

Using Virtual Reality to Engage and Instruct: A novel tool for Outreach and Extension Age Group: All Ages!

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Recent developments in computer and display technologies are providing novel ways to interact with information. One of these innovations is the development of Virtual Reality (VR) hardware. Innovations in hardware and software have made this technology broadly accessible with options ranging from cell phone based VR kits made of cardboard to dedicated headsets driven by computers using powerful graphical hardware. VR based educational experiences provide opportunities to present content in a form where they are experienced in 3 dimensions and are interactive. This is accomplished by placing users in virtual spaces with content of interest and allows for natural interactions where users can physically move within the space and use their hands to directly manipulate/experience content. VR also reduces the impact of external sensory distractions by completely immersing the user in the experience. These interactions are particularly compelling when content that is only observable through a microscope (or not at all) can be made large allowing the user to experience these things at scale. This has great potential for entomological education and outreach as students can experience animated models of insects and arthropods at impossible scales. VR has great potential as a new way to present entomological content including aspects of morphology, physiology, behavior and other aspects of insect biology.

This demonstration allows users of all ages to view static and animated 3D models of insects and arthropods in virtual reality.

The VR system used in this demonstration is the HTC Vive being driven by a VR ready laptop. The insect models people will be viewing are freely accessible on Sketchfab.com using the Firefox Web Browser. In addition, the models displayed in this demo can also be viewed in two dimensions on any computer with most web browsers via Sketchfab.

Details and links to the associated hardware and software are available in the table below. The VR system and computer used for this demo are not exclusive and other less expensive options are available

Demo Associated Hardware and Software

Virtual Reality System	Computer	Software	Media
HTC VIVE - Virtual Reality System by HTC Link: http://a.co/d/4f6r5vz	MSI GE63 Raider RGB-010 15.6" 120Hz 3ms Performance Gaming Laptop GTX 1070 8G i7-8750H 16GB 256GB SSD + 1TB, RGB Cover Aluminum Black Link: http://a.co/d/2mDL0PF	Firefox Web Browser Link: https://www.mozilla.org/en-US/firefox/new/	Sketchfab.com Insect Model Collection Link: https://skfb.ly/6xVru

Alternative Hardware Options

Oculus Rift - \$399

Oculus Rift Bundles

by Oculus

Link: <http://a.co/d/5ikkjy1>

Samsung Odyssey – \$498.97

Samsung Hmd Odyssey Windows Mixed Reality Headset with 2 Wireless Controllers (XE800ZAA-HC1US)

by Samsung

Link: <http://a.co/d/hgZK7Ju>

Oculus GO Standalone Virtual Reality Headset – \$199.00

Oculus Go

by WARBV

Link: <http://a.co/d/br6Zk3a>

Lenovo Mirage Solo – \$399.00

by Lenovo

Link: <https://www.lenovo.com/us/en/daydreamvr>

Samsung Gear VR W/Controller - \$129.99

by Samsung

Link: <http://a.co/d/6j1ahK3>

Google Daydream View - \$99

By Google – Requires a smartphone

Link:

https://store.google.com/product/google_daydream_view

Google Cardboard - \$15

Google Cardboard viewer Wearable for Android 4.1 or Higher, or iOS 8.0 or Higher (Requires Smartphone)

by Google Inc.

Link: <http://a.co/d/2ugeoLA>

MERGE VR/AR Goggles - \$79.00

Virtual and Augmented Reality Headset - iPhone and Android, Adjustable Lenses, Dual Inputs, Soft Material, Easy to Clean and Share, Kids 10+ (Requires Smartphone)

by MERGE

Link: <http://a.co/d/8A4dUti>

VR Ready Laptops/Computers

Many possible options ranging from \$800 and up. Google VR ready laptops or computers for options