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Virtual Reality

“The total number of active users in virtual worlds is expected to grow exponentially from 136 million in 2009 to 1,899 million by year 2013” (Animesh, Pinsonneault and Yang). What a staggering number 1,899 million active users. This statistic is in reference to such virtual reality experiences as Second Life. If you are like me you are suddenly wondering what Second Life is, well Second Life is a “3D world where everyone you see is a real person and every place you visit is built by people just like you” (What is Second life?); I know that sounds an awful lot like real life but the difference is that this is in a simulated environment called virtual reality (VR).

By way of a better definition virtual reality is “a realistic simulation of an environment, including three-dimensional graphics, by a computer system using interactive software and hardware” (Virtual Reality). By this definition there are many other entertainment applications which could be classified as virtual reality. Such games like the well know massive multiplayer online universe of the World of Warcraft or Everquest certainly have elements of virtual reality to them.

In 1995 popular video game manufacture Nintendo released the Virtual Boy which was advertised to be a portable gaming system capable of generating three-dimensional graphics.

This platform was rudimentary, carrying only a limited number of titles and featuring only a monochromatic display in red. Since this time other companies have been playing with virtual reality gaming in an attempt to utilize the advanced computing power discovered since 1995. One such company is Oculus VR which has a goal of making “immersive virtual reality technology that’s wearable and affordable” (Oculus VR).

In these virtual worlds the experience of the user is a large factor in the success of the service. Users interact with the virtual world around them by using an avatar to represent themselves within the space. In order to help users be more comfortable in the space virtual reality environments provide ways for a user to interact with their surroundings and according to Animesh et al “the more opportunities that the participants have to interact with the virtual environment and objects via their avatar, the more rooted the participants will be in the virtual world” (Animesh, Pinsonneault and Yang).

As we consider the applications of virtual reality we should consider the medical applications. You can imagine the medical field could benefit strongly from virtual reality from both a training and practical application point of view. Claudio and Maddalena suggest that there are precisely those two applications for virtual reality either a simulation tool or an interaction tool (Claudio and Maddalena).

Thinking first of a virtual reality or virtual world as a training tool for medical students and even for experienced doctors we discover that given the proper data a virtual reality environment could allow a doctor or group of doctors to virtually view the patient and the target surgical site from all perspectives and examine, in advance of surgery, the possible complications they may encounter and go over the planned surgery. “Apart from anatomical

training, VR has been used for teaching the skill of performing different tasks like a 12-lead ECG (Claudio and Maddalena).

In the spirit of training the medical field has virtual patients. These are mannequins equipped with sensors which can be connected to a computer and then simulate a set a symptoms for the medical student to diagnose and treat. These simulations can also be programmed to include complications. Depending on the treatment options chosen by the student the virtual patient responds with either an improvement in condition or becoming worse. A popular application of such a virtual reality platform has been in CPR mannequins.

Coming full circle now the medical world has also used such applications as Second Life for training. Second Life has been used for disaster, nursing, education and other topics much of this information is provided in Second Life by HealthInfo Island which is funded by the National Library of Medicine (Claudio and Maddalena).

Aside from the physiological applications there are also psychological applications ranging from group therapies to relaxation therapies as well as family therapies. According to Claudio and Maddalena exposure based treatments are most effective with the possible reason being that many patients are reluctant to expose themselves to real life phobic stimuli (Claudio and Maddalena) though the same reason are why patients may prefer virtual reality treatments.

Exposure treatments are designed to help patients feel threatened when faced with certain stimuli. In recent years virtual reality has begun to be used to administer specific forms of exposure therapy. This therapy called VR exposure therapy (VRET) has several advantages to in vivo exposure therapy including the ability to control, enhance, and accelerate the process (Claudio and Maddalena).

As we have discussed above the use of virtual reality, virtual worlds, and virtual environments is all around us. It has application in both the entertainment industry as well as the medical and mental health fields. It is applicable to students, professionals, and patients alike each in their own unique way benefitting from the ability to simulate situations and information.

Imagine now if this is where we are with the current applications of virtual reality where is there left to go? Imagine what Oculus will be able to achieve through their development of an immersive, wearable and affordable technology. One day we may be able to strap on a pair of Oculus goggles and visit exotic new places we otherwise couldn't experience. Or a surgeon could use the same pair of goggles coupled with augmented reality gloves to conduct a surgery remotely similarly to the way the da Vinci Surgical System operates.

The world of virtual reality is expanding rapidly and when coupled with the world of robotics the capabilities of combined platforms and user experiences or practical applications are limitless. Hollywood has even produced several movies depicting what this might look like, something like "Surrogates".

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