Overcome Acrophobia with the Help of Virtual Reality and Kinect Technology

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Abstract

There are many people in this world who are feared of high places. In general, there are two types of people: the prior one is people that are afraid of height and the latter one is people who really cannot handle high places (i.e. acrophobia). The purpose of this research is to reduce acrophobia level of people. The methodology which is used in this research is experiment with the help of virtual reality to simulate virtual world of high places environment as the reality in the imagination of the user. The virtual environment helps the sufferer to reduce their fear of height in a safe and controllable environment. This research shows that virtual reality is able to mimic real high places and train the users to overcome their anxiety of high places. With virtual world, the users are able to confront their fear gradually based on the level progression in the virtual world. Thus, it gives the users more experience to handle their fear in the secured environment and gradually decrease their anxiety level of acrophobia.

Keywords: virtual reality, kinect, acrophobia, afraid of height, anxiety

1. Introduction

Phobia is a condition where human become extremely afraid of something even though there is no exact danger. This condition is very irrational and unexplained. For some severe victims, they can get stressed just by thinking about their phobia \(^1\). There are many types of phobia and the causes are varying. It could be place, condition, situation, living thing, etc. Photophobia for instance, if the human eyes are very sensitive to light, the human will tend to avoid

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light but it does not mean that the human is afraid of light. It is actually because of the biological issue of the human itself, not because of the psychological. Another example is acrophobia, a psychological condition where it makes people afraid of heights. This phobia creates a logical barrier for people to avoid several places, such as: mountain, skyscraper, and other high places. Moreover, acrophobia also may have hindered them from activities such as parasailing, fly an airplane, and more. The illustration of facing phobia is represented in Fig. 1.

![Fig. 1. Illustration of Facing Phobia](image)

In some events, phobias do not always have a high impact in human daily life. For instance, phobia with the cause of bat, snake, or caterpillar is not really disturbing our life because the causes are quite hard to find in modern daily life. However, acrophobia could really affect people’s career or holiday. Fortunately, by using a proper treatment and therapy, this height anxiety problem can be reduced. One of the methods is by teaching people to face their fear in a controlled and safe environment. With the simulated world, it will be possible for people learn from basic to advance to face their afraid of height phobia.

Nowadays, virtual reality has become one of the most trending technologies in the world. Virtual reality is a virtual world which almost describe as the world in the reality. It is composed of an interactive computer simulation which catch the user has current state, the movement, and the action that being sense and give a feedback illustration or information to the user. The sense of being immersed in the virtual world or simulation is called virtual environment.

Virtual reality has been used in many parts in our live like education and entertainment. In this research, we implement virtual reality in the medical field, especially in the behavioral therapy. One of the methods is by using a proper treatment and therapy, this height anxiety problem can be reduced. Real-world environment is created inside the virtual reality which represents the situation or condition of the height anxiety. The example environment can be seen in Fig. 2. The subjects use a virtual reality cardboard head mount to see the virtual reality world. Inside, people can face the fear inside their mind in a safe manner. Furthermore, real objects (i.e. ropes) will be added into the virtual world to create more realistic feelings. It will help increase the effectiveness of the phobia treatment. Therefore, virtual reality and virtual world should be able to help people to reduce their acrophobia.

![Fig. 2. Virtual World and Virtual Environment](image)
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