Abstract

There is a solution is proposed for controlling the UAV from the distance, which follows the principles of Augmented Reality. Dr. Ahmed Mahdy’s laboratory, the Innovation in Computing Research (iCORE), has developed an Android application for Google Glass (a wearable computer created by Google, Inc.). This application was created using concepts of Augmented Reality in which it superimposes a computer-generated image on a user's view of the real world, thus providing a composite view for augmenting the reality around the user. The Android application for Google Glass, can be controlled by voice, using head movements, and provides real time data about the Unmanned Aerial Vehicle, which is in line with Human Computer Interaction (HCI) principles. A major component of the Android application for Google Glass is its ability to provide a live video feed from the mounted video camera on the Unmanned Aerial Vehicle which displays the video feed to the user with Google Glass. This application will likely impact the way Unmanned Aerial Vehicle systems are used for agriculture, mapping, and surveying.

Background

For the past few decades, there has been research for uses of Unmanned Aerial Vehicles (UAV) outside of military use. The current controlling techniques limits the interactive control of UAVs. The current way to control Unmanned Aerial Vehicles, is by either interfacing with using a computer, a smartphone or tablet. There are not any techniques that allow users to control drones hands-free and in a immersive way.

Methods

Flow of the application

- Connect to UAV WI-FI
- Use the “Start Flight” command to activate Glass application
- Click on the pilot section of application
- Use “Take off” voice command to fly the UAV
- Head movements determine the UAV’s position
- Use “Land” voice command to land the UAV

Figure 1. Flowcharts illustrate how the flow of the of the Glass application works

Results

Main Screen to call application

App verifies WiFi Connection

Voice Command for Google Glass

Application’s Piloting Mode

App displays live video feed from UAV

App controls UAV using head movements

Conclusions

Based on the algorithms surveyed, it would seem that the trend in terrain rendering is to compose a multi-level method for rendering to increase speed and memory efficiency. Therefore, our approach is to first preprocess patches of the data set using irregular meshes. Due to the relatively flat region of South Texas, the number of triangles per patch should be significantly reduced. The patches will then be managed in real-time by tile blocks.

Future Work

-Controlling a UAV using a Wearable Computer (Smart watch) using Human Computer Interaction.

References


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