

# Tutorial and Laboratories

## 11464 – 11524PG AR/VR for Data Analysis and Communication

### Week 5

#### Introduction

HoloLens is another ground-breaking technology in the AR/VR world which aims at blending both digital and real world seamlessly. It is a Windows device that rests on top of your head with a capability to view everything up-close or far, as you prefer. One of the many advantages of this device is its capability to present holographic information and still be a part of the real world.

Multiple windows can be pinned to your eye glance, and you can shift between the different windows by moving your head. Another fascinating feature is its ability to allow the user to alter with various 3-D objects and position them on top of anything as the user please.

To get a deeper understanding of the product and its capabilities, you can use the following link : <https://docs.microsoft.com/en-us/archive/msdn-magazine/2016/november/hololens-introduction-to-the-hololens>.

The main topics which will be covered in this tutorial are:

- Setting up your HoloLens Device
- Setting up Live streaming of the device
- Connecting the device to your local PC
- Interaction with Holograms

#### Exercise 1: HoloLens Setup

There are few easily accessible buttons (image below) in your HoloLens to set up:

- Power button is on the right corner of the posterior part of the device.
- Brightness adjustment button is on your right.
- Volume buttons are available on your left side.



**Figure 1.** The HoloLens and its main buttons.

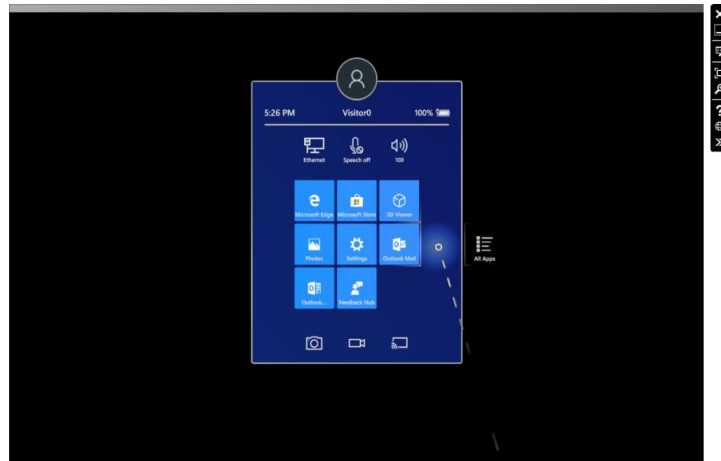
You can also adjust your HoloLens to suit the size of your head by turning the adjustment wheel at the back of the device.

Once it is powered on, you will be directed to a login screen. **Type in the PIN (3698741)** by touching the appropriate keys just like a normal phone touch screen. Then, If the HoloLens is not connected to Wi-Fi automatically, simply establish the connection by providing the necessary credentials when prompted.

**WiFi:** Robolab

**Password:** r0b0l@b123

Windows start screen should popup as shown below.



**Figure 2.** Windows start screen.

In case you are unable to see the start screen, there are two ways (an example is presented in the image below) to open the Windows Start Menu: 1) a two-handed Start gesture (preferred option), and 2) a one-handed Start gesture.

1. Holding out one hand with the palm facing you will cause the Start icon to appear on your wrist. Tapping the Start icon with the other hand will open the Start menu.
2. Holding out your hand with the palm facing you will display the Start icon on the wrist. Looking at the Start icon will cause dots to spin around the icon. While the dots are spinning, touching the index finger and thumb together will open the Start menu.

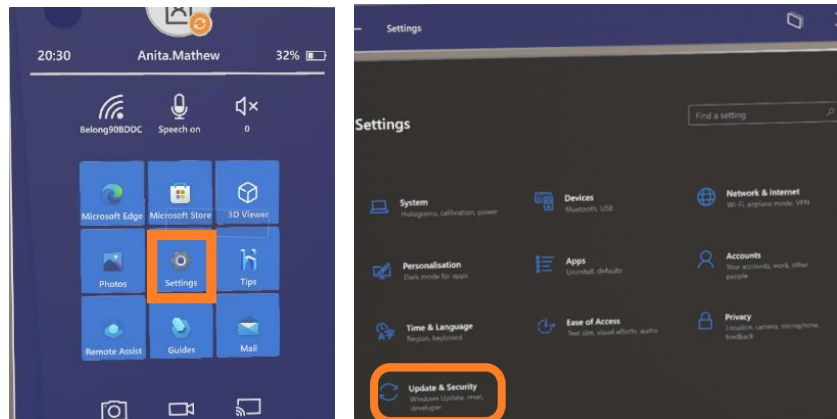


**Figure 3.** Hand gestures to open the Windows Start Menu.

## Exercise 2 Live Streaming

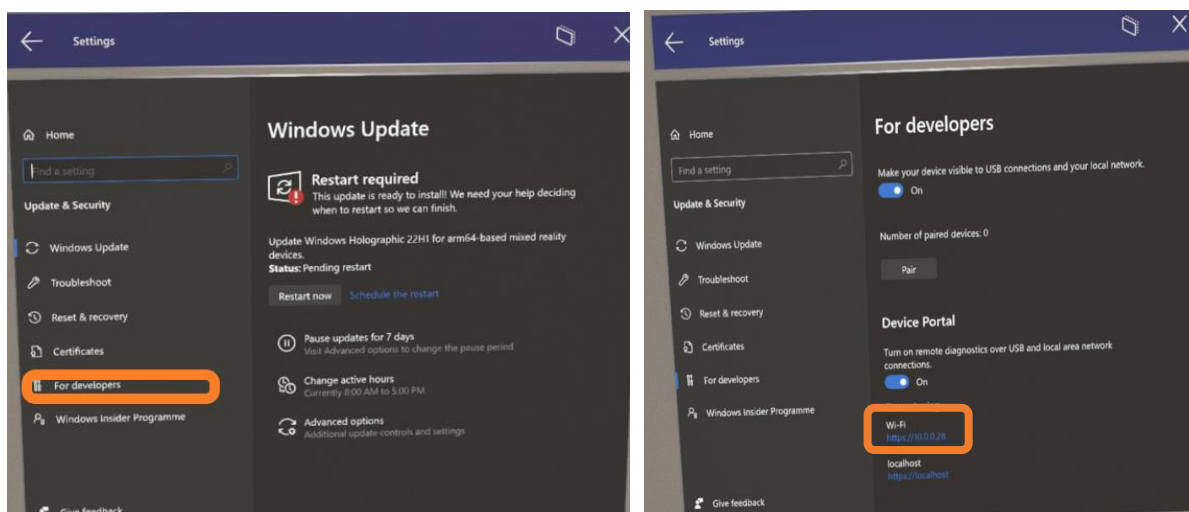
For this part, your PC/laptop should be connected to the same Wi-Fi network (Robolab) that the HoloLens. So, if the PC/laptop is not connected to the same Wi-Fi, simply establish the connection by providing the same credentials as presented above. After both systems (HoloLens and computer) are in the same network, you can proceed.

Navigate to the *Settings* tab from your start Menu as shown in the figure below (left panel).



**Figure 4. a)** Selection of Settings option from the Start Menu, **b)** Selection of Update & Security tab

Select the Update and Security settings as illustrated in Fig 4 (b), followed by the “For Developers” option as shown in Fig 5 (a).

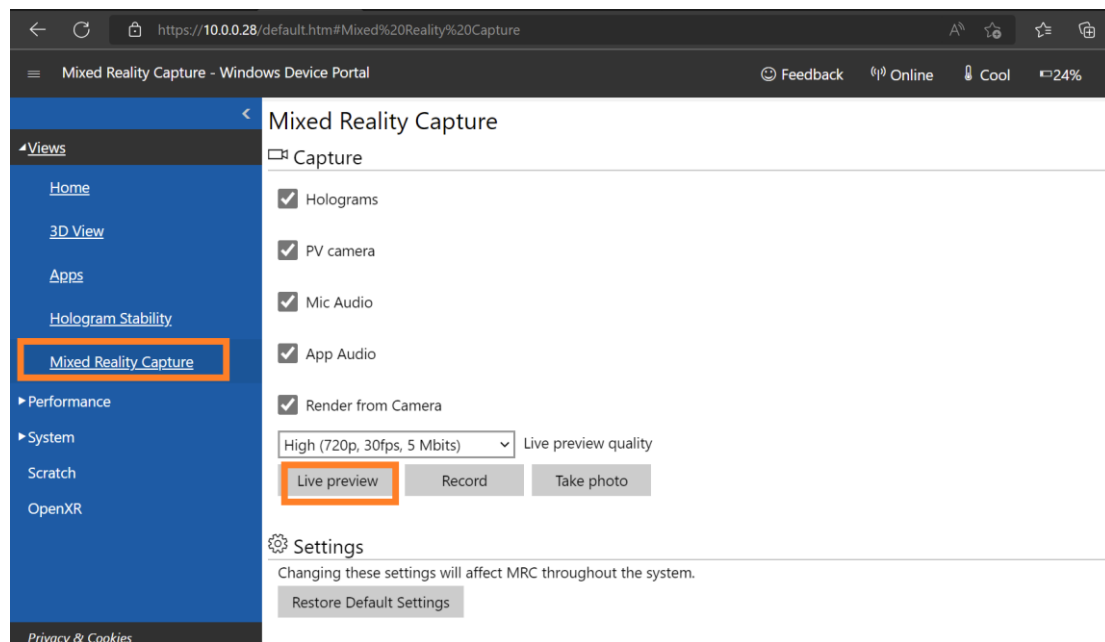


**Figure 5. a)** For developers option **b)** Navigation to Device portal settings

Navigate to the bottom of this page to the section Device portal and enable remote diagnostics as shown in Fig 5 (b).

Please ensure that your PC and the HoloLens is connected to the same Wi-Fi network.

Open a web browser in your local PC and type in the host URL that you obtained from the previous step (Under Wi-Fi section). The windows device portal page on your PC should prompt you to setup the login details. Once the details are verified, please navigate to the Mixed Reality Capture option under the Views section, and further enable Live streaming option as shown in Figure 6. The live streaming of your HoloLens should now be visible on your PC.



**Figure 6.** Device Portal Setup in local PC to enable Live Preview.

### Exercise 3: Interact with Holograms

The next step is to understand how holograms work and how to interact with them. HoloLens have included a Tips section which acts as a great introduction to them. Click on the *Tips* icon as shown below.

This section will open a window to guide you through the various sound and touch gestures available on the device for interacting with holograms. Select first the voice feature and then move on to the hand gestures guide.



There are different methods which are available to interact with HoloLens and they are Gaze, Gesture, Voice, and spatial mapping.

### Exercise 4: Fun time with holograms

This section is intended to familiarise you with the device and its capabilities from the perspective of a hologram.

Open the start menu and navigate to Microsoft Store. Search for the game *Graffiti* and install it on your device.

Once installed, navigate back to start menu and select the downloaded app from the *All Apps* option.

Direct both your palms to face your way to be able to access a menu with lot of available options such as colour, line type and selection mode.

Play around with the various options and interact with the created graffiti art, to enjoy the immersive experience of HoloLens.