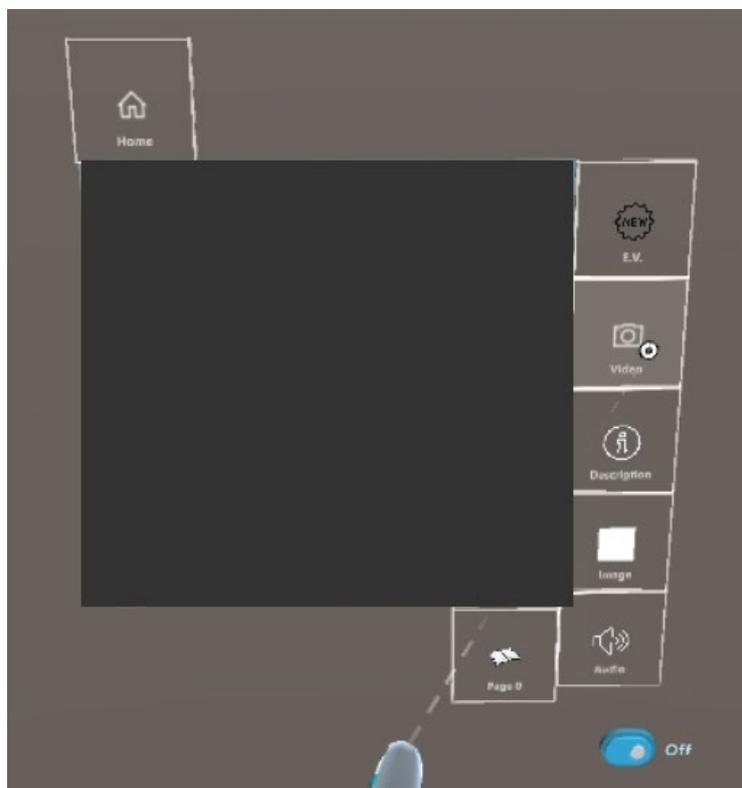**Figure 2.** Gallery view of the MR application *(artworks have been hidden)*.



**Figure 3.** Single artwork view of the MR application *(artworks have been hidden)*.

*Physical-Digital Artwork Matcher.*

*Capture a Snapshot*

- Aim the device's camera at a physical artwork and tap Capture (Figure 4).
- Optionally crop the image to focus on a specific area.

*Submit for Matching*

- Tap Submit; the app uploads your snapshot to the CREAMS server.

*Review Results*

- Within seconds, the server returns the top three visually similar digital artworks (Figure 5).

*Explore a Match*

- Tap any result to view its digital version and view all associated media (images, videos, metadata).
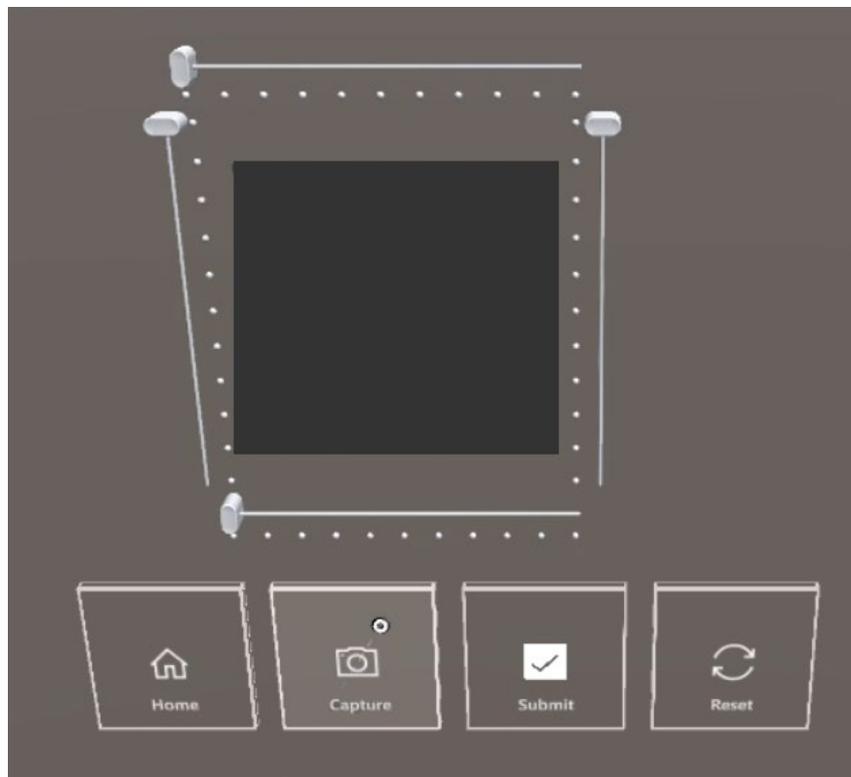


**Figure 4.** Taking a snapshot of a real physical artwork for image similarity matching with digital artworks *(artworks have been hidden)*.

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**Figure 5.** Displaying the top three most similar digital artworks to the captured physical artwork *(artworks have been hidden)*.

*Cognitive Agent*

- Select Cognitive Agent from the menu (Figure 6).
- View artwork and its description in text.
- Tap the Record button, speak your question aloud.
- The app sends your WAV file to the LLM component and displays its answer.



**Figure 6.** Gallery of the cognitive agent component *(artworks have been hidden)*.

*MR Exhibitions Viewer*

- Select MR Exhibitions (Figure 7).
- Choose an exhibition from the list.
- Browse assigned 2D thumbnails and 3D model previews (Figure 8).
- Tap a 3D artwork to load it full-size (Figure 9).
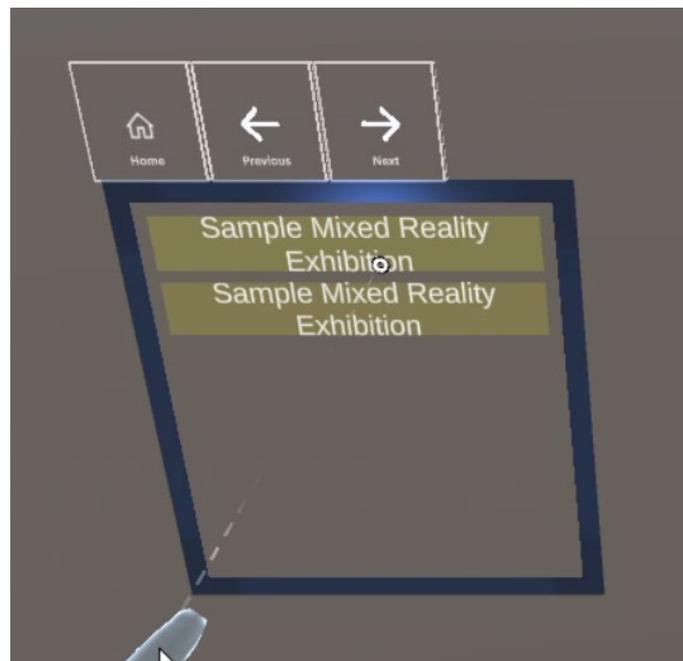- Interact via hand gestures: pinch to resize, drag to rotate.



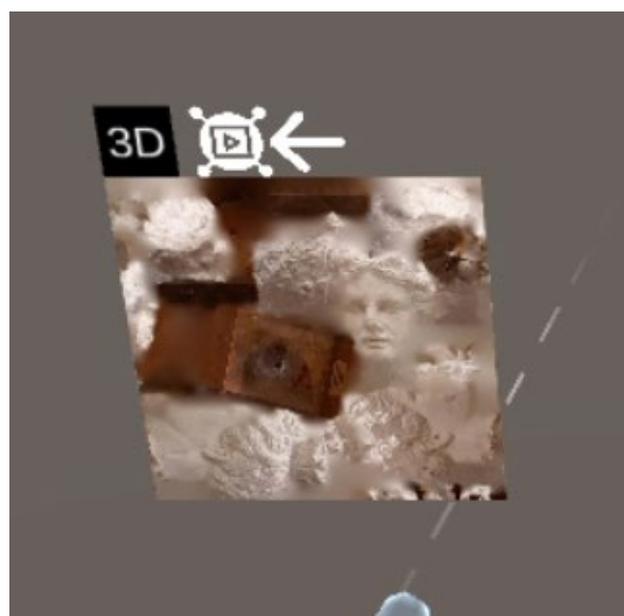**Figure 7.** Listing the mixed reality exhibitions.



**Figure 8.** Displaying the thumnbail of a three-dimensional artwork that is part of a mixed reality exhibition.

**Figure 9.** Displaying a three-dimensional artwork.