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## 4.1 Sprint 1

This sprint deals with creating a unity project that exports the data of the cube object to a csv file which was then used in colabs to train a neural network to predict the XYZ values of the cube from the 2D screen points.

|  |  |  |
| --- | --- | --- |
| Task | Description | Status |
| 1 | Create Unity project | Complete |
| 2 | Create Cube game object | Complete |
| 3 | Create game objects for each corner of cube | Complete |
| 4 | Export data to csv file | Complete |
| 5 | Import Data to colabs | Complete |
| 6 | Train neural network | Complete |

Table 4 Sprint 1 Task Breakdown Table

### Task 1

Implementing a unity project with a cube game object. While setting up small sphere game objects to each corner of the cube to gather the position of each corner. Having to create a C# script that would gather all the relative data from the cube and print it correctly to a csv file.

In Figure 4.1.1 shows the Unity project set up with the cube and CubeData.csv file produced in the assets folder.

A screenshot of a computer

Description automatically generated

Figure 4.1.1 Unity Project Prototype

### Task 2

Creating a Google colab and importing the correct libraries for training a neural network. Using the imported libraries on colabs to train a neural network to predict the XYZ values of the cube by passing in the 2D XY values of the cube. After the neural network was trained to predict the XY values, in Figure 4.1.2 and 4.1.3 it shows a graph of the accuracy and loss while training the neural network to demonstrate the accuracy of the network.

A screen shot of a graph

Description automatically generated

Figure 4.1.2 Colabs Graph of the loss in the training

A screen shot of a graph

Description automatically generated

Figure 4.1.3 Colabs Graph of the accuracy of the training

The neural network was then used to predict the XY values of the cube game object which can be seen in Figure 4.1.4.

A graph of different colored lines

Description automatically generated

Figure 4.1.4 Colabs Graph of the Network predicting the XY values of the Cube object.

### Results

A unity project that produces a csv file filled with data based on the cube object values and used that data to train a neural network on google colabs. With the neural network trained, it was able to predict the XY values and display the percentage accuracy and loss of the training.