

# Virtual Reality

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## **Abstract**

This project consists of a virtual reality application for treating the phobia of solitude.

*Keywords:* VR, virtual-reality, software, hardware, academic, research, phobia, solitude.

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## 27 **2. Project Overview**

### 28 *2.1. Description of the problem*

29     Phobias are not an easy thing to live with. Furthermore, phobia of soli-  
30     tude not only affects the person that has it, it also impacts everyone that  
31     must keep up with it. [7]

### 32 *2.2. Goals*

- 33     • Create a software app in Unity, with support for VR hardware. The  
34       options being:
  - 35           Oculus Rift
  - 36           Google Cardboard

### 37 *2.3. Hypotheses or assumptions*

### 38 *2.4. Justification*

39     Given the usage of virtual reality is still considred questionable as a means  
40     to treat or even fix real fears, with the help from Metz [5], a viable usage is  
41     given for patients using virtual reality as a means for recovery:  
42     ”It provides exposure in a way that patients feel safe. We can go to a location  
43     together, and the patient can tell me what they’re feeling and what they’re  
44     thinking. Traditionally, psychologists have treated such conditions by helping  
45     patients imagine they are facing a fear, mentally creating a situation where  
46     they can address their anxieties. Virtual reality takes this a step further.”  
47     This meaning, the usage of virtual reality for people with disorders means  
48     that they can confront their fears, without them actually being in real danger.  
49     So long as the patient does is not relaxed at the thought that it is not real,  
50     the testing is safer. Even still, if the patient is relaxed trough the test, that  
51     could mean the treatment is giving results.

## 52 **3. Theoretical framework**

### 53 *3.1. Historical framework*

54 Considering that including many elements that take up the history of  
55 virtual reality will take up a lot of space (and time to write), in this section,  
56 only main points from Virtual-Reality-Society [9] shall be written:

- 57 • 1838 – Stereoscopic photos & viewers.
  - 58 1838 : The stereoscope (Charles Wheatstone)
  - 59 1849 : The lenticular stereoscope (David Brewster)
  - 60 1939 : The View-Master (William Gruber)
- 61 • 1929 – Link Trainer The First Flight Simulator
- 62 • 1950s – Morton Heilig’s Sensorama
- 63 • 1960 – The first VR Head Mounted Display
- 64 • 1961 Headsight – First motion tracking HMD
- 65 • 1965 – The Ultimate display by Ivan Sutherland
- 66 • 1968 – Sword of Damocles
- 67 • 1969 – Artificial Reality
- 68 • 1991 – Virtuality Group Arcade Machines
- 69 • 1993 – SEGA announce new VR glasses
- 70 • 1995 – Nintendo Virtual Boy

### 71 *3.2. Conceptual framework*

#### 72 *3.2.1. Definitions*

73 For many technologies that are presented, a proper definition is needed  
74 for them. With the definitions used from Bhardwaj, Sharma, Chouhan, and  
75 Sharma [1], PcMagazine [6], Katchhi and Sachdeva [3], Haas [2], Mazuryk  
76 and Gervautz [4], the required definitions are presented for some technologies  
77 and/or terms that will be used.

78 **Android (operating system)** “Android is a software platform and oper-  
79 ating system for mobile devices, based on the Linux kernel, and de-  
80 veloped by Google and later the Open Handset Alliance. It allows  
81 developers to write managed code in the Java language, controlling the  
82 device via Google developed Java libraries.” [1]

83 **Google Cardboard** “A 3D virtual reality headset constructed of cardboard,  
84 introduced in 2015. Designed by Google and made by third parties,  
85 Cardboard holds an Android smartphone and uses the Cardboard app  
86 or a third-party app to display a stereoscopic view. The app is con-  
87 trolled by head movement and the smartphone’s built-in accelerometer,  
88 as well as a magnet slider on the unit that interacts with the phone’s  
89 magnetometer.” [6]

90 **Oculus Rift** “The device is a lightweight virtual reality headset that blocks  
91 your view of your surroundings and fully immerses you in a virtual  
92 world. The Rift lets you step into a game, look around in any direction  
93 and see the game environment all around you rather than on a flat  
94 screen surrounded by your living room decor. And you see it in 3D.”  
95 [3]

96 **Unity (game engine)** “Unity (commonly known as Unity3D) is a game  
97 engine and integrated development environment (IDE) for creating in-  
98 teractive media, typically video games. As CEO David Helgason put  
99 it, Unity “is a toolset used to build games, and it’s the technology that  
100 executes the graphics, the audio, the physics, the interactions, [and]  
101 the networking.”” [2]

102 **Virtual Reality** “Real-time interactive graphics with three-dimensional mod-  
103 els, combined with a display technology that gives the user the immer-  
104 sion in the model world and direct manipulation.” [4]

### 105 3.2.2. *Legal framework*

106 Legal issues can always arrive from usage of any technology.  
107 However, common usage of virtual reality has raised suspicion of legal use.  
108 With the help of VenableLLP [8], some key points can be defined.

- 109 • “Some of the key legal issues that these stakeholders, along with brands  
110 and other advertisers sponsoring and providing VR programs and cam-  
111 paigns (“Brands”), should consider relate to intellectual property rights,

112 such as trademark and copyright ("IP"), and right of publicity. Gener-  
113 ally, these legal issues are the same across the virtual and real worlds,  
114 but VR creates interesting twists in how the existing laws may apply."  
115 Generally, main issues arise from the use of trademarks and intellectual  
116 rights. Money spent creating and keeping these creations profitable are  
117 a key point.

- 118 • "When VR stakeholders import or incorporate music, photographs,  
119 names or likenesses of people, or brand names or logos into a virtual  
120 experience, the traditional laws of trademark, copyright, and right of  
121 publicity apply. This means that such use may require permission from  
122 the owners of the applicable rights. Whether permission is required de-  
123 pends on the nature of the use and the stakeholders involved."  
124 Either in a virtual world or a the real one, usage of intellectual prop-  
125 erties should be taken care of, this being paying for the usage of them  
126 if a commercial gain is expected or keeping the usage of content free.
- 127 • "When it comes to the creation of content in the real world, whoever  
128 creates content owns it, unless certain narrow exceptions apply or own-  
129 ership is changed by contract. However, the default ownership is not  
130 so clear in VR, where Users direct creation but the underlying code  
131 enabling the creation of images, virtual property, or other content was  
132 created or otherwise is controlled by the Platform. Thus, as between  
133 the User and the Platform, ownership may be disputed."  
134 Also bearing in mind intellectual property, an entity should consider  
135 the platforms where that creation will be put to sale/usage.

136 *3.2.3. Objective and benefits*

137 *3.2.4. Tipology*

138 *3.2.5. Theoretical bases*

139 *3.3. Referential framework*

140 **4. Methodology**

141 *4.1. Population or universe / sample*

142 *4.2. Type of study*

143 *4.3. Description of the instrument*

144 *4.4. Collection procedure*

145 *4.5. Statistical information management procedure*





## <sup>147</sup> 6. Conclusions

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