**Virtual Gaming**

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***Abstract*-** Brain-computer interface (BCI) is a progressing area that has been adding this whole new dimension of capability to HCI. BCI has created a unique communication channel, mainly for the ones who're incapable to generate the required muscular movements in their daily life to control the common devices[1]. The patients who suffer from Thalassemia or dialysis undergo painful treatments with time duration of 2-3 hours which is quite long. The engagement of their hands due to the canola drips makes them even more mentally disturbed. They are unable to carry out any task utilizing hands and feet except from watching the screens which can be very exhausting after some time. They need some enjoyable entertainment especially during their treatment to divert their mind from the pain they endure. Furthermore, Studies shows that the ADHD (Attention deficit hyperactivity disorder) patients are also treated by the neuro-feedback, since they tend to lose the focus easily very often. Taking these issues in consideration, we proposed a solution called Virtual Gaming, which comprises of an EEG (electroencephalogram) headset. EEG safely measures brainwave signals and monitors the concentration and attention levels of users as they interact with the system in order to play the game[2][3]. The proposed solution aims to provide those patients an ease and means of entertainment during the treatment without any involvement of the hands. Also, the proposed system acts as a mind booster for normal people to increase attention, focus and concentration.

***Keywords:***BCI (Brain Computer Interface), EEG headset, Games, Attention Deficit Hyperactivity Disorder (ADHD), Brainwaves, Brain Exercise.

**Introduction**

Nowadays, Human Computer Interfaces (HCI)has become omnipresent. Keyboards and mouse are the best examples of HCI. But the people who are paralyzed or has any kind of physical disability cannot interact with computers as normal and enabled people can do. BCI(Brain-Computer Interface) is the solution that enables the paralyzed people to control their environment directly with their brain without any involvement of gestures or any muscular activity. Currently, BCI is using in many communications like controlling a wheelchair, games etc. Controlling a game with brain is not only used for entertainment but it is also a therapy for mentally weak people. Virtual Gaming is for all, it is not only for the people who have any kind of disability but it is an exciting experience for the healthy people as well. We have developed a car racing game on which we have implemented our idea. Such patients especially most of the young generation lose hope very soon and thinks that they have no place in society. So, the game has been developed in such a way that it encourages and motivates its users. The game aims to spread positivity and stop them from thinking negatively about themselves and to make them feel like a valuable citizen of the society. We have implemented our idea on some of the very famous and most liked games like Need for Speed, FIFA, and Asphalt etc. For Brain Control Interfaces, there is a hardware called EEG (electroencephalography) headset which is now easily available all across the world.