
Expanse

User Documentation

Group 13:

Allen Tung
Andrew Chan
Anthony Wong
Dmitriy Kozorezov
Joshua Chan
Marc Tabago
Yue Yang

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USER'S MANUAL

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Thank you for choosing to use our product, Expanse. We hope this product will provide you a great virtual reality experience.

1.0 GENERAL INFORMATION

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1.1 System Overview

Expanse Version 1.0 is the first release of an application developed for Google Cardboard systems to view a computer desktop in virtual reality.

Expanse can run as a standalone application on a desktop and Android phone as long as the system meets the minimum specifications. The gesture controller features can be used as long as the user has a Kinect camera device.

1.2 System Requirements

Desktop

	Min	Recommended
OS	Windows 7/8	Windows 7/8
RAM	2 GB	4GB
Graphical Processor	Intel HD 4400(DX 11 supported)	Nvidia GTX 660(DX 11 supported)
Processor	64 bit processor Dual-core 2.66Ghz	64 bit processor Dual-core 3.1 Ghz or better
Storage	Any	Any

Kinect

Color Camera	640 x 480 @ 30fps
Depth Camera	320 x 240 @ 30fps
Audio	16 bit audio @ 16kHz
Max Depth Distance	3.5 meters
Min Depth Distance	40 cm in near mode
Horizontal Field of View	57 degrees
Vertical Field of View	43 +/- 27 degrees

USB Standard	2.0
Supported OS	Win 7, 8

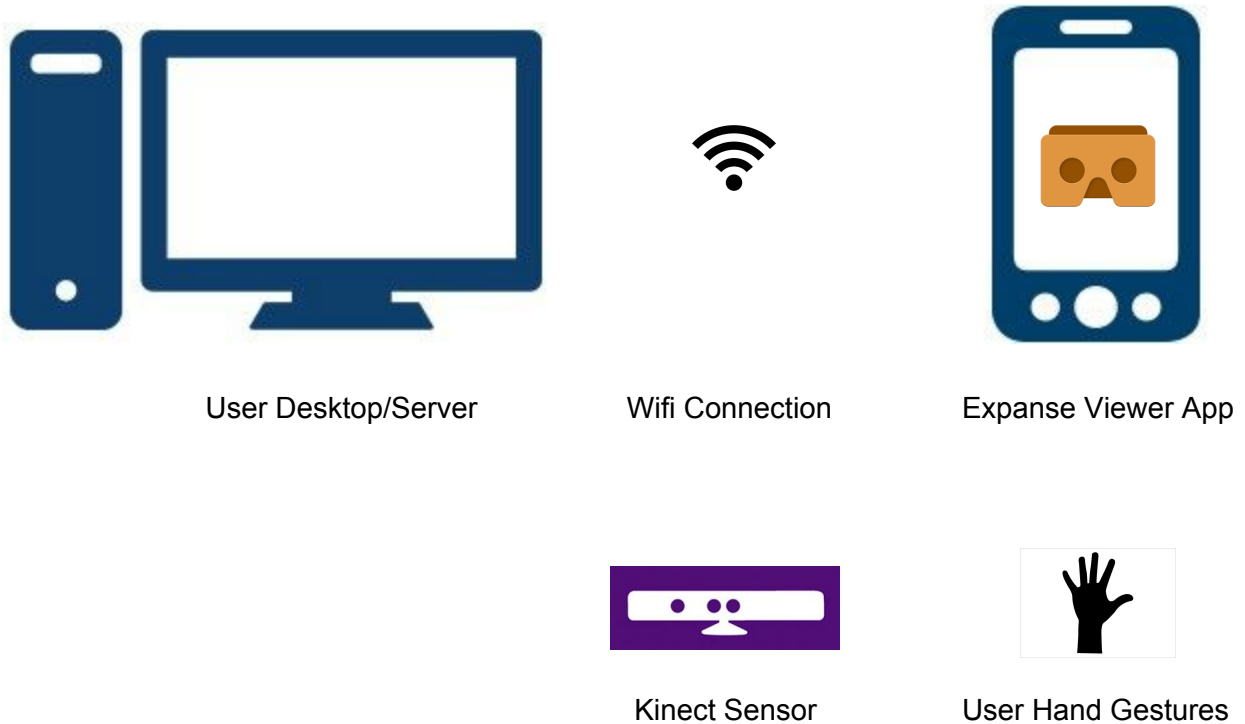
Smartphone Specification

	Min	Recommended
OS	Android KitKat 4.4 or higher	Android 5.0 Lollipop or higher
RAM	1 GB	3 GB
Graphical Processor	Adreno 306	Adreno 330
Processor	1.4GHz Qualcomm Snapdragon 410	1.8GHz Qualcomm Snapdragon 808
Storage	1 GB or higher	1 GB or higher
Display resolution	1280 by 720 pixels	1920 by 1080 pixels

2.0 SYSTEM SUMMARY

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2.1 System Configuration



2.2 Data Flows

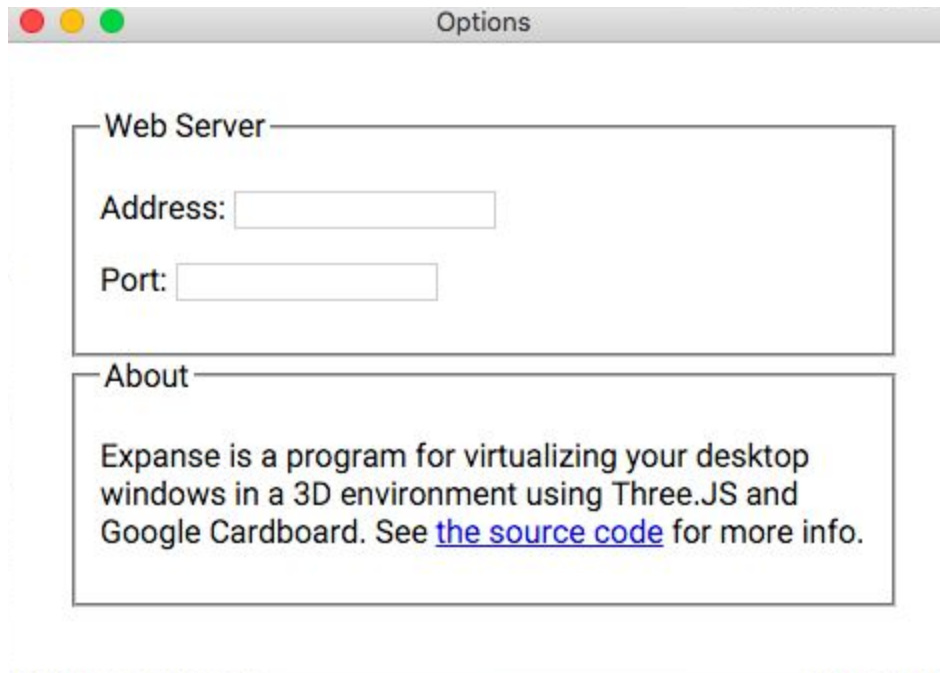
The user interacts with their desktop and runs the Expanse desktop application to begin virtualization of their desired windows. Then, on the Expanse Viewer application on the user's smartphone, the user will click [Connect] on the app to establish a connection with their desktop. The user will then place their smartphone into the Google Cardboard viewer to view their desired scene in virtual reality. If the user has a Kinect sensor and has Gesture Controls enabled the user can use their hand gestures to control their windows in the application.

3.0 GETTING STARTED

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3.1 System Menu

3.1.1 Web Server and Options



Options

Web Server

Address:

Port:

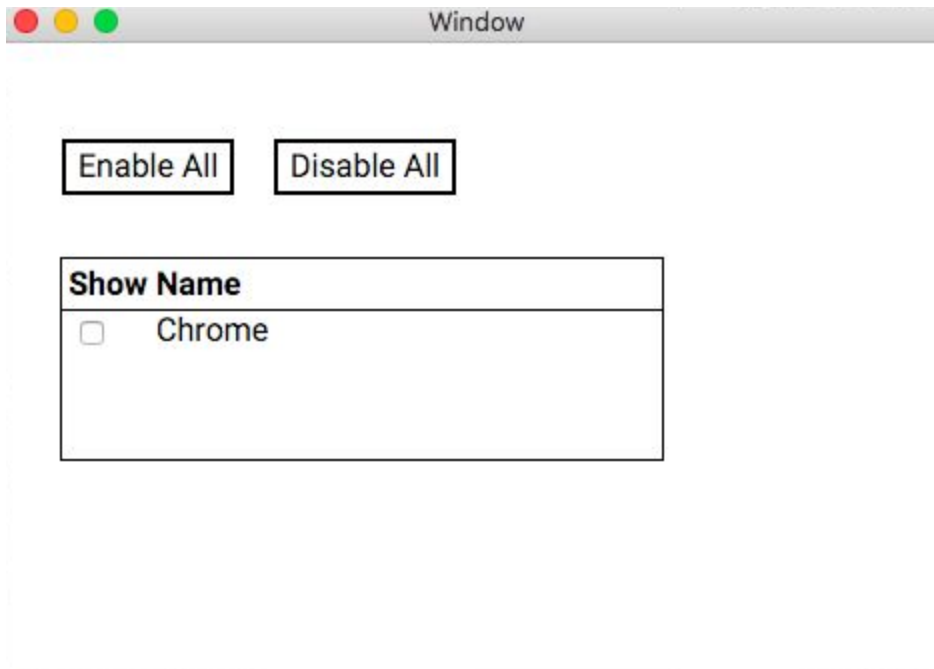
About

Expanse is a program for virtualizing your desktop windows in a 3D environment using Three.JS and Google Cardboard. See [the source code](#) for more info.

On this screen, the user can provide the IP Address and Port of the Server. The IPv4 of the server can be found from via the ipconfig.

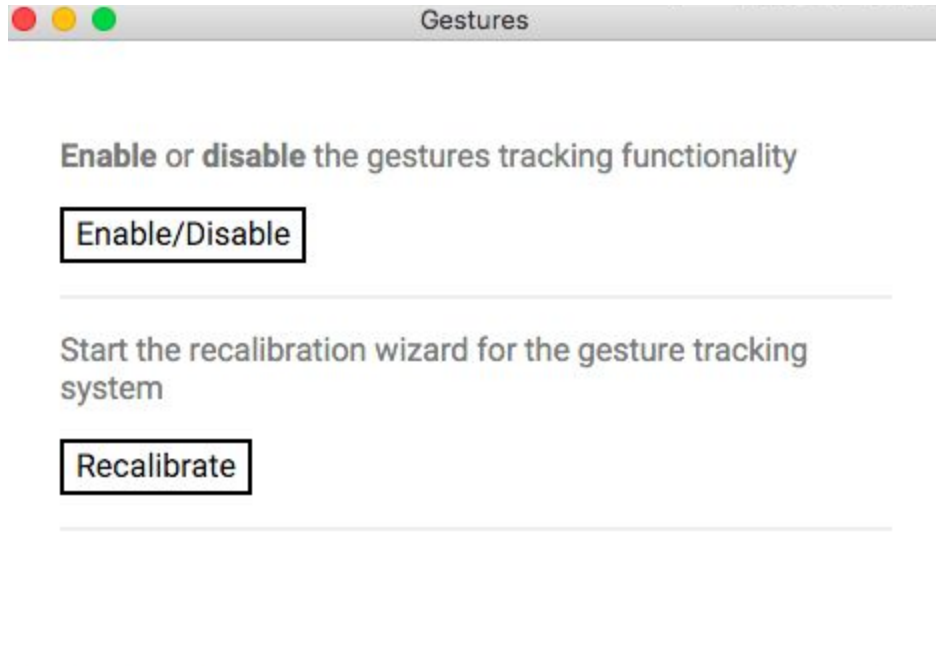
After this screen the Windows selection screen appears.

3.1.2 Window Selection



On this window we can see the selection of applications for virtual viewing. By clicking the checkmark next to the application name, the window will be selected for viewing. The Enable All button will select all windows and bring them to the virtual screen. The Disable All button will uncheck all selections.

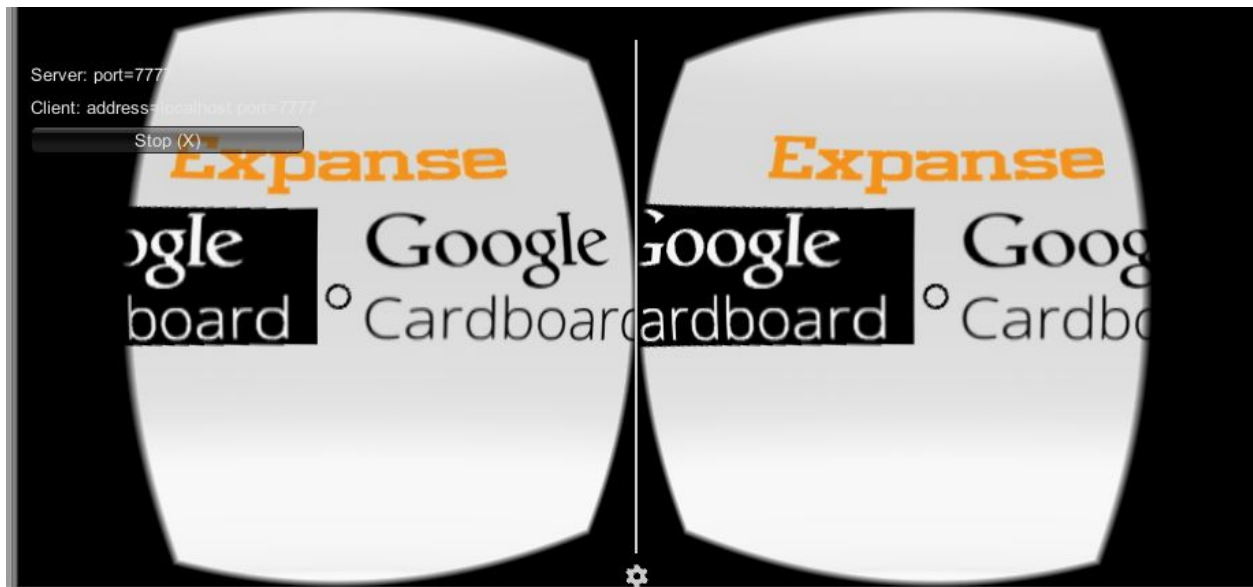
3.1.3 Gesture Control



The second optional window that appears manages Gesture Controls. The Enable/Disable button will Enable gestures if gesture tracking is disabled and vice versa. The 'Recalibration' button starts the calibration wizard which enables one to calibrate the user's hands.

4.0 USING EXPANSE

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After everything is setup, you should see this screen on your phone. The Google Cardboard images are placeholders for windows.

4.1 Reticle

The Reticle is placed at the center of your vision when you view it in Google Cardboard. This allows for ease of viewing and focusing on objects.

4.1.1 Reticle focusing

After placing a reticle on a window for more than 3 seconds, the window will pop forward and be selected for focus.

4.2 Gestures

Gesture control is used to manipulate and move windows in the virtual scene.

4.2.1 Moving Windows

By default when a window comes into focus and gesture control is activated, the window will be displaced proportional to the movement of the hand.

4.2.2 Resizing windows

By default, by moving fingers away from each other the window will grow larger. To decrease window size, users will move fingers closer together.