Microsoft HoloLens

Web and Mobile Solutions (WaMS)

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Goals Today

- About WaMS
- UW-Madison opportunity
  - YOUR opportunity to move UW-Madison forward
- Define mixed reality (MR)
- HoloLens overview
- HoloLens development
- Demo!
- Questions & brainstorming
About WaMS

- DoIT - Application Development and Integration (ADI)
- Develop custom, data-driven web applications
  - Long-term team based support model
  - 14 full-time developers, 2 student developers
  - Microsoft development stack
  - Cost recovery group
- Team overview document available
UW-Madison Opportunity

- Smartphone comparison - 10 years from now
- Research I university
  - Leadership
  - Wisconsin Idea
- Multiple Perspectives
  - Collaborative
  - Off the shelf applications
  - Entrepreneurial
  - Cutting edge

YOUR OPPORTUNITY TO CONTRIBUTE
What is Mixed Reality (MR)?

- Digitally rendered objects interact with physical objects in a unified environment and experience.\[1\]

[Pic] https://www.youtube.com/watch?v=qKpRrhI-en0
What is a HoloLens?

- Fully untethered holographic MR device
- Full Windows 10 installation with all functionality
- $3,000 (developer edition)
- 2-3 hour battery
Applications

- Individual
- Local Group
- Remote Group

[Left] https://giphy.com/gifs/headset-TRjJAwim7kaWY
[Middle] https://jiasuhui.com/archives/140681
[Right] https://hololens.reality.news/news
Gestures

Bloom
(Windows Key Press)

Air Tap
(Left Mouse Click)

Gesture Frame

https://support.microsoft.com/en-us/help/12644/hololens-use-gestures
Gaze - Your MR mouse

[Left] https://abhijitjana.net/2016/05/19/adding-a-gaze-input-cursor-to-your-unity-3d-holographic-app/
Development

3D Model Editor

Export .obj .fbx → Unity 2017

Edit/Compile Code

Visual Studio 2017

Deploy/Emulate

Microsoft HoloLens
Blender - Laptop 3D object
Unity 2017 - Setup application objects
void Start()
{
    Instance = this;

    // Set up a GestureRecognizer to detect Select gestures.
    recognizer = new GestureRecognizer();
    recognizer.Tapped += (args) =>
    {
        // Send an OnSelect message to the focused object and its ancestors.
        if (FocusedObject != null)
        {
            FocusedObject.SendMessageUpwards("OnSelect", SendMessageOptions.DontRequireReceiver);
            // play sound
            buttonClickSound = GetComponent<AudioSource>();
            buttonClickSound.Play();
        }
    };
    recognizer.StartCapturing Gestures();
}

public void OnSelect()
{
    // run animation
    this.gameObject.GetComponent<Animator>().Play("ShutAndOpenComputer");
}
Result on HoloLens
Demo Outline

- Lesions - WaMS
- Foot - Dynamic Anatomy
- Protein - WaMS
- Collaborative View - CAD Explorer

NOTE: The projected video streaming of HoloLens has a two second delay and transparent holograms are brighter while wearing the HoloLens.
Questions and Brainstorming
HoloLens demos available!

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