Developing Virtual Reality Applications with Unity

Instructors:

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Arno Hartbolt, University of Southern California Institute for Creative Technologies
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Date and Length:

Full day

Abstract:

This tutorial will provide an introduction to Unity (http://www.unity3D.com) and several VR components that are designed to work with Unity. These VR components can be used in isolation or pieced together to provide fully immersive VR experiences.

Unity is a feature rich multi-platform game engine for the creation of interactive 3D content. It includes an intuitive interface while at the same time allowing low-level access for developers. Thousands of assets provided by other content creators can be reused to quickly develop immersive experiences. Because of its intuitive interface, well designed architecture, and ability to easily reuse assets, 3D software can be developed in a fraction of time compared to traditional development.

Consumer-level virtual-reality hardware combined with Unity have recently empowered hobbyists, professionals, and academics to quickly create virtual reality applications. Because of Unity's widespread use and ease of use, several virtual reality companies now fully support Unity. During this tutorial, participants will learn how to quickly build virtual reality applications from some of the leaders of Unity virtual reality development. Attendees will gain an understanding of how to use multiple VR components with Unity and will have enough knowledge to start building VR applications using Unity by the end of the tutorial.

Prerequisites and intended audience

We suggest that attendees bring their own laptop with Unity installed and may optionally bring their own VR peripherals. Whereas bringing your own laptop is not required, you will retain the information provided in the lessons much better if you are an active participant working along with the speakers. We also suggest users have already installed software that speakers will be talking about such as

- the Oculus Unity package (https://developer.oculusvr.com/)
- the Sixense Unity plug-in (http://sixense.com/sixensestudios/unity-plugin)
- MiddleVR (http://www.imin-vr.com/middlevr/)

- the Virtual Human Toolkit. (https://vhtoolkit.ict.usc.edu/download/)

Some of the speakers will be available before the tutorial begins (7:30am to 8:30am) to help those who have not yet installed the software.

The day will start at a basic level for those who are new to Unity. For the morning session, no programming experience will be required although the speakers will spend part of their time talking about code. The complexity of topics will expand as the day goes on and we expect some participants to not attend the entire day—those new to Unity might only attend morning sessions and advanced users might choose to only attend sessions of interest.

Speakers:

Jason Jerald (jason@nextgeninteractions.com) is founder and President of NextGen Interactions, a company that provides consulting services and product development in the areas of virtual/augmented reality, interactive 3D graphics, and human-computer interaction. Jason's virtual reality work has been featured on ABC's Shark Tank, in the New York Times, and on the cover of the MIT Press Journal Presence: Teleoperators and Telepresence. He also currently serves on the IEEE 3DUI and VR Conference Committees. Jason received a Bachelors in Science with an Emphasis in Computer Graphics and minors in Mathematics and Electrical Engineering from Washington State University. He received his PhD in Computer Science from the University of North Carolina at Chapel Hill with a focus on virtual reality and visual-temporal perception. Jason holds over 20 publications and patents in the areas of computer graphics, human-computer interaction, and virtual/augmented reality.

Peter Giokaris (peter.giokaris@oculusvr.com) is a Senior Engineer at Oculus VR and is responsible for leading the integration of the Oculus Rift with Unity. He has been working in the video game industry for the past 20 years. His previous companies have included Midway Games, Microsoft, Lucas Arts and Electronic Arts. Before starting at Oculus, he was at Qualcomm creating tools and demos to showcase new technologies such as augmented reality.

Danny Woodall (danny@sixense.com) is the Creative Director for Sixense Entertainment and has over ten years of game design experience including work at Sega Studios and Interpoint. Danny recently led the Sixense team that developed the grand-prize-winning app in the seven-week Intel Ultimate Coder Challenge: Going Perceptual contest. He has experience with systems design, technical design, AI, balance, camera, controls, single and multiplayer level design, and prototyping. Danny received a BS in Mechanical Engineering Technology from Central Washington University.

Arno Hartbolt (or Edward Fast) (hartholt@ict.usc.edu or fast@ict.usc.edu) is the project leader of the USC ICT Integrated Virtual Humans group and of the central ICT Art Group. As such, he bears responsibility for much of the technology, art, processes and procedures related to virtual humans. These include the integrated research prototype SASO, the mixed-reality Gunslinger project, and the Virtual Human Toolkit, which is freely available to the research community. He is also involved in a variety of other projects, including SimCoach, INOTS/ELITE, NSF Museum Twins, RobotCoach, Bravemind and Strive. Hartholt studied computer science at the University of Twente in the Netherlands where he earned both bachelor's and master's degrees. As one of the main integration software engineers within

the virtual humans project, Hartholt developed a variety of technologies, with a focus on task modeling, natural language processing and knowledge representation.

Anish Chandak (achandak@impulsonic.com**)** is CEO and CTO at Impulsonic, a company that is bringing next generation audio and acoustics technology to applications through innovation. Anish has a PhD and MS in Computer Science from UNC-Chapel Hill and a B Tech in Computer Science from the Indian Institute of Technology Bombay.

Sébastien Kuntz (sebastien.kuntz@imin-vr.com) is the founder and president of "i'm in VR", a company focusing on immersive VR, and offering MiddleVR, a generic VR plugin. He also created the VR Geeks association, which aims at creating cheap VR experiences. Sébastien is a board member of the French VR association AFRV and teaches VR at engineering schools and at game designers schools. Sébastien has more than 10 years of experience in VR. Prior to " i'm in VR", he worked at Virtools / Dassault Systèmes as the lead Virtual Reality engineer and at SNCF (french railways) on a VR Engine and VR Simulators (FIACRE and SIMURAT).