HelloHolo Workshops
End-to-End
Microsoft HoloLens App Development

Workshop Overview

Microsoft HoloLens is the world's first fully-untethered holographic computer that delivers mixed reality applications. Using the Windows Holographic SDK and tools, developers can easily build apps that deliver immersive, 3D, room-scale experiences.

This **Microsoft HoloLens App Development Workshop** gives an **end-to-end** overview of the Universal Windows Platform (UWP) and Unity 3D engine, and provides hands-on learning and coding with a real HoloLens through multiple tutorials.

At the end of this workshop, attendees will have a full understanding of interaction concepts on Microsoft HoloLens, and the foundation to build their own mixed reality experiences that make the best use of HoloLens capabilities.

Attendees will receive a certificate of participation upon successfully completing the workshop.

Workshop Length

9AM to 6PM, weekday/Saturday.
8 hours, excluding 1h lunch break.

Suggested Requirements

This workshop is recommended for people with intermediate experience in app development. Specific experience with the Microsoft .NET Framework or C# language is helpful, but optional.

Attendees will need to bring their own laptop for the lesson (see Laptop Setup).

Schedule & Pricing Details

Public workshops and private corporate sessions are available.
Workshops are held at a HelloHolo-provided venue, or on-site at the client's location.

Please visit www.hellholo.info/workshops, email helloholo@axensionstudios.com, or call +65 9625 2267 for workshops schedules and pricing.

www.helloholo.info
HelloHolo is an initiative by Axension Studios
and is not associated with Microsoft, Microsoft Singapore, Microsoft HoloLens and/or its partners.

Workshop Outline

- Introduction to Microsoft HoloLens & Mixed Reality
- Introduction to Development Concepts
- Introduction to Unity 3D (Tutorial)
- MR Concepts: Gaze (Tutorial)
- MR Concepts: Gesture & Voice (Tutorial)
- MR Concepts: Spatial Mapping (Tutorial)
- Hands-on exploration of additional HoloLens apps and concepts

Learning Outcomes

- Understand the concepts for Mixed Reality apps on Microsoft HoloLens
- Architecture an app for UWP
- Use and navigate Microsoft Visual Studio and Unity Editor
- Use the .NET Framework and C# to build 3D UWP apps
- Use the Windows Mixed Reality APIs:
  - Displaying Holograms
  - Gaze, Gesture & Voice
  - Spatial Mapping & Understanding
- Understand the following advanced concepts:
  - Shared Holographic Experiences using a local server
  - Using the Vuforia SDK to anchor holograms to physical objects
  - Connect to cloud services using the Unity Plugin for Azure
- Build, deploy and test using a real Microsoft HoloLens
- Deploy apps and publish to the Windows Store

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Trainer Profiles

Rong Kang is the Technical Lead and co-founder of HelloHolo. Having previously worked with Microsoft Singapore's Developer Experience and Evangelism team as a Technical Evangelist, he has used his wealth of knowledge and experience with Microsoft's development platforms and tools to empower the technical community to achieve more. He is most experienced with the .NET stack and tools, and specializes in Mobile and Cloud solutions for Windows and Android.

Kah Wei is a developer at HelloHolo with a rich experience with building games and interactive applications with Unity and OpenGL. Skilled with the C++ and C# programming languages, he has used his knowledge to create innovative solutions for games in multiple platforms, including mobile, desktop and for VR.

Rong Kang and Kah Wei's foray into mixed reality technology has allowed them to share and inspire other developers who also wish into venture into this new frontier of technology. You can expect their lessons to be high-energy and filled with personal insights.

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Laptop Setup

Attendees will need to bring their own laptops for the workshop. Follow the instructions below to setup your laptop for Windows Mixed Reality development by installing the required software.

Click to Download	Notes
Visual Studio 2017 **OR** Visual Studio 2015 Update 3	**Visual Studio 2017:** • Select the **Universal Windows Platform development** workload • Select the **Game Development with Unity** workload ○ **Deselect** the Unity Editor optional component since you'll be installing a newer version of Unity from the instructions below. **Visual Studio 2015 Update 3:** • If you choose a custom install, ensure that **Tools (1.4) and Windows 10 SDK (10.0.10586)** is enabled under Universal Windows App Development Tools node. All editions of Visual Studio 2015 Update 3 and Visual Studio 2017 are supported (including Community). **Note**: **The HoloLens Visual Studio project templates are currently only supported on Visual Studio 2015 Update 3 and are not compatible with Visual Studio 2017.**

HoloLens Emulator (build 10.0.14393.0)
 	
(OPTIONAL FOR WORKSHOP)
	The emulator allows you to run apps on Windows Holographic in a virtual machine without a HoloLens. Build 10.0.14393.0 includes the latest updates to Windows Holographic on HoloLens. If you have already installed a previous build of the emulator, this build will install side-by-side. This package also includes holographic DirectX project templates for Visual Studio.
	Notes:
	• **Your system must support Hyper-V for the Emulator installation to succeed. Please reference the System Requirements section below for the details.**
	• **If you are using Visual Studio 2017 and do not have Visual Studio 2015 installed, you must update the registry to work around a prerequisite check**
	   1. Add or locate this key: HKLM\SOFTWARE\ Microsoft\Analog
	   2. Add a REG_SZ value in that key with name: "OverrideHoloLensSDKPrerequisites", and value: "TRUE"
	   3. If you are on an x64 version of Windows, also add or locate this key: HKLM\SOFTWARE\Wow6432Node\Microsoft\Analog

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	4. Add a REG_SZ value in that key with name: "OverrideHoloLensSDKPrerequisites", and value: "TRUE"
Unity	**Minimum Version**: 5.5.0f3 on November 30th, 2016
	The Unity engine is an easy way to get started building a holographic app.
	Important, ensure the following Components are selected:
	• Unity 5.X
	• Standard Assets
	• Windows Store .NET Scripting Backend
	Deselect the following Components:
	• Microsoft Visual Studio Community

If attendees face any difficulties with installing the developer tools, they may use a loaner PC or connect to a pre-prepared Lab Virtual Machine online.

For more information, please visit:

https://developer.microsoft.com/en-us/windows/mixed-reality/install_the_tools

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