VR for CS

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Overview

The Virtual Reality for Computer Science (VR4CS) team is a group working toward creating Virtual Reality applications for the Oculus Go in classroom settings. The applications seek to demonstrate computer science (CS) concepts that adhere to the K-12 CS learning standards, including networks, basic programming, and algorithms. The goal is to help teach the concepts to students in a clear and engaging way. The team is developing the games from scratch, starting by selecting concepts from the standards, designing a scenario in which the concept is applicable, then implementing the gameplay in a virtual environment.

Challenge: Why use VR rather than a personal computer?

A common issue when developing a virtual reality application is making sure that it provides a more enriching experience for the user than if they were using the same application on a desktop. It is important to consider what the benefits of virtual reality are and take advantage of them.
These include:

Immersion – Keeping out external visual stimuli and increasing engagement between the user and the virtual environment and making the experience more fun and exciting.

Simulation – Using the body in a way that resembles reality in order to get a virtual experience that is as true to the actual experience it represents.

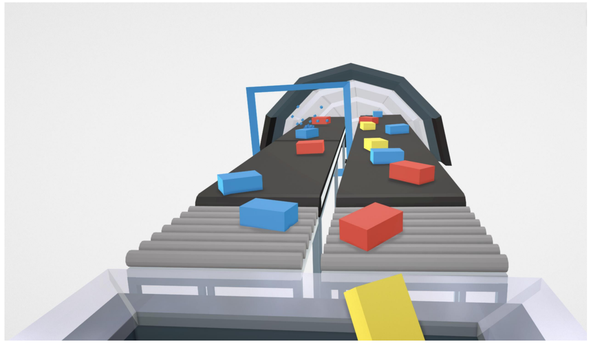
Purpose

To develop VR applications and supporting material to assist teachers in meeting the K-12 Computer Science Standards. The end result should clearly communicate the standards in a fun and engaging way.

K-12 Computer Science Standards				
Computing Systems	Networks & The Internet	Data & Analysis	Algorithms & Programming	Impacts of Computing
Devices Hardware & Software Troubleshooting	Network Communication & Organization Cybersecurity	Storage Collection, Visualization & Transformation Inference & Models	Algorithms Variables Control Modularity Program Development	Culture Social Interactions Safety Law & Ethics

Process

The team is working to build virtual reality applications from scratch. This begins with coming up with ideas on how to represent the academic computer science standards, writing gameplay to support the idea, designing the environment in which the game will take place, and implementing the design.



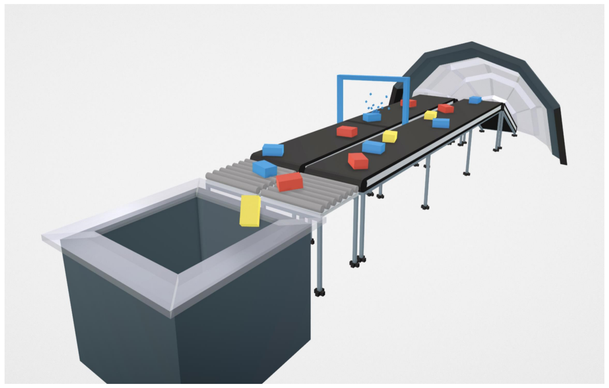
Google Blocks models of Network Collapse

Example: Network Collapse

Network Collapse is a game in which the user plays the role of a network component, such as a router or a modem, serving to meet the standard for Networks & The Internet.

The user takes incoming packages and routes them to their correct destination based on color, winning when a certain number of requests are completed, and losing points when packages fall on the floor.

This game takes place in a factory setting with the user stationed in a hub. Packages initially come in on surrounding conveyor belts, but may come flying in during harder levels.



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