Networking

Project Name
Virtual Wheelchairs / Mobility Enhancement
Project Description:
This project seeks to develop virtual worlds and environments which may be of benefit to people with mobility limitations. Example projects may include. • Wheelchair training environments for virtual reality. • Wheelchairs as interfaces to games. • Video games for people with mobility disabilities. The student's investigation should align with one of the following open-ended research questions: **1.** How can mobility training be improved through the use of virtual environments or computer games? **2.** How can computer games be made more accessible to people with mobility limitations? This work builds off a number of successful research projects, for further reading see: *John, Nigel W., et al. "The Implementation and Validation of a Virtual Environment for Training Powered Wheelchair Manoeuvres." IEEE Transactions on Visualization and Computer Graphics (2017).* Students wishing to be part of this phase are strongly advised to contact the project supervisor before applying for this project.
Are there any prerequisite skills / courses?

NA
Which degree program is this aimed at? (It can be more than 1)
Computer Games Programming / Computer Science
Number of students you wish to undertake this project
2

Project Name
HCI and Interfaces in Mobile VR
Project Description:
This project explores how users can better interact with mobile virtual reality experiences. Platforms such as the GearVR have democratized Virtual Reality, however, their control interfaces are often limited. While some extended controllers exist for these platform, adoption has been slow. Some mobile VR platforms only have the option of a single button for user interaction. In this project you will explore how developers can work with this challenging control-bandwidth, and what impact different control modalities have on player experience. Furthermore, as mobile VR has limited positional tracking, some users report more cases of cyber sickness than desktop based VR (such as the Vive or Rift). How can developers work with these limitations to reduce cyber sickness? The student's investigation should align with one of the following open-ended research questions:

1. What are the best practice implications for developers working with limited control-bandwidth interfaces for mobile VR games?

2. How can natural or intuitive interaction be supported by limited control-bandwidth interfaces?

3. Do specific game genera's suit control-bandwidth interfaces for mobile VR.

4. How can the risk of cyber sickness be reduced for mobile VR applications?

Are there any prerequisite skills / courses?
NA
Which degree program is this aimed at? (It can be more than 1)
Computer Games Programming
Number of students you wish to undertake this project
2