

For my third year dissertation, I completed a project to create a touchless interface between the user and a custom built radio-controlled model aircraft. The development of the project started with researching relevant material, choosing a methodology to follow and determining the risks of the project. Afterwards, I narrowed down the essential and desirable requirements, as well as the different technologies (hardware and software) to be used and finally created a timeplan to follow. I opted to follow the scrum methodology. To start with, I built the aircraft's frame and created a system to allow the user to control the plane through the use of a controller which was developed in Arduino. Afterwards, I started tracking the user's body using the Kinect's SDK and C# to define different gestures. Finally, I combined both systems together and performed user and component testing.

After the build of the system, I noticed that the gestures were not working correctly. This was because Kinect's tracking technology decreases in accuracy as the tracking point became smaller. For example, it was easier to track the center of the user's body than it was to track their hand. This was very troublesome as I would receive data that I did not expect to get, and it had the possibility to damage the hardware of the plane. In order to overcome this challenge, I created a smoothing algorithm that took the data and created a rolling average. This system was built in C# as the Kinect's SDK has better documentation for C# than any other programming language. Further, on the hardware prototype, I also built a system that limited the data received in order to ensure that the plane would not be forced into a position that is unsafe. This was built on the hardware as this ensures that there will not be a connection problem to potentially damage the plane.

In order to ensure that the system was fit for purpose, I checked that it was performing the essential requirements that I have defined in the start of the project. I was also receiving feedback from my supervisor every meeting. I performed user testing regularly in order to provide a large sample of data to my tracking algorithm. I also followed the development guidelines of Kinect's SDK.

I am not fully certain as to where I would fit into your organisation, however I would love to start to get an opportunity to find where I would fit. I have been learning and developing with Java for the past four years and feel fairly confident with it. I also have experience in C# and C++. I have a keen interest in embedded systems which has led me to develop a number of interesting projects that I would be happy to discuss further!