**Team 25**

**Client: NTT Data**

**Project Abstract: A Virtual Reality Simulation of riding in a Self-Driving Car**

**Bi-weekly report Date: 07/02/2020**

1. **Overview of the last two weeks:**

In the last month, our team has constructed a prototype of the VR car simulator. This prototype consists of two main scenes - the Car Selection scene and the Car Simulation scene. Basic functionalities of the Car Selection page include selecting a car, customising its exteriors like changing its color, etc. For the Car Simulation, we have created a self-driving car that drives around a small city. The car currently has very basic interiors - an entertainment/infotainment system, a Dashboard/Instrument Panel with a speedometer, and a navigation panel. *Oculus Quest* and the *Oculus Touch Controller(s)* were used when developing and testing our prototype, instead of Haptic Gloves due to some logistic problems.

1. **Completed tasks:**
2. Project functionalities (taken from the MoSCoW list)
   1. A user-friendly interface that allows the user to choose a car
      1. User-friendly elements include buttons for choosing a color for the car and arrows for navigating car options
      2. User must also be able to view information about a car - it's specifications, description, and performance figures
   2. A user-interface for customising the car
      1. A menu that lists out all available cars with additional customising options like choosing the colour of the car
   3. A feature-complete simulation of riding in a self-driving car
      1. Users must be able to see the cars moving from a start point to a destination along a specific track
      2. The car must have basic elements of a car’s interiors; must have a driver's seat, a front-passenger seat, and a Dashboard/instrument panel with at least a speedometer
      3. A navigation system for the car - a virtual map with real-time updates of the car’s position
3. [Project website](https://abirbhushan.com/systems-engineering-project-website/)
4. Elevator Pitch Presentation
5. Preliminary Work video / Lab Demo
6. Chosen and requested the following Unity Assets:
   1. Car (future self-driving car with car interior assets)
      1. [#067 Sportscar](https://assetstore.unity.com/packages/3d/vehicles/land/067-sportcar-149095)
      2. [Realistic Mobile Car #06](https://assetstore.unity.com/packages/3d/vehicles/land/realistic-mobile-car-06-149519)
   2. Map
      1. [Urban Construction Pack](https://assetstore.unity.com/packages/3d/environments/urban/urban-construction-pack-8081)
   3. UI Icon Kit
      1. [Ultimate Sci-Fi UI Components Pack](https://assetstore.unity.com/packages/2d/gui/ultimate-sci-fi-ui-bundle-109073)

**Total Cost: € 116.14**

1. **Project Status:**

We are currently building up on our prototype - finding more Unity assets for our VR environment, working on the self-driving algorithm, and integrating Oculus hand tracking API with our project. We are also working on the IEP Legal Implications document.

1. **Future Plan:**
   1. Improve the Car's interiors
   2. Replace the *Oculus Touch Controllers* with Leap Motion to enable *hands capture*.
   3. Research about algorithms relating to Car Navigation
   4. Complete the self-driving algorithm
   5. Create a UI for Car Navigation so that users can customise the route the car will take