The UNI

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I. PROJECT DESCRIPTION

A. Problem Definition

Many controllers created present-day require simultaneous use of both hands for proper function. While this does not pose a problem for the vast majority of players, for those who only have one functional one hand this modern design makes it very difficult to play many video games. While some one-handed controllers exist on the market, most are not whole controllers but controller add-ons that make the device clunky and non-ergonomic[1]. Other single handed controllers are custom made and typically are restricted to one or two devices causing a need to buy several expensive personalized controllers [2].

II. JUSTIFICATION

By creating a single-handed controller, it would allow certain handicapped players to experience playing games and increase their likelihood of enjoyment and fun. Without a reliable and easy to access one-handed controller, this community of players would be more or less cut off from playing console games and have great difficulty playing most PC games. With over one billion people suffering from a form of disability at some point in their life[3] it is important to expand the horizons of hardware in gaming to increase accessibility. Additionally with the vast majority of persons with disability being in lower to middle class income, these options need to be affordable and reliable. These one handed devices could potentially have use outside of gaming, such as furthering the accessibility of 3D simulations [4] and even allowing for everyday activities such as driving[5].

III. SYSTEM ARCHITECTURE

The system architecture of the UNI involves the inputs of two joysticks and fifteen buttons. Through these inputs, the user uses the controller to send data through the USB port or wirelessly through a dongle to the computer, which uses the software XInput to map the buttons to an Xbox equivalent controller. Once this is done, any signals sent from the controller will be processed and sent to any games supporting controllers, which will give visual feedback to the player that the controller works as intended.
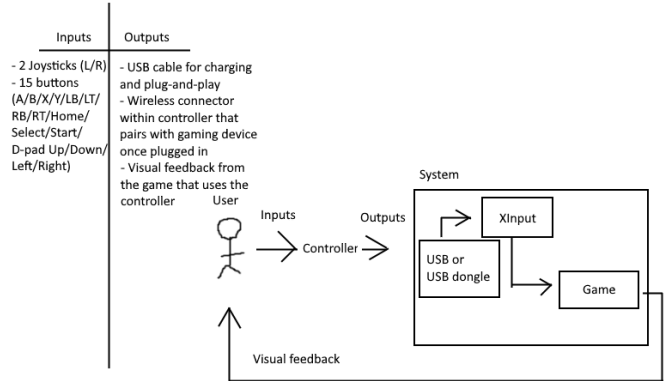

Fig. 1. Architecture diagram depicting the input, outputs and possible subsystems involved

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