

# Traffic Light Optimisation with Machine Learning

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# Chapter 1

## Namespace Index

### 1.1 Packages

Here are the packages with brief descriptions (if available):

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## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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## Chapter 4

# File Index

### 4.1 File List

Here is a list of all documented files with brief descriptions:

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## Chapter 5

# Namespace Documentation

### 5.1 SimpleJSON Namespace Reference

#### Classes

- class **JSON**
- class **JSONArray**
- class **JSONBool**
- class **JSONLazyCreator**
- class **JSONNode**
- class **JSONNull**
- class **JSONNumber**
- class **JSONObject**
- class **JSONString**

#### Enumerations

- enum **JSONNodeType** {  
    **Array** = 1, **Object** = 2, **String** = 3, **Number** = 4,  
    **NullValue** = 5, **Boolean** = 6, **None** = 7, **Custom** = 0xFF }
- enum **JSONTextMode** { **Compact**, **Indent** }



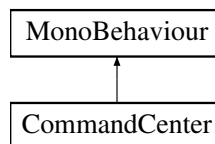


## Chapter 6

# Class Documentation

### 6.1 CommandCenter Class Reference

Inheritance diagram for CommandCenter:



#### Public Attributes

- **JSONNode apiRequestInfo**
- string **response**
- string **json**

#### 6.1.1 Detailed Description

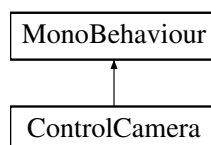
This class contains logic for the command center it handles the communication between the simulation and the AI on the server

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **CommandCenter.cs**

### 6.2 ControlCamera Class Reference

Inheritance diagram for ControlCamera:



## Public Member Functions

- void **Transition** ()
- void **DeTransition** ()

## Public Attributes

- Transform **startCameraPosition**
- Transform **endCameraPosition**
- GameObject **leaveSimulationCanvas**
- **StartMenuManager** **startMenuManager**

### 6.2.1 Detailed Description

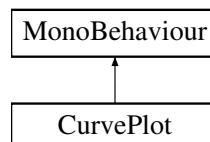
This class contains the logic for controlling the camera

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **ControlCamera.cs**

## 6.3 CurvePlot Class Reference

Inheritance diagram for CurvePlot:

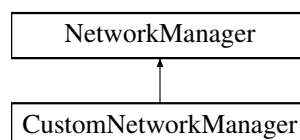


The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/CurvePlot.cs

## 6.4 CustomNetworkManager Class Reference

Inheritance diagram for CustomNetworkManager:



## Public Member Functions

- override void **OnServerAddPlayer** (NetworkConnection conn)  
*Called when a new connection is made to the simulation.*
- override void **OnServerDisconnect** (NetworkConnection conn)  
*Called when a connection is terminated from simulation.*

### 6.4.1 Detailed Description

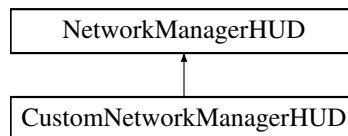
This class contains the custom network manager we implemented, it inherits from the base network manager and adds extra functionality

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **CustomNetworkManager.cs**

## 6.5 CustomNetworkManagerHUD Class Reference

Inheritance diagram for CustomNetworkManagerHUD:



### 6.5.1 Detailed Description

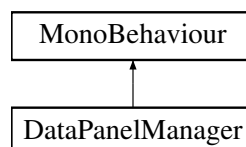
This class contains the custom network manager HUD we implemented, it inherits from the base network manager hud and adds extra functionality

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **CustomNetworkManagerHUD.cs**

## 6.6 DataPanelManager Class Reference

Inheritance diagram for DataPanelManager:



## Public Attributes

- `GameObject[] dataPanels`

The documentation for this class was generated from the following file:

- `E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/DataPanelManager.cs`

## 6.7 SimpleJSON.JSONNode.Enumerator Struct Reference

### Public Member Functions

- **Enumerator** (`List< JSONNode >. Enumerator aArrayEnum`)
- **Enumerator** (`Dictionary< string, JSONNode >. Enumerator aDictEnum`)
- `bool MoveNext ()`

### Properties

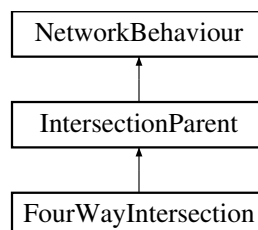
- `bool IsValid [get]`
- `KeyValuePair< string, JSONNode > Current [get]`

The documentation for this struct was generated from the following file:

- `E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs`

## 6.8 FourWayIntersection Class Reference

Inheritance diagram for `FourWayIntersection`:



### Public Member Functions

- `override TrafficIntersection getIntersection ()`
- `void changeLights ()`
- `override void makeChange ()`
- `override void resetGeneration ()`

## Public Attributes

- GameObject **inX1**
- GameObject **inX2**
- GameObject **inZ1**
- GameObject **inZ2**
- GameObject **tlX1**
- GameObject **tlX2**
- GameObject **tlZ1**
- GameObject **tlZ2**
- GameObject **prefabTLX1**
- GameObject **prefabTLX2**
- GameObject **prefabTLZ1**
- GameObject **prefabTLZ2**
- bool **light\_configuration** = false

### 6.8.1 Detailed Description

This class contains the logic for the four way intersection

### 6.8.2 Member Function Documentation

#### 6.8.2.1 changeLights()

```
void FourWayIntersection.changeLights ( )
```

**changeLights()** (p. 15) - Changes light tags and updates light configuration flags

#### 6.8.2.2 getIntersection()

```
override TrafficIntersection FourWayIntersection.getIntersection ( ) [virtual]
```

**getIntersection()** (p. 15) - Returns traffic light object with updates data

Reimplemented from **IntersectionParent** (p. 19).

#### 6.8.2.3 makeChange()

```
override void FourWayIntersection.makeChange ( ) [virtual]
```

**makeChange()** (p. 15) - Sets changing flag

Reimplemented from **IntersectionParent** (p. 19).

#### 6.8.2.4 resetGeneration()

```
override void FourWayIntersection.resetGeneration ( ) [virtual]
```

**resetGeneration()** (p. 15) - Resets moving Cars

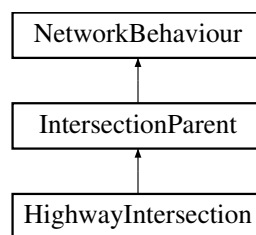
Reimplemented from **IntersectionParent** (p. 19).

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **FourWayIntersection.cs**

## 6.9 HighwayIntersection Class Reference

Inheritance diagram for HighwayIntersection:



### Public Member Functions

- override **TrafficIntersection** **getIntersection** ( )
- void **changeLights** ( )
- override void **makeChange** ( )
- override void **resetGeneration** ( )

### Public Attributes

- GameObject **inX1**
- GameObject **inX2**
- GameObject **inZ1**
- GameObject **inZ2**
- GameObject **tlX1**
- GameObject **tlX2**
- GameObject **tlZ1**
- GameObject **tlZ2**
- GameObject **prefabTLX1**
- GameObject **prefabTLX2**
- GameObject **prefabTLZ1**
- GameObject **prefabTLZ2**
- bool **light\_configuration** = false

## 6.9.1 Detailed Description

This class contains the logic for the high way intersection

## 6.9.2 Member Function Documentation

### 6.9.2.1 changeLights()

```
void HighwayIntersection.changeLights ( )
```

**changeLights()** (p. 17) - Changes light tags and updates light configuration flags

### 6.9.2.2 getIntersection()

```
override TrafficIntersection HighwayIntersection.getIntersection ( ) [virtual]
```

**getIntersection()** (p. 17) - Returns traffic light object with updates data

#### Returns

Returns an intersection object with the stationary and moving car values

Reimplemented from **IntersectionParent** (p. 19).

### 6.9.2.3 makeChange()

```
override void HighwayIntersection.makeChange ( ) [virtual]
```

**makeChange()** (p. 17) - Sets changing flag

Reimplemented from **IntersectionParent** (p. 19).

### 6.9.2.4 resetGeneration()

```
override void HighwayIntersection.resetGeneration ( ) [virtual]
```

**resetGeneration()** (p. 17) - Resets moving Cars

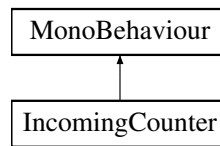
Reimplemented from **IntersectionParent** (p. 19).

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/HighwayIntersection.cs

## 6.10 IncomingCounter Class Reference

Inheritance diagram for IncomingCounter:



### Public Member Functions

- void **reset** ()  
*Resets number of moving cars.*
- void **resetGeneration** ()  
*Resets number of moving and stationary cars.*
- int **getNumberCars** ()
- int **getMovingCars** ()

#### 6.10.1 Detailed Description

This class contains the counting logic for counting cars entering an intersection

#### 6.10.2 Member Function Documentation

##### 6.10.2.1 getMovingCars()

```
int IncomingCounter.getMovingCars ( )
```

##### Returns

Returns the number of moving cars

##### 6.10.2.2 getNumberCars()

```
int IncomingCounter.getNumberCars ( )
```

##### Returns

Returns the number of stationary cars

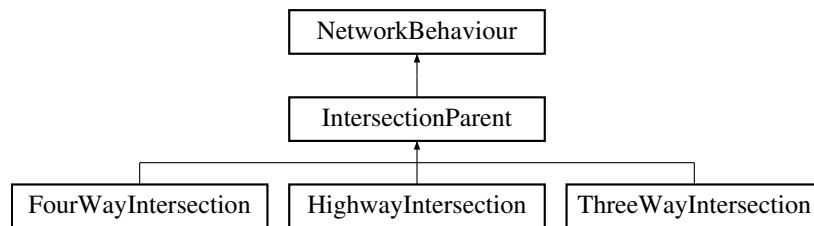
The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **IncomingCounter.cs**



## 6.11 IntersectionParent Class Reference

Inheritance diagram for IntersectionParent:



### Public Member Functions

- virtual **TrafficIntersection** **getIntersection** ()
- virtual void **updateTimeOut** (float newTimeOut)  
*Supposed to be implemented in inheriting classes to reset timer to the 16 seconds.*
- virtual void **makeChange** ()  
*Supposed to be implemented in inheriting classes to be called when new data from the server is received.*
- virtual void **resetGeneration** ()  
*Supposed to be implemented in inheriting classes to reset the appropriate counters when incrementing generations.*

### 6.11.1 Detailed Description

This class is the base class all intersections inherit from

### 6.11.2 Member Function Documentation

#### 6.11.2.1 getIntersection()

```
virtual TrafficIntersection IntersectionParent.getIntersection ( ) [virtual]
```

#### Returns

Returns null unless implemented to return an intersection object as is intended

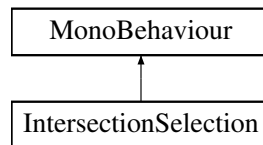
Reimplemented in **ThreeWayIntersection** (p. 35), **HighwayIntersection** (p. 17), and **FourWayIntersection** (p. 15).

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **IntersectionParent.cs**

## 6.12 IntersectionSelection Class Reference

Inheritance diagram for IntersectionSelection:



### Public Attributes

- TextMeshProUGUI **UI\_intersection**
- TextMeshProUGUI **UI\_intersectionData**
- GameObject **IntersectionDataPanel**

### 6.12.1 Detailed Description

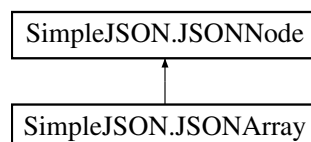
This class is to implement the feature of hovering statistics

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **IntersectionSelection.cs**

## 6.13 SimpleJSON.JSONArray Class Reference

Inheritance diagram for SimpleJSON.JSONArray:



### Public Member Functions

- override **Enumerator GetEnumerator** ()
- override void **Add** (string aKey, **JSONNode** altem)
- override **JSONNode Remove** (int alndex)
- override **JSONNode Remove** ( **JSONNode** aNode)

## Properties

- override bool **Inline** [get, set]
- override JSONNodeType **Tag** [get]
- override bool **IsArray** [get]
- override **JSONNode this[int aIndex]** [get, set]
- override **JSONNode this[string aKey]** [get, set]
- override int **Count** [get]
- override IEnumerable< **JSONNode** > **Children** [get]

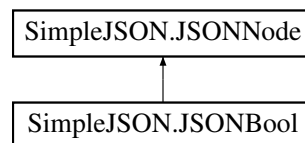
## Additional Inherited Members

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.14 SimpleJSON.JSONBool Class Reference

Inheritance diagram for SimpleJSON.JSONBool:



## Public Member Functions

- override **Enumerator GetEnumerator** ()
- **JSONBool** (bool aData)
- **JSONBool** (string aData)
- override bool **Equals** (object obj)
- override int **GetHashCode** ()

## Properties

- override JSONNodeType **Tag** [get]
- override bool **IsBoolean** [get]
- override string **Value** [get, set]
- override bool **AsBool** [get, set]

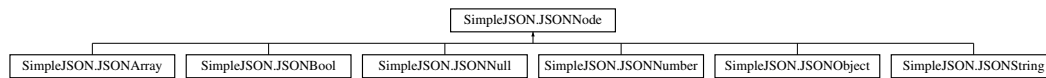
## Additional Inherited Members

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.15 SimpleJSON.JSONNode Class Reference

Inheritance diagram for SimpleJSON.JSONNode:



### Classes

- struct **Enumerator**
- struct **KeyEnumerator**
- class **LinqEnumerator**
- struct **ValueEnumerator**

### Public Member Functions

- virtual void **Add** (string aKey, **JSONNode** altem)
- virtual void **Add** ( **JSONNode** altem)
- virtual **JSONNode Remove** (string aKey)
- virtual **JSONNode Remove** (int aIndex)
- virtual **JSONNode Remove** ( **JSONNode** aNode)
- override string **ToString** ()
- virtual string **ToString** (int alndent)
- abstract **Enumerator GetEnumerator** ()
- override bool **Equals** (object obj)
- override int **GetHashCode** ()

### Static Public Member Functions

- static implicit **operator JSONNode** (string s)
- static implicit **operator string** ( **JSONNode** d)
- static implicit **operator JSONNode** (double n)
- static implicit **operator double** ( **JSONNode** d)
- static implicit **operator JSONNode** (float n)
- static implicit **operator float** ( **JSONNode** d)
- static implicit **operator JSONNode** (int n)
- static implicit **operator int** ( **JSONNode** d)
- static implicit **operator JSONNode** (bool b)
- static implicit **operator bool** ( **JSONNode** d)
- static implicit **operator JSONNode** (KeyValuePair< string, **JSONNode** > aKeyValue)
- static bool **operator==** ( **JSONNode** a, object b)
- static bool **operator!=** ( **JSONNode** a, object b)
- static **JSONNode Parse** (string aJSON)

### Static Public Attributes

- static bool **forceASCII** = false

## Properties

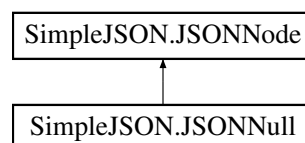
- abstract JSONNodeType **Tag** [get]
- virtual **JSONNode** **this[int aIndex]** [get, set]
- virtual **JSONNode** **this[string aKey]** [get, set]
- virtual string **Value** [get, set]
- virtual int **Count** [get]
- virtual bool **IsNumber** [get]
- virtual bool **IsString** [get]
- virtual bool **IsBoolean** [get]
- virtual bool **IsNull** [get]
- virtual bool **IsArray** [get]
- virtual bool **IsObject** [get]
- virtual bool **Inline** [get, set]
- virtual IEnumerable< **JSONNode** > **Children** [get]
- IEnumerable< **JSONNode** > **DeepChildren** [get]
- IEnumerable< KeyValuePair< string, **JSONNode** > > **Linq** [get]
- **KeyEnumerator** **Keys** [get]
- **ValueEnumerator** **Values** [get]
- virtual double **AsDouble** [get, set]
- virtual int **AsInt** [get, set]
- virtual float **AsFloat** [get, set]
- virtual bool? **AsBool** [get, set]
- virtual **JSONArray** **AsArray** [get]
- virtual **JSONObject** **AsObject** [get]

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔  
Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.16 SimpleJSON.JSONNull Class Reference

Inheritance diagram for SimpleJSON.JSONNull:



## Public Member Functions

- override **Enumerator** **GetEnumerator** ()
- override bool **Equals** (object obj)
- override int **GetHashCode** ()

## Static Public Member Functions

- static **JSONNull** **CreateOrGet** ()

## Static Public Attributes

- static bool **reuseSameInstance** = true

## Properties

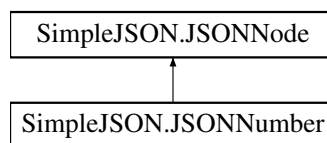
- override JSONNodeType **Tag** [get]
- override bool **IsNull** [get]
- override string **Value** [get, set]
- override bool **AsBool** [get, set]

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.17 SimpleJSON.JSONNumber Class Reference

Inheritance diagram for SimpleJSON.JSONNumber:



## Public Member Functions

- override **Enumerator** **GetEnumerator** ()
- JSONNumber** (double aData)
- JSONNumber** (string aData)
- override bool **Equals** (object obj)
- override int **GetHashCode** ()

## Properties

- override JSONNodeType **Tag** [get]
- override bool **IsNumber** [get]
- override string **Value** [get, set]
- override double **AsDouble** [get, set]

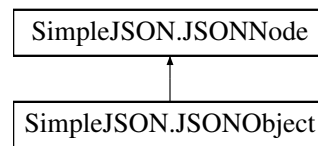
## Additional Inherited Members

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.18 SimpleJSON.JSONObject Class Reference

Inheritance diagram for SimpleJSON.JSONObject:



### Public Member Functions

- override **Enumerator GetEnumerator** ()
- override void **Add** (string aKey, **JSONNode** altem)
- override **JSONNode Remove** (string aKey)
- override **JSONNode Remove** (int alndex)
- override **JSONNode Remove** ( **JSONNode** aNode)

### Properties

- override bool **Inline** [get, set]
- override JSONNodeType **Tag** [get]
- override bool **IsObject** [get]
- override **JSONNode this[string aKey]** [get, set]
- override **JSONNode this[int alndex]** [get, set]
- override int **Count** [get]
- override IEnumerable< **JSONNode** > **Children** [get]

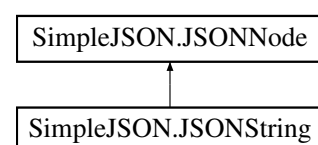
### Additional Inherited Members

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.19 SimpleJSON.JSONString Class Reference

Inheritance diagram for SimpleJSON.JSONString:



## Public Member Functions

- override **Enumerator GetEnumerator** ()
- **JSONString** (string aData)
- override bool **Equals** (object obj)
- override int **GetHashCode** ()

## Properties

- override JSONNodeType **Tag** [get]
- override bool **IsString** [get]
- override string **Value** [get, set]

## Additional Inherited Members

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.20 SimpleJSON.JSONNode.KeyEnumerator Struct Reference

### Public Member Functions

- **KeyEnumerator** (List< **JSONNode** >. **Enumerator** aArrayEnum)
- **KeyEnumerator** (Dictionary< string, **JSONNode** >. **Enumerator** aDictEnum)
- **KeyEnumerator** ( **Enumerator** aEnumerator)
- bool **MoveNext** ()
- **KeyEnumerator GetEnumerator** ()

### Properties

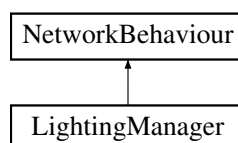
- **JSONNode Current** [get]

The documentation for this struct was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.21 LightingManager Class Reference

Inheritance diagram for LightingManager:





## Public Attributes

- Light **DirectionalLight**
- **LightingPreset** **Preset**
- float **timeOfDay**
- GameObject **carSpawner**

### 6.21.1 Detailed Description

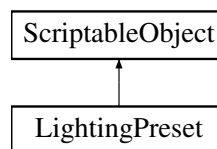
This class is to implement day-night cycle

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **LightingManager.cs**

## 6.22 LightingPreset Class Reference

Inheritance diagram for LightingPreset:



## Public Attributes

- Gradient **AmbientColor**
- Gradient **DirectionalColor**
- Gradient **FogColor**

### 6.22.1 Detailed Description

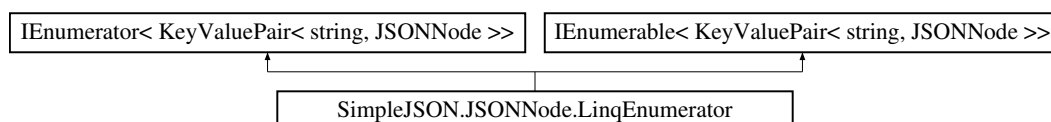
This class is implemented to hold values concerning the day-night cycle

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **LightingPreset.cs**

## 6.23 SimpleJSON.JSONNode.LinqEnumerator Class Reference

Inheritance diagram for SimpleJSON.JSONNode.LinqEnumerator:



## Public Member Functions

- bool **MoveNext** ()
- void **Dispose** ()
- IEnumerator< KeyValuePair< string, **JSONNode** > > **GetEnumerator** ()
- void **Reset** ()

## Properties

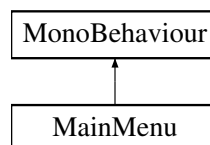
- KeyValuePair< string, **JSONNode** > **Current** [get]

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs

## 6.24 MainMenu Class Reference

Inheritance diagram for MainMenu:



## Public Member Functions

- void **Reset** ()  
*Resets the main menu camera to the original position.*
- void **JoinAI** ()  
*Logic for connecting to the AI simulation.*
- void **JoinNoAI** ()  
*Logic for connecting to the No-AI simulation.*
- void **QuitSimulation** ()  
*Closes the application when the quit button is pressed.*
- void **LeaveSimulation** ()  
*Logic for when the user returns to the main menu from the simulation.*
- void **TransitionCamera** ()  
*Transitions the camera to the end point for the simulation.*
- void **DeTransitionCamera** ()  
*Transitions the camera back to the starting position to show main menu.*

## Public Attributes

- GameObject **simulationCanvas**
- GameObject **networkManagerObject**
- GameObject **mainMenuUI**
- GameObject **mainCamera**
- GameObject **connectingText**
- Transform **startCameraPosition**
- Transform **endCameraPosition**
- GameObject **mainMenuLightingManagerObject**
- GameObject **aiIndicator**
- GameObject **noAiIndicator**

### 6.24.1 Detailed Description

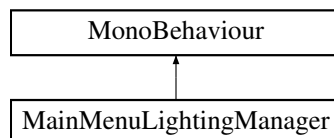
This class contains the logic for the main menu

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/MainMenu.cs

## 6.25 MainMenuLightingManager Class Reference

Inheritance diagram for MainMenuLightingManager:



## Public Attributes

- Light **DirectionalLight**
- **LightingPreset** Preset
- float **timeOfDay**

### 6.25.1 Detailed Description

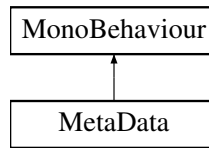
This class handles the lighting for the main menu background

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/MainMenuLightingManager.cs

## 6.26 Metadata Class Reference

Inheritance diagram for Metadata:



### Public Attributes

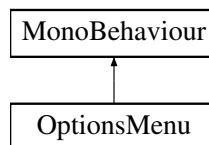
- TextMeshProUGUI **UI\_intersection**
- int **stopped**
- GameObject **time**
- GameObject **spawner**

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/Metadata.cs

## 6.27 OptionsMenu Class Reference

Inheritance diagram for OptionsMenu:



### Public Member Functions

- void **SetResolution** (int resolutionIndex)  
*Setter for setting the resolution.*
- void **SetQuality** (int qualityIndex)  
*Setter for setting the quality of the application.*
- void **SetFullScreen** (bool isFullscreen)  
*Setter for setting fullscreen or not.*

### Public Attributes

- Dropdown **resolutionDropdown**

### 6.27.1 Detailed Description

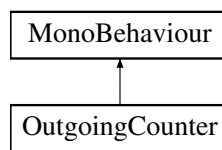
This Options class handles all the logic for the options menu

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/OptionsMenu.cs

## 6.28 OutgoingCounter Class Reference

Inheritance diagram for OutgoingCounter:



### Public Member Functions

- void **reset** ()  
*Resets moving cars to 0.*
- int **getNumberCars** ()

### 6.28.1 Detailed Description

This class holds the logic for the outgoing counter

### 6.28.2 Member Function Documentation

#### 6.28.2.1 getNumberCars()

```
int OutgoingCounter.getNumberCars ( )
```

#### Returns

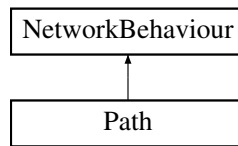
Returns number of moving cars

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **OutgoingCounter.cs**

## 6.29 Path Class Reference

Inheritance diagram for Path:



### Public Attributes

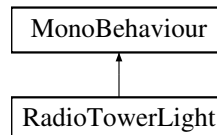
- float **speed**

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/Path.cs

## 6.30 RadioTowerLight Class Reference

Inheritance diagram for RadioTowerLight:



### Public Member Functions

- void **lightStart** ()  
*Called first and starts the flashing process.*
- void **lightMiddle** ()  
*Called second and this triggers a timer that waits 2 seconds before starting the intensity detransition.*
- void **lightEnd** ()  
*Called third and detransitions the flashing process back to the beginning.*
- void **lightEndTimer** ()  
*Called last and this triggers a timer that waits 2 seconds before starting the intensity again.*

### Public Attributes

- Light **myLight**

### 6.30.1 Detailed Description

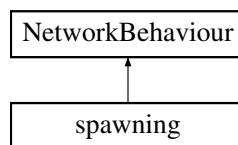
This class handles the light atop the radio tower

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/RadioTowerLight.cs

## 6.31 spawning Class Reference

Inheritance diagram for spawning:



### Public Attributes

- float **speed**

### 6.31.1 Detailed Description

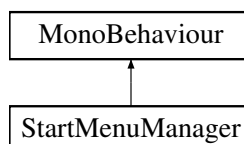
This class holds the logic for spawning cars

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **spawning.cs**

## 6.32 StartMenuManager Class Reference

Inheritance diagram for StartMenuManager:



### Public Member Functions

- void **LeaveSimulation** ()

*This method handles leaving the simulation and starts the main menu back up.*

## Public Attributes

- GameObject **startMenuObject**
- GameObject **simulationCanvasObject**

### 6.32.1 Detailed Description

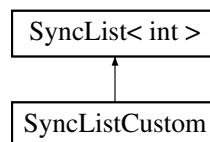
This class manages the start menu

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/StartMenuManager.cs

## 6.33 SyncListCustom Class Reference

Inheritance diagram for SyncListCustom:

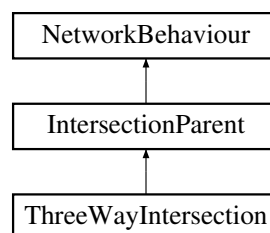


The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/Path.cs

## 6.34 ThreeWayIntersection Class Reference

Inheritance diagram for ThreeWayIntersection:



## Public Member Functions

- override **TrafficIntersection** **getIntersection** ()
- void **changeLights** ()
- override void **updateTimeOut** (float newTimeOut)  
*Resets time to the 16 seconds.*
- override void **makeChange** ()
- override void **resetGeneration** ()



## Public Attributes

- GameObject **inX**
- GameObject **inZ1**
- GameObject **inZ2**
- GameObject **tlX1**
- GameObject **tlZ1**
- GameObject **tlZ2**
- GameObject **prefabTLX1**
- GameObject **prefabTLZ1**
- GameObject **prefabTLZ2**
- bool **light\_configuration** = false

### 6.34.1 Detailed Description

This class holds the logic the Three way intersection

### 6.34.2 Member Function Documentation

#### 6.34.2.1 changeLights()

```
void ThreeWayIntersection.changeLights ( )
```

**changeLights()** (p. 35) - Changes light tags and updates light configuration flags

#### 6.34.2.2 getIntersection()

```
override TrafficIntersection ThreeWayIntersection.getIntersection ( ) [virtual]
```

**getIntersection()** (p. 35) - Returns traffic light object with updates data

#### Returns

Returns an intersection object with the stationary and moving car values

Reimplemented from **IntersectionParent** (p. 19).

#### 6.34.2.3 makeChange()

```
override void ThreeWayIntersection.makeChange ( ) [virtual]
```

**makeChange()** (p. 35) - Sets changing flag

Reimplemented from **IntersectionParent** (p. 19).

#### 6.34.2.4 resetGeneration()

```
override void ThreeWayIntersection.resetGeneration ( ) [virtual]
```

**resetGeneration()** (p. 35) - Resets moving Cars

Reimplemented from **IntersectionParent** (p. 19).

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **ThreeWayIntersection.cs**

### 6.35 TrafficIntersection Class Reference

#### Public Member Functions

- string **toJson** (int id)

#### Public Attributes

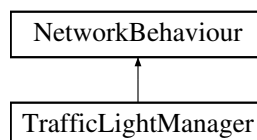
- float **stationaryX**
- string **name**
- Int32 **phase**

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **CommandCenter.cs**

### 6.36 TrafficLightManager Class Reference

Inheritance diagram for TrafficLightManager:



#### Public Member Functions

- void **changeLight** (string colour)

## Public Attributes

- string **currentColour**
- GameObject **greenLight**
- GameObject **orangeLight**
- GameObject **redLight**

### 6.36.1 Detailed Description

This class holds the logic for the traffic light colour changer

### 6.36.2 Member Function Documentation

#### 6.36.2.1 changeLight()

```
void TrafficLightManager.changeLight (
    string colour )
```

<Setter that sets colour of light to the one passed in>

#### Parameters

<i>Light</i>	colour is passed in
--------------	---------------------

The documentation for this class was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/ **TrafficLightManager.cs**

## 6.37 SimpleJSON.JSONNode.ValueEnumerator Struct Reference

### Public Member Functions

- **ValueEnumerator** (List< **JSONNode** >. **Enumerator** aArrayEnum)
- **ValueEnumerator** (Dictionary< string, **JSONNode** >. **Enumerator** aDictEnum)
- **ValueEnumerator** ( **Enumerator** aEnumerator)
- bool **MoveNext** ()
- **ValueEnumerator GetEnumerator** ()

### Properties

- **JSONNode Current** [get]

The documentation for this struct was generated from the following file:

- E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/↔ Pathing2.0/Assets/Scripts/SimpleJSON.cs



## Chapter 7

# File Documentation

### 7.1 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/CommandCenter.cs File Reference

#### Classes

- class `CommandCenter`
- class `TrafficIntersection`

### 7.2 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/ControlCamera.cs File Reference

#### Classes

- class `ControlCamera`

### 7.3 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/CustomNetworkManager.cs File Reference

#### Classes

- class `CustomNetworkManager`

**7.4 E:/Homework/Computer Science/COS  
301/Traffic-Light-Optimisation-with-Machine-Learning/Unity  
Simulation/Pathing2.0/Assets/Scripts/CustomNetworkManagerH↵  
UD.cs File  
Reference**

**Classes**

- class `CustomNetworkManagerHUD`

**7.5 E:/Homework/Computer Science/COS  
301/Traffic-Light-Optimisation-with-Machine-Learning/Unity  
Simulation/Pathing2.0/Assets/Scripts/FourWayIntersection.cs File  
Reference**

**Classes**

- class `FourWayIntersection`

**7.6 E:/Homework/Computer Science/COS  
301/Traffic-Light-Optimisation-with-Machine-Learning/Unity  
Simulation/Pathing2.0/Assets/Scripts/IncomingCounter.cs File  
Reference**

**Classes**

- class `IncomingCounter`

**7.7 E:/Homework/Computer Science/COS  
301/Traffic-Light-Optimisation-with-Machine-Learning/Unity  
Simulation/Pathing2.0/Assets/Scripts/IntersectionParent.cs File  
Reference**

**Classes**

- class `IntersectionParent`

## **7.8 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/IntersectionSelection.cs File Reference**

### **Classes**

- class `IntersectionSelection`

## **7.9 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/LightingManager.cs File Reference**

### **Classes**

- class `LightingManager`

## **7.10 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/LightingPreset.cs File Reference**

### **Classes**

- class `LightingPreset`

## **7.11 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/OutgoingCounter.cs File Reference**

### **Classes**

- class `OutgoingCounter`

## **7.12 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/spawning.cs File Reference**

### **Classes**

- class `spawning`

### **7.13 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/ThreeWayIntersection.cs File Reference**

#### **Classes**

- class `ThreeWayIntersection`

### **7.14 E:/Homework/Computer Science/COS 301/Traffic-Light-Optimisation-with-Machine-Learning/Unity Simulation/Pathing2.0/Assets/Scripts/TrafficLightManager.cs File Reference**

#### **Classes**

- class `TrafficLightManager`



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