54. VARNA P V

BRAIN COMPUTER INTERFACE CONTROL IN A VIRTUAL REALITY ENVIRONMENT AND APPLICATIONS FOR THE IoT

Abstract

Brain–computer interfaces (BCIs) have enabled individuals to control devices,such as spellers, robotic arms, drones, and wheelchairs, but often these BCI applications are restricted to research laboratories. With the advent of virtual reality (VR) systems and the Internet of Things (IoT) we can couple these technologies to offer real-time control of a user's virtual and physical environment. Likewise,BCI applications are often single-use with user's having no control outside of the restrictions placed upon the applications at the time of creation. Therefore, there is a need to create a tool that allows users the flexibility to create and modularize aspects of BCI applications for control of IoT devices and VR environments. Using a popular video game engine,Unity, and coupling it with BCI2000, this can create diverse applications that give the end-user additional autonomy during the task at hand. This method demonstrate the validity of controlling a Unity-based VR environment and several commercial IoT devices via direct neural interfacing processed through BCI2000.