App-synthesis

COS 301
V3D Graph Visualizer: User Manual

App-Synth

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1   Introduction

1.1   System Overview

The V3D Digraph Visualizer is a graph visualization tool that allows users to perceive the information contained within digraphs which will be defined using the set of triples notations specified by Barla-Szabo in a 3D environment. The system will allow users to visualize and interact with the graph models in a 3D space. The system will consist of a mobile and a desktop application. The mobile application will allow the user to visualise the graph in a 3D space with the use of a mobile virtual reality headset, while the desktop application displays the visualisation for observers.

1.2   System Configuration

Unity game engine is used to model the visual components and interface of the system, with C Sharp being the primary programming language used. Unity 2017.1 for development can run on Windows 7, 8 and 10 and also from MAC OS X 10.9 moving forward to later developments. For the development of the graph ideally Visual Studio can be used for debugging purposes.

1.2.1   Dependency Requirements (Development)

- **GPU**: Graphics card with DX9 (shader model 3.0) or DX11 with feature level 9.3 capabilities.

- **Visual Studio**: 2012 or higher. Download Here

- **Android Studio**: Android SDK and Java Development Kit (JDK) Download Here

- **Internet Connection**: Desktop needs to have an active Wi-Fi connection to facilitate communication with the mobile application.

1.2.2   Dependency Requirements (Compiled App)

- A mobile phone running Android 4.1 (Jelly Bean) or newer.

- Google Cardboard VR headset or equivalent

- 25mb of memory.

2   Installation

Download the installation file onto the mobile device. Once the file has been downloaded, begin the installation. The android mobile device will request the user to grant access to the mobiles file system. This is necessary in order for the application to access the graph specification files needed to load a graph. These files will be stored on the device internal storage. Once this has been established, the application will be installed onto the device.

To run the Desktop version, the user would have needed to download the (.exe) file of the application. Once downloaded, the user can run the installation and then proceed to open the desktop application once it has been installed.

3   Getting Started

Before we begin, the mobile device should not be placed inside the VR glasses as yet. This manual will prompt when its appropriate to Once you have installed all the dependencies and have launched the Application on both the Desktop application and the mobile application, you will be presented with the following interfaces:

3.1   On Mobile
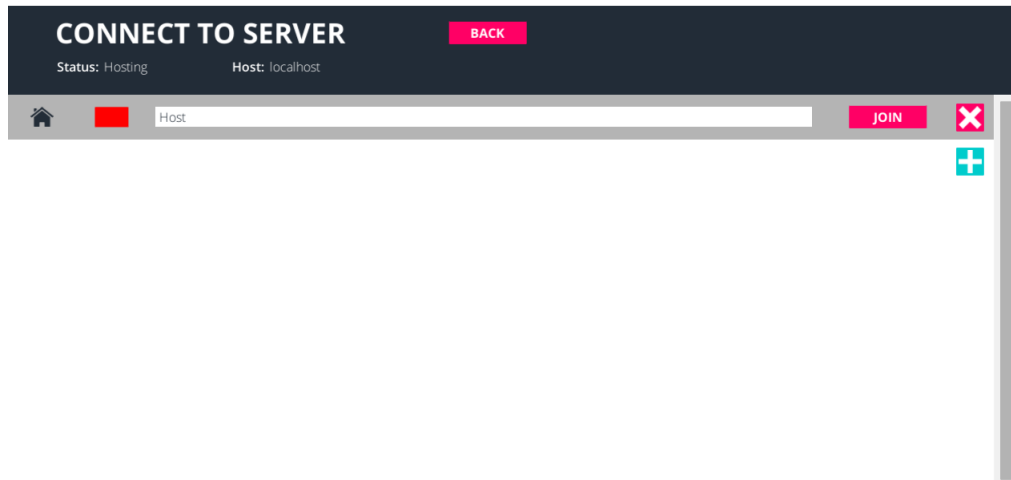
The Mobile application on this interface contains a menu where the user can select whether the mobile can be a server that can render the display onto the Desktop.

3.2   On Desktop
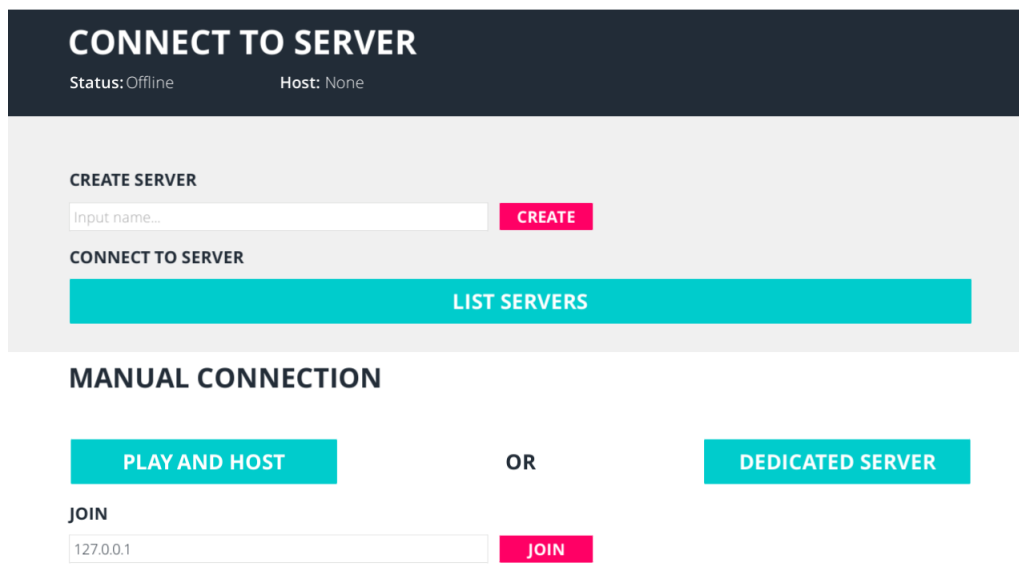
The Desktop application will be opening to this interface. From here if the server

4   Usage

Once you have installed all the dependencies and have launched the Application on both the Desktop application and the mobile application, you will be presented with the following interfaces:
Once you have selected the graph which you want to visualize, you will be presented a visualisation of the graph in a display similar to the screenshot below.

As seen on the screen shot above, there is a cursor on the center of the screen in the form of a white dot. This cursor us used to interact with various buttons and controls in the VR environment. The cursors movement is controlled by the users head movements. In order to interact with a control, simply hover the cursor over the appropriate control. On the screen there are four arrows positioned on the top, left, right
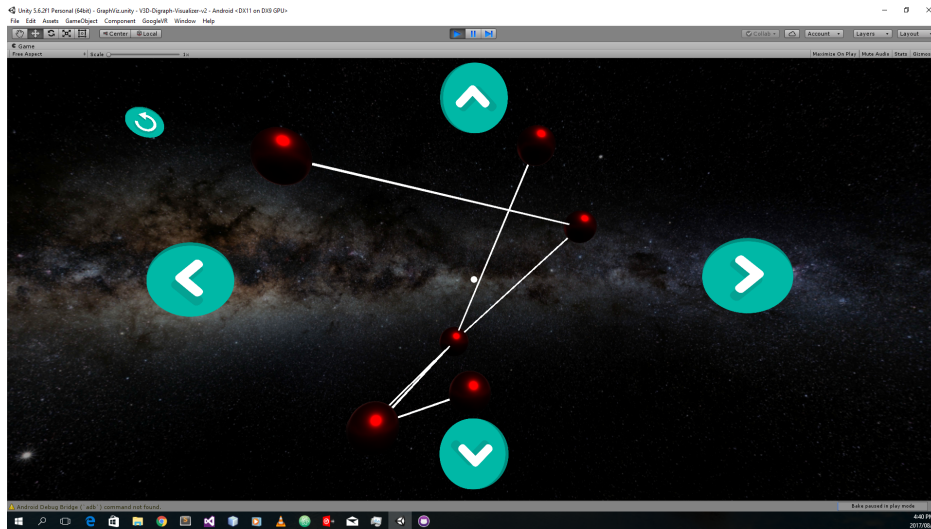
and bottom of the screen. These arrows are used to rotate the graph. There is also a back button located towards the top-left corner of the screen which is used to return to the main menu.

5   Troubleshooting