# Team 2:


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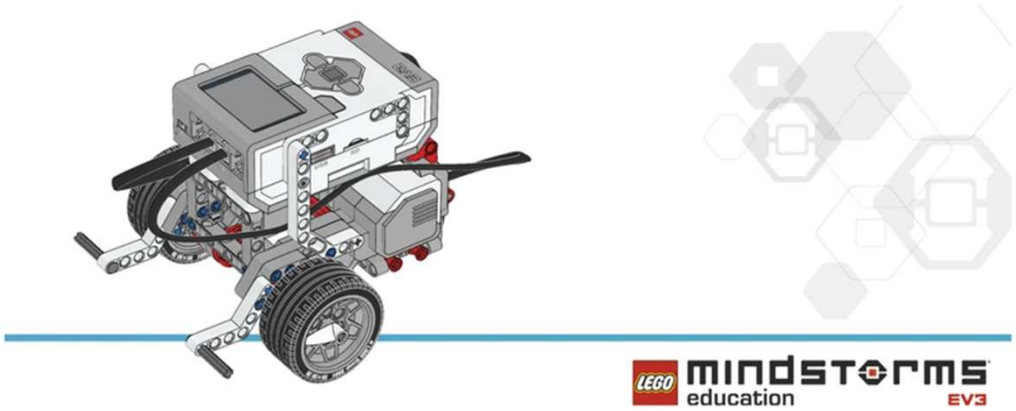
# Autonomous Driving Cars

# Functionality

This will be a core system useable by other systems in BrickMMO. This system lets a user point a location to the vehicle, then the vehicle will drive to that location automatically.



# Dependency

**This system will be dependant on :**

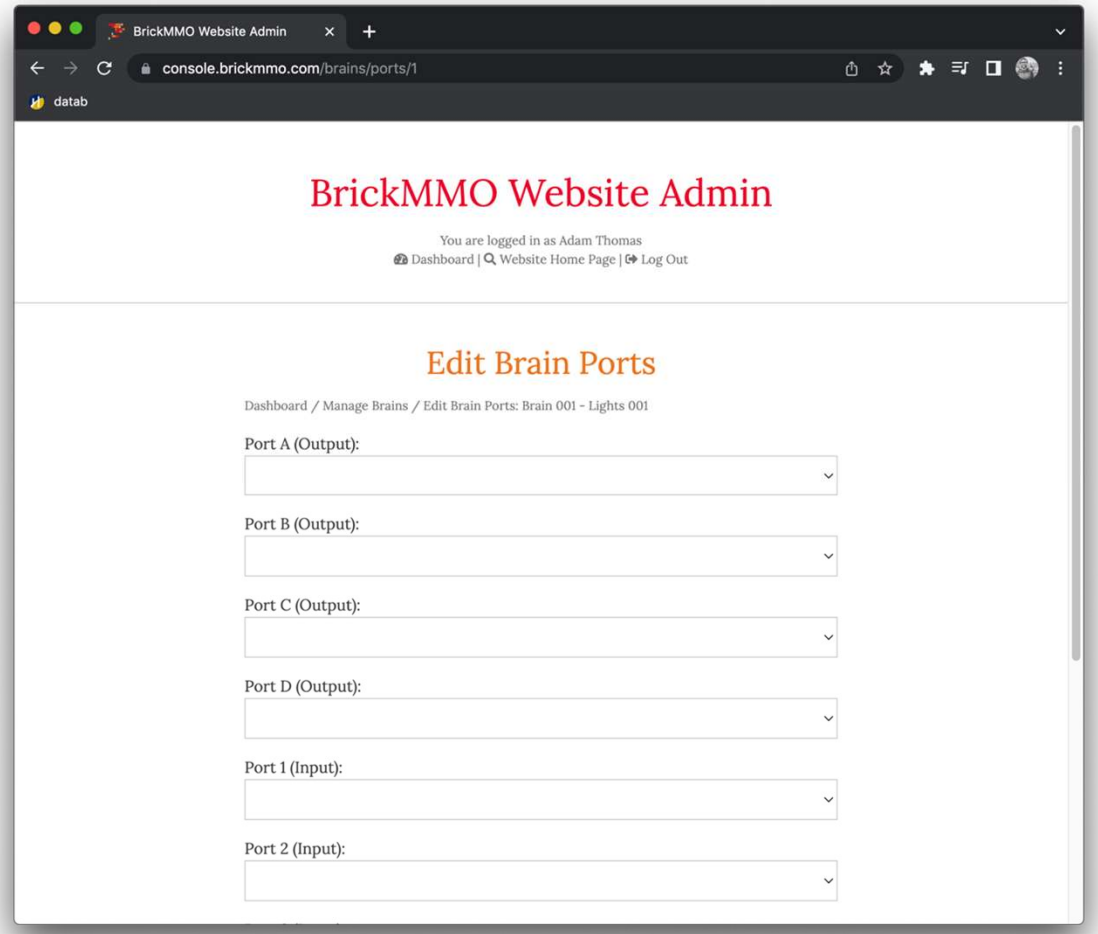
**GPS System**
**Charging system**
**Speed-Control system**

The LEGO Group. (n.d.). Boutique Hotel. Retrieved 2022, from https://www.lego.com/en-ca/product/boutique-hotel-10297.

# 3. Settings and Info

# Settings & State

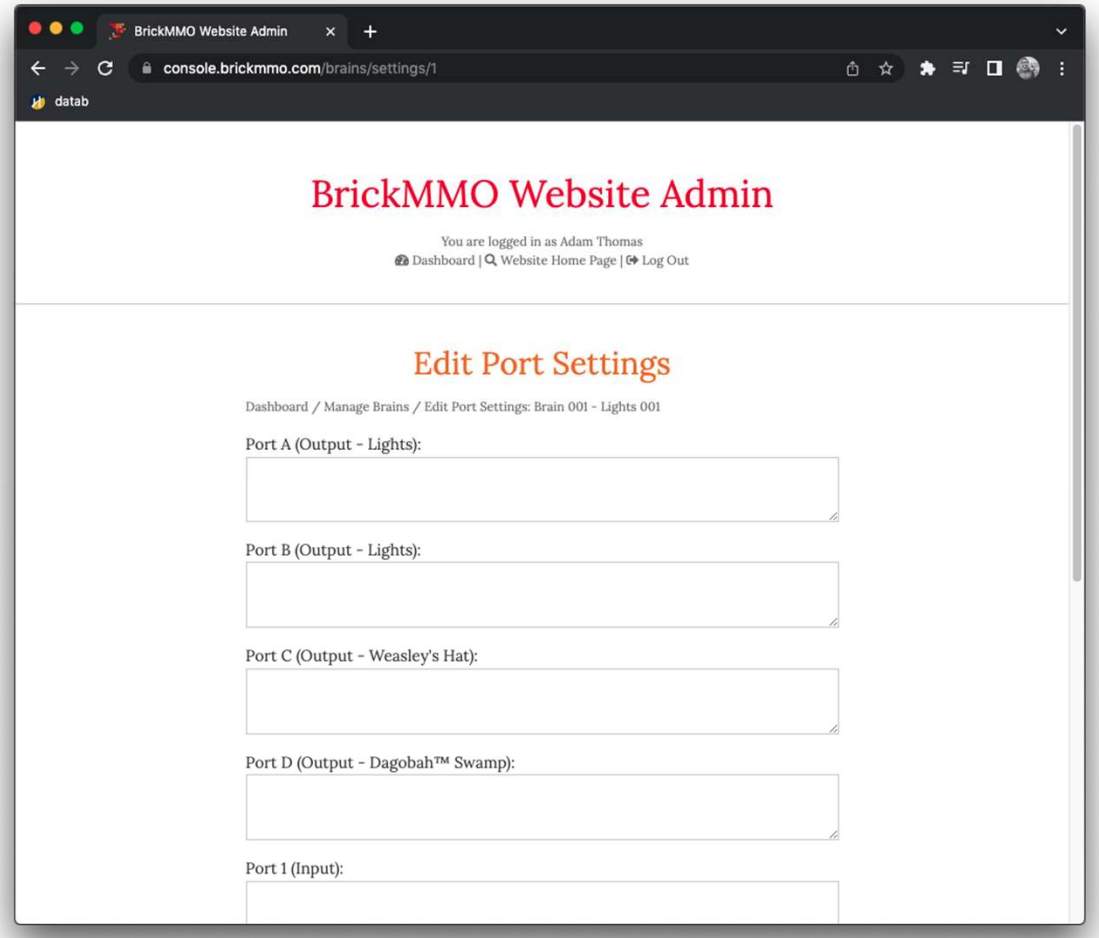
**Vehicle ID : Unique ID for API calls**
**Vehicle state : On / Off**
**Destination : GPS Location**
**Route Traffic : Retrieve from GPS**
**Battery Level : 0 - 100%**



# Module Input / Output

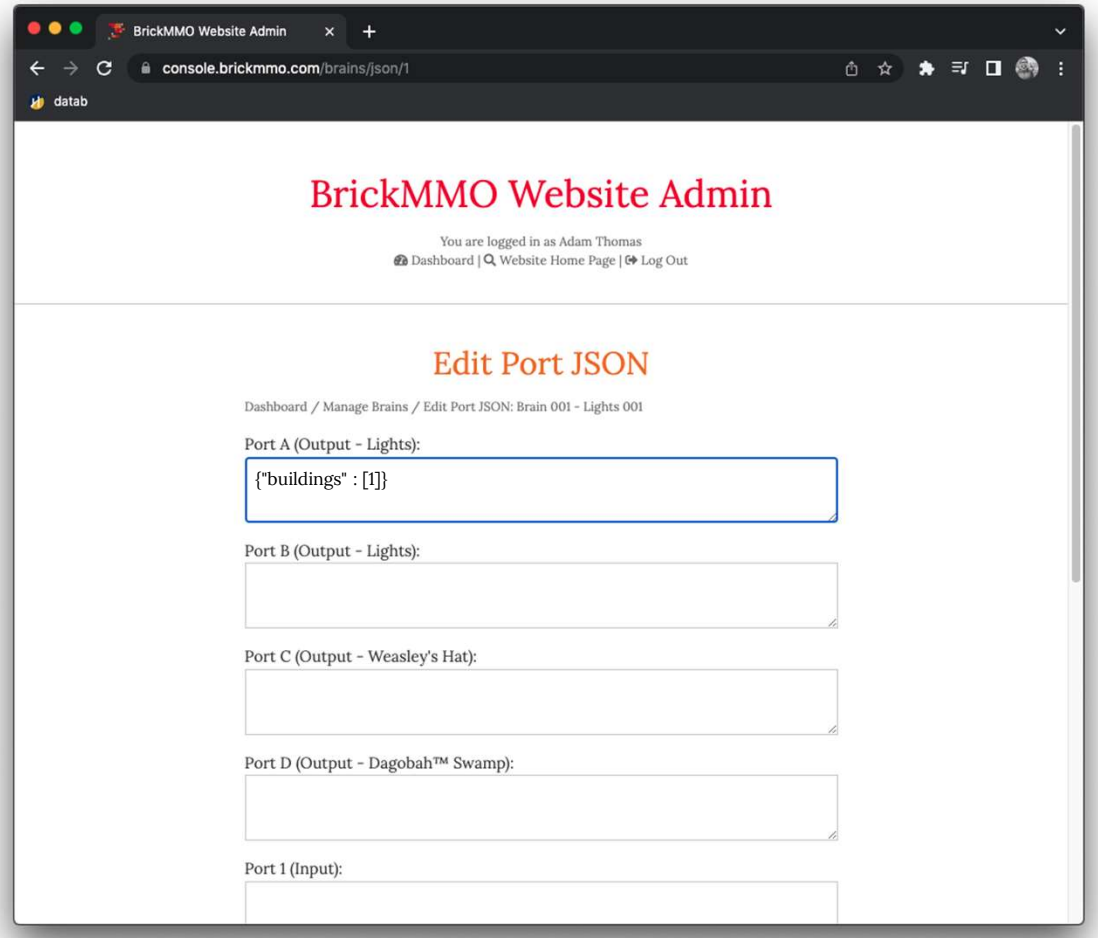
**Inputs**
**Destination : GPS Location**

**Outputs**
**Shortest Path to Destination : Route**
**Estimated time to Destination : Integer**
**Has enough charge to reach Destination : Boolean**



# Possible Integrations

**This core system can possibly be integrated into a future public transit system, or ride share like Uber.**



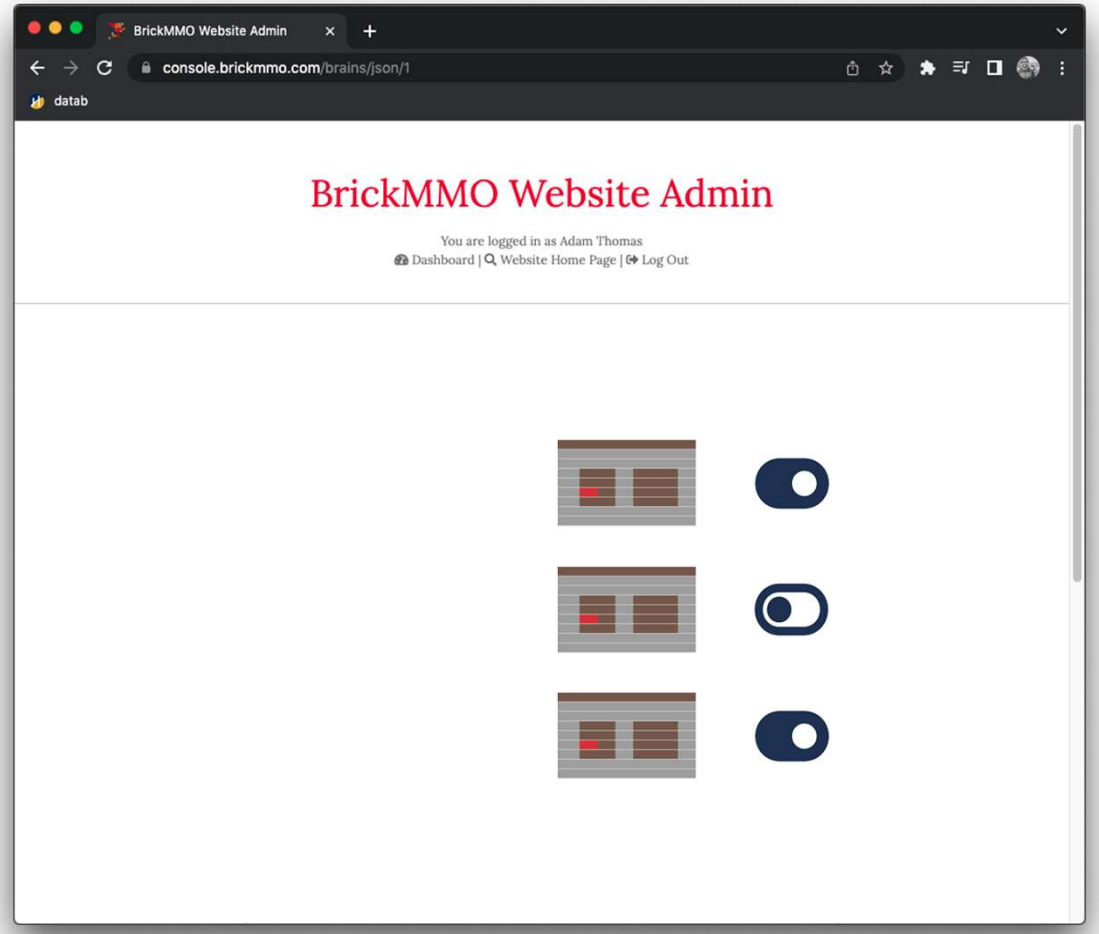
# 4. Ports, Motors, and Settings

# Sensors and Motors

- EV3 Hub (Brain, receives inputs)
- EV3 Medium Motor to turn infrared sensor
- EV3 Large Motor for accelerating / stopping / turning
- Infrared Sensors / Radar (Measure distance to nearby objects, aid in maneuvering)

# Admin Control Panel

1. Managing vehicle condition
    - Checking battery
    - Checking sensor
1. Parking spot



# 5. Pseudocode

# IOT Loop

```
if carCharged:
set coordinates;
        while reachedToCoordinates:
                if obstacle || traffic
signal

        slowDown or stop;
                else if emptyRoad

        maintainSpeed;
else:
        Use chargingStation;
```

The LEGO Group. (n.d.). Diagon Alley™. Retrieved 2022, from https://www.lego.com/en-ca/product/diagon-alley-75978.

# API Endpoints

/api/vehicle/info/{vehicle-id}

**Returns the vehicle information of the specified vehicle. E.g Battery Percentage, Estimated time to location, etc.**

/api/vehicle/destination/[vehicle-id]/{gps-location}/

**Tells the specified vehicle id to goto the specified location.**


The LEGO Group. (n.d.). Diagon Alley™. Retrieved 2022, from https://www.lego.com/en-ca/product/diagon-alley-75978.