

# Namespace MainRobot

## Classes

[Configuration](#)

[Program](#)

[RobotConfiguration](#)

[ServiceRegistration](#)

[StatusFile](#)

[StatusLoginInfo](#)

[StatusRobot](#)

# Class Configuration

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public static class Configuration
```

## Inheritance

[object](#) ← Configuration

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Fields

### ARGUMENTS\_ESPEAK

parameter to configure eSpeak int this case is italian voice with pitch 20

```
public static string ARGUMENTS_ESPEAK
```

#### Field Value

[string](#)

### CAMERA\_IP\_PAS

```
public static string CAMERA_IP_PAS
```

#### Field Value

[string](#)

## CAMERA\_IP\_URL

```
public static string CAMERA_IP_URL
```

Field Value

[string](#) ↗

## CAMERA\_IP\_USR

```
public static string CAMERA_IP_USR
```

Field Value

[string](#) ↗

## FAKE\_HW

```
public static bool FAKE_HW
```

Field Value

[bool](#) ↗

## FAKE\_REMOTE\_ARDUINO

```
public static bool FAKE_REMOTE_ARDUINO
```

Field Value

[bool](#) ↗

## HTTP\_URL\_BASE\_LLM

```
public static string HTTP_URL_BASE_LLM
```

Field Value

[string](#)

## HTTP\_URL\_COMMUNICATION

http settings : url to server http arduino

```
public static string HTTP_URL_COMMUNICATION
```

Field Value

[string](#)

## HTTP\_URL\_LLM

```
public static string HTTP_URL_LLM
```

Field Value

[string](#)

## MAP\_FILE\_NAME

path of image used as map

```
public static string MAP_FILE_NAME
```

Field Value

[string](#)

## PATH\_ESPEAK

to speech by default is used eSpeak this is the folder when espeak is installed

```
public static string PATH_ESPEAK
```

Field Value

[string](#)

## SERIAL\_ARRAY\_SEPARATOR

separator char for array elements

```
public static string SERIAL_ARRAY_SEPARATOR
```

Field Value

[string](#)

## SERIAL\_END\_MESSAGE

Chars for end message

```
public static string SERIAL_END_MESSAGE
```

Field Value

[string](#)

## SERIAL\_NAME

serial settings : serial name

```
public static string SERIAL_NAME
```

Field Value

[string](#)

## SERIAL\_SEPARATOR

separator char for command

```
public static string SERIAL_SEPARATOR
```

Field Value

[string](#)

## SERIAL\_SPEED

serial settings : serial speed

```
public static int SERIAL_SPEED
```

Field Value

[int](#)

## SERIAL\_START\_MESSAGE\_ARDU

Start chars for message from Server (message from Arduino to Server)

```
public static string SERIAL_START_MESSAGE_ARDU
```

Field Value

[string](#)

## SERIAL\_START\_MESSAGE\_RPI

Start chars for message from Server (message from Server to Arduino)

```
public static string SERIAL_START_MESSAGE_RPI
```

Field Value

[string](#)

## TCP\_URL\_COMUNICATION

TCP settings if is configured as tcp use this to configure "ip;port"

```
public static string TCP_URL_COMUNICATION
```

Field Value

[string](#)

# Class Program

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public class Program
```

Inheritance

[object](#) ← Program

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Class RobotConfiguration

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public static class RobotConfiguration
```

## Inheritance

[object](#) ← RobotConfiguration

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Fields

### ANGLE\_CORRECTION\_LIDAR

fixed correction of calculated angle from lidar

```
public static int ANGLE_CORRECTION_LIDAR
```

#### Field Value

[int](#)

### AngleStartRecharge

Angle to start recharge base

```
public static int AngleStartRecharge
```

#### Field Value

[int](#)

## HALF\_HEIGHT\_ROBOT

half height of robot in cm

```
public static int HALF_HEIGHT_ROBOT
```

Field Value

[int](#)

## HALF\_WIDTH\_ROBOT

half width of robot in cm

```
public static int HALF_WIDTH_ROBOT
```

Field Value

[int](#)

## HAVE\_LIDAR

true if robot have a lidar

```
public static bool HAVE_LIDAR
```

Field Value

[bool](#)

## HEIGHT\_MAP

max heeight of map in cm

```
public static int HEIGHT_MAP
```

Field Value

[int↗](#)

## LOG\_FILE\_EMULATOR

used to the emulator to write the path calculation to the path.json file

```
public static bool LOG_FILE_EMULATOR
```

Field Value

[bool↗](#)

## MAX\_DISTANCE\_AUTOPOS\_LIDAR

If the distance from teoric position and calculated position from lidar is greater than this value, invalidate autoposition

```
public static int MAX_DISTANCE_AUTOPOS_LIDAR
```

Field Value

[int↗](#)

## MAX\_DISTANCE\_FORWARD\_CONSEC

maximum distance travelled in a straight line, once this distance has been travelled the robot performs position checks

```
public static int MAX_DISTANCE_FORWARD_CONSEC
```

Field Value

[int↗](#)

## MAX\_DISTANCE\_LIDAR

Max distance valid for lidar

```
public static int MAX_DISTANCE_LIDAR
```

Field Value

[int](#)

## MESSAGGIO\_AVVIO

```
public static string MESSAGGIO_AVVIO
```

Field Value

[string](#)

## MESSAGGIO\_AVVIO\_COMPLETATO

```
public static string MESSAGGIO_AVVIO_COMPLETATO
```

Field Value

[string](#)

## MESSAGGIO\_RICARICA

```
public static string MESSAGGIO_RICARICA
```

Field Value

[string](#)

## MIN\_DISTANCE\_LIDAR

Min distance valid for lidar

```
public static int MIN_DISTANCE_LIDAR
```

Field Value

[int](#)

## MIN\_STEP\_FOR\_FINDPATH

min step use for pathfinding

```
public static int MIN_STEP_FOR_FINDPATH
```

Field Value

[int](#)

## MIN\_STEP\_FOR\_WEIGHTPATH

Each time an obstacle is detected, the weight of the point where the obstacle was detected is increased by this value

```
public static int MIN_STEP_FOR_WEIGHTPATH
```

Field Value

[int](#)

## ORIENTATION\_LIDAR

orientation of the lidar sensor relative to the zero of the robot

```
public static int ORIENTATION_LIDAR
```

Field Value

[int](#)

## PERC\_POINT\_OVERLAP\_AUTOPOS\_LIDAR

Used for autoposition , if percentage of overlapping point finded from lidar are greater than this percentage , calculate autoposition

```
public static int PERC_POINT_OVERLAP_AUTOPOS_LIDAR
```

Field Value

[int](#)

## PointRecharge

Point where the charging base is positioned

```
public static RPoint PointRecharge
```

Field Value

[RPoint](#)

## PointStartRecharge

point where the robot begins to approach the charging base

```
public static RPoint PointStartRecharge
```

Field Value

[RPoint](#)

## WIDHT\_MAP

max width of map in cm

```
public static int WIDHT_MAP
```

Field Value

[int](#)

## Properties

### DxLedColorRecharge

```
public static Rgba32 DxLedColorRecharge { get; }
```

Property Value

Rgba32

### DxLedTolleranceRecharge

```
public static Rgba32 DxLedTolleranceRecharge { get; }
```

Property Value

Rgba32

### FrontLedColorRecharge

```
public static Rgba32 FrontLedColorRecharge { get; }
```

Property Value

Rgba32

## FrontLedTolleranceRecharge

```
public static Rgba32 FrontLedTolleranceRecharge { get; }
```

Property Value

Rgba32

## SxLedColorRecharge

```
public static Rgba32 SxLedColorRecharge { get; }
```

Property Value

Rgba32

## SxLedTolleranceRecharge

```
public static Rgba32 SxLedTolleranceRecharge { get; }
```

Property Value

Rgba32

# Class ServiceRegistration

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public static class ServiceRegistration
```

Inheritance

[object](#) ← ServiceRegistration

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

Register(IServiceCollection)

```
public static void Register(IServiceCollection services)
```

Parameters

services [IServiceCollection](#)

# Class StatusFile

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public class StatusFile
```

## Inheritance

[object](#) ← StatusFile

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Angle

```
public int Angle { get; set; }
```

### Property Value

[int](#)

## AngleStartRecharge

```
public int AngleStartRecharge { get; set; }
```

### Property Value

[int](#)

## PointStartRecharge

```
public RPoint PointStartRecharge { get; set; }
```

Property Value

[RPoint](#)

X

```
public int X { get; set; }
```

Property Value

[int](#)

Y

```
public int Y { get; set; }
```

Property Value

[int](#)

# Class StatusLogInfo

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public class StatusLogInfo
```

## Inheritance

[object](#) ← StatusLogInfo

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## EnableMoviment

```
public bool EnableMoviment { get; set; }
```

## Property Value

[bool](#)

## Path

```
public List<RPoint> Path { get; set; }
```

## Property Value

[List](#)<[RPoint](#)>

## Rele1Active

```
public bool Rele1Active { get; set; }
```

Property Value

bool ↗

Rele2Active

```
public bool Rele2Active { get; set; }
```

Property Value

bool ↗

# Class StatusRobot

Namespace: [MainRobot](#)

Assembly: MainRobot.dll

```
public static class StatusRobot
```

Inheritance

[object](#) ← StatusRobot

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Properties

CurrentAngle

```
public static int CurrentAngle { get; set; }
```

Property Value

[int](#)

CurrentPosition

```
public static RPoint CurrentPosition { get; set; }
```

Property Value

[RPoint](#)

FakeMoviment

```
public static bool FakeMoviment { get; set; }
```

Property Value

[bool](#)

## IsInMoviment

```
public static bool IsInMoviment { get; set; }
```

Property Value

[bool](#)

## IsInRecharge

```
public static bool IsInRecharge { get; set; }
```

Property Value

[bool](#)

## LowBattery

```
public static bool LowBattery { get; set; }
```

Property Value

[bool](#)

## Navigating

```
public static bool Navigating { get; set; }
```

Property Value

[bool](#)

## NavigatingToRecharge

```
public static bool NavigatingToRecharge { get; set; }
```

Property Value

[bool](#)

## Methods

### InitStatus()

```
public static void InitStatus()
```

### UpdateStatus(StatusFile)

```
public static void UpdateStatus(StatusFile statusFile = null)
```

Parameters

**statusFile** [StatusFile](#)

# Namespace MainRobot.Common

## Classes

[Location](#)

[MathUtil](#)

[RPoint](#)

# Class Location

Namespace: [MainRobot.Common](#)

Assembly: MainRobot.dll

```
public class Location
```

## Inheritance

[object](#) ← Location

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Constructors

## Location()

```
public Location()
```

## Location(int, RPoint, int)

```
public Location(int id, RPoint position, int angle)
```

## Parameters

id [int](#)

position [RPoint](#)

angle [int](#)

# Fields

## Angle

```
public int Angle
```

### Field Value

[int](#)

## Id

```
public int Id
```

### Field Value

[int](#)

## Position

```
public RPoint Position
```

### Field Value

[RPoint](#)

# Class MathUtil

Namespace: [MainRobot.Common](#)

Assembly: MainRobot.dll

```
public class MathUtil
```

## Inheritance

[object](#) ← MathUtil

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### AngleBetweenTwoPoint180Origin(RPoint, RPoint)

```
public static double AngleBetweenTwoPoint180Origin(RPoint p1, RPoint p2)
```

#### Parameters

p1 [RPoint](#)

p2 [RPoint](#)

#### Returns

[double](#)

### AngleBetweenTwoPoints(RPoint, RPoint)

```
public static double AngleBetweenTwoPoints(RPoint p1, RPoint p2)
```

#### Parameters

p1 [RPoint](#)

p2 [RPoint](#)

Returns

[double](#)

## DifferenceTwoAngle(double, double)

```
public static double DifferenceTwoAngle(double angle, double angle1)
```

Parameters

angle [double](#)

angle1 [double](#)

Returns

[double](#)

## DifferenceTwoAngleSigned(double, double)

esegue la differenza di due angoli con il segno tra 180,0,-180

```
public static double DifferenceTwoAngleSigned(double firstAngle, double secondAngle)
```

Parameters

firstAngle [double](#)

secondAngle [double](#)

Returns

[double](#)

## DifferenceTwoAngleZero(double, double)

```
public static double DifferenceTwoAngleZero(double angle, double angle1)
```

Parameters

angle [double](#)

angle1 [double](#)

Returns

[double](#)

## Distance(RPoint, RPoint)

```
public static double Distance(RPoint p1, RPoint p2)
```

Parameters

p1 [RPoint](#)

p2 [RPoint](#)

Returns

[double](#)

## MovePointOfDistance(RPoint, double, double)

```
public static RPoint MovePointOfDistance(RPoint p, double distance, double angle)
```

Parameters

p [RPoint](#)

distance [double](#)

angle [double](#)

Returns

[RPoint](#)

## MovePointOfDistanceRounded10(RPoint, double, double)

```
public static RPoint MovePointOfDistanceRounded10(RPoint p, double distance, double angle)
```

Parameters

p [RPoint](#)

distance [double](#)

angle [double](#)

Returns

[RPoint](#)

## SumTwoAngle(double, double)

```
public static double SumTwoAngle(double angle, double angle1)
```

Parameters

angle [double](#)

angle1 [double](#)

Returns

[double](#)

# Class RPoint

Namespace: [MainRobot.Common](#)

Assembly: MainRobot.dll

```
public class RPoint
```

## Inheritance

[object](#) ← RPoint

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Constructors

## RPoint()

```
public RPoint()
```

## RPoint(int, int)

```
public RPoint(int x, int y)
```

## Parameters

x [int](#)

y [int](#)

# Fields

## X

```
public int X
```

Field Value

int ↗

Y

```
public int Y
```

Field Value

int ↗

# Namespace MainRobot.Common.Graphics

## Classes

[ImageUtility](#)

# Class ImageUtility

Namespace: [MainRobot.Common.Graphics](#)

Assembly: MainRobot.dll

```
public class ImageUtility
```

## Inheritance

[object](#) ← ImageUtility

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### GetPointWithHighestDensity(List<RPoint>)

```
public static RPoint GetPointWithHighestDensity(List<RPoint> points)
```

#### Parameters

points [List](#)<RPoint>

#### Returns

[RPoint](#)

### IsDarkImage(Image<Rgba32>, double?)

```
public static bool IsDarkImage(Image<Rgba32> image, double? threshold = 50)
```

#### Parameters

image [Image](#)<Rgba32>

`threshold` `double`?

Returns

`bool`

## ListPixelOfColor(Image<Rgba32>, int, int, int, int, int, int)

```
public static List<RPoint> ListPixelOfColor(Image<Rgba32> inputImage, int r, int g, int b,  
int toleranceRed, int toleranceGreen, int toleranceBlue)
```

Parameters

`inputImage` `Image<Rgba32>`

`r` `int`

`g` `int`

`b` `int`

`toleranceRed` `int`

`toleranceGreen` `int`

`toleranceBlue` `int`

Returns

`List`<`RPoint`>

## PositionOfColor(Image<Rgba32>, int, int, int, int, int)

```
public static RPoint PositionOfColor(Image<Rgba32> inputImage, int r, int g, int b, int  
toleranceRed, int toleranceGreen, int toleranceBlue)
```

Parameters

`inputImage` `Image<Rgba32>`

r [int](#)

g [int](#)

b [int](#)

toleranceRed [int](#)

toleranceGreen [int](#)

toleranceBlue [int](#)

Returns

[RPoint](#)

# Namespace MainRobot.Http

## Classes

[HttpMethodAttribute](#)

[HttpServer](#)

[RestApiClient](#)

[SerializationMiddleware](#)

# Class HttpMethodAttribute

Namespace: [MainRobot.Http](#)

Assembly: MainRobot.dll

```
[AttributeUsage(AttributeTargets.Method)]
public class HttpMethodAttribute : Attribute
```

## Inheritance

[object](#) ← [Attribute](#) ← HttpMethodAttribute

## Inherited Members

[Attribute.Equals\(object\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,  
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) ,  
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,  
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,  
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,  
[Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,  
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,  
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,  
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(MemberInfo\)](#) ,  
[Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,  
[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,  
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,  
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type\)](#) ,  
[Attribute.GetCustomAttributes\(Module, Type, bool\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo\)](#) ,  
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) ,  
[Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,  
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) , [Attribute.GetHashCode\(\)](#) ,  
[Attribute.IsDefaultAttribute\(\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,  
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.IsDefined\(MemberInfo, Type\)](#) ,  
[Attribute.IsDefined\(MemberInfo, Type, bool\)](#) , [Attribute.IsDefined\(Module, Type\)](#) ,  
[Attribute.IsDefined\(Module, Type, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,  
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.Match\(object\)](#) , [Attribute.TypeId](#) ,  
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,  
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

## HttpMethodAttribute(string)

```
public HttpMethodAttribute(string method)
```

### Parameters

method [string](#)

## Properties

### Method

```
public string Method { get; }
```

### Property Value

[string](#)

# Class HttpServer

Namespace: [MainRobot.Http](#)

Assembly: MainRobot.dll

```
public class HttpServer
```

Inheritance

[object](#) ← HttpServer

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### HttpServer(string, IServiceProvider)

```
public HttpServer(string prefix, IServiceProvider provider)
```

Parameters

prefix [string](#)

provider [IServiceProvider](#)

## Methods

### StartAsync()

```
public Task StartAsync()
```

Returns

[Task](#)

# Class RestApiClient

Namespace: [MainRobot.Http](#)

Assembly: MainRobot.dll

```
public class RestApiClient
```

## Inheritance

[object](#) ← RestApiClient

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### RestApiClient(string)

```
public RestApiClient(string baseUrl)
```

## Parameters

baseUrl [string](#)

## Methods

### SendRequestAsync(string, string, object)

```
public Task<HttpResponseMessage> SendRequestAsync(string method, string url, object data  
= null)
```

## Parameters

method [string](#)

url [string](#)

`data object`

Returns

`Task<HttpResponseMessage>`

`addHeader(string, string)`

```
public void addHeader(string key, string value)
```

Parameters

`key string`

`value string`

# Class SerializationMiddleware

Namespace: [MainRobot.Http](#)

Assembly: MainRobot.dll

```
public class SerializationMiddleware
```

## Inheritance

[object](#) ← SerializationMiddleware

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

InvokeAsync(HttpListenerContext, Dictionary<string, object>, IServiceProvider)

```
public Task InvokeAsync(HttpListenerContext context, Dictionary<string, object> data,  
IServiceProvider provider)
```

## Parameters

context [HttpListenerContext](#)

data [Dictionary](#)<[string](#), [object](#)>

provider [IServiceProvider](#)

## Returns

[Task](#)

# Namespace MainRobot.NaturalLanguage.SpacyNet

## Classes

[IntentRecognition](#)

[Vocabulary](#)

# Class IntentRecognition

Namespace: [MainRobot.NaturalLanguage.SpacyNet](#)

Assembly: MainRobot.dll

```
public class IntentRecognition : IIntentRecognition
```

## Inheritance

[object](#) ← IntentRecognition

## Implements

[IIntentRecognition](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

IntentRecognition()

```
public IntentRecognition()
```

## Methods

Init()

```
public void Init()
```

ProcessIntent(string)

```
public Task<List<IntentData>> ProcessIntent(string sentence)
```

Parameters

**sentence** [string](#)

Returns

[Task](#) <[List](#) <[IntentData](#)>>

# Class Vocabulary

Namespace: [MainRobot.NaturalLanguage.SpacyNet](#)

Assembly: MainRobot.dll

```
public static class Vocabulary
```

## Inheritance

[object](#) ← Vocabulary

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Fields

## Intent

```
public static Dictionary<string, string> Intent
```

## Field Value

[Dictionary](#)<[string](#), [string](#)>

# Namespace MainRobot.Robot

## Classes

[LogFileForEmulator](#)

[Robot](#)

Main class robot

## Interfaces

[IRobot](#)

# Interface IRobot

Namespace: [MainRobot.Robot](#)

Assembly: MainRobot.dll

```
public interface IRobot
```

## Methods

### InitRobot()

```
Task InitRobot()
```

Returns

[Task](#)

# Class LogFileForEmulator

Namespace: [MainRobot.Robot](#)

Assembly: MainRobot.dll

```
public static class LogFileForEmulator
```

## Inheritance

[object](#) ← LogFileForEmulator

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### Write(string, string)

```
public static void Write(string textJson, string fileName)
```

#### Parameters

textJson [string](#)

fileName [string](#)

### WriteCommand(string, string)

```
public static void WriteCommand(string command, string fileName)
```

#### Parameters

command [string](#)

fileName [string](#)

# Class Robot

Namespace: [MainRobot.Robot](#)

Assembly: MainRobot.dll

Main class robot

```
public class Robot : IRobot
```

Inheritance

[object](#) ← Robot

Implements

[IRobot](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

Robot(INavigation, IRechargeManager, ITextToSpeech,  
IBatteryManager, ICommandCommunication)

```
public Robot(INavigation navigation, IRechargeManager rechargeMaanger, ITextToSpeech  
textToSpeech, IBatteryManager batteryManager, ICommandCommunication communication)
```

Parameters

navigation [INavigation](#)

rechargeMaanger [IRechargeManager](#)

textToSpeech [ITextToSpeech](#)

batteryManager [IBatteryManager](#)

communication [ICommandCommunication](#)

# Methods

## InitRobot()

Set initial status of robot

```
public Task InitRobot()
```

Returns

[Task](#)

# Namespace MainRobot.Robot.ActionExec

## Classes

[ActionExec](#)

[GeneratedText](#)

[InputslImage](#)

[LLMHFCall](#)

[LLMHFImageToTextCall](#)

[LLMHFIInput](#)

[LLMHFIInputImage](#)

[LLMHFParameters](#)

[LLMRestCall](#)

[ResultAction](#)

## Interfaces

[IActionExec](#)

[ILLMRestCall](#)

# Class ActionExec

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class ActionExec : IActionExec
```

## Inheritance

[object](#) ← ActionExec

## Implements

[IActionExec](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

ActionExec(IIntentRecognition, IRoomInfo, INavigation,  
IMovement, ITextToSpeech, IWebSocketCommand)

```
public ActionExec(IIntentRecognition intentRecognition, IRoomInfo roomInfo,  
INavigation navigation, IMovement movement, ITextToSpeech textToSpeech,  
IWebSocketCommand webSocketCommand)
```

## Parameters

intentRecognition [IIntentRecognition](#)

roomInfo [IRoomInfo](#)

navigation [INavigation](#)

movement [IMovement](#)

textToSpeech [ITextToSpeech](#)

webSocketCommand [IWebSocketCommand](#)

# Methods

## SentenceExec(string)

```
public Task SentenceExec(string sentence)
```

### Parameters

sentence [string](#)

### Returns

[Task](#)

# Class GeneratedText

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class GeneratedText
```

## Inheritance

[object](#) ← GeneratedText

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## generated\_text

```
public string generated_text { get; set; }
```

## Property Value

[string](#)

# Interface IActionExec

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public interface IActionExec
```

## Methods

### SentenceExec(string)

Task **SentenceExec**(**string** sentence)

Parameters

**sentence** [string](#)

Returns

[Task](#)

# Interface ILLMRestCall

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public interface ILLMRestCall
```

## Methods

### ProcessIntent(string)

```
Task<List<IntentData>> ProcessIntent(string sentence)
```

Parameters

**sentence** [string](#)

Returns

```
Task<List<IntentData>>
```

### ProcessIntentASK(string)

```
Task<string?> ProcessIntentASK(string sentence)
```

Parameters

**sentence** [string](#)

Returns

```
Task<string>
```

## ProcessIntentGOTO(string)

Task<[string](#)?> ProcessIntentGOTO([string](#) sentence)

Parameters

[sentence](#) [string](#)

Returns

[Task](#)<[string](#)>

# Class InputsImage

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class InputsImage
```

## Inheritance

[object](#) ← InputsImage

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## image

```
public string image { get; set; }
```

## Property Value

[string](#)

# Class LLMHFCall

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class LLMHFCall : ILLMRestCall
```

## Inheritance

[object](#) ← LLMHFCall

## Implements

[ILLMRestCall](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### Init()

```
public void Init()
```

### ProcessIntent(string)

```
public Task<List<IntentData>?> ProcessIntent(string sentence)
```

#### Parameters

[sentence](#) [string](#)

#### Returns

[Task](#) <[List](#) <[IntentData](#)>>

## ProcessIntentASK(string)

```
public Task<string?>? ProcessIntentASK(string sentence)
```

Parameters

**sentence** [string](#)

Returns

[Task](#) <[string](#)>

## ProcessIntentGOTO(string)

```
public Task<string?>? ProcessIntentGOTO(string sentence)
```

Parameters

**sentence** [string](#)

Returns

[Task](#) <[string](#)>

# Class LLMHFIImageToTextCall

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class LLMHFIImageToTextCall
```

## Inheritance

[object](#) ← LLMHFIImageToTextCall

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### LLMHFIImageToTextCall()

```
public LLMHFIImageToTextCall()
```

## Methods

### ProcessImage(string)

```
public Task<string?> ProcessImage(string image)
```

#### Parameters

**image** [string](#)

#### Returns

[Task](#)<[string](#)>

# Class LLMHFInput

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class LLMHFInput
```

## Inheritance

[object](#) ← LLMHFInput

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## inputs

```
public string inputs { get; set; }
```

### Property Value

[string](#)

## parameters

```
public LLMHFPARAMETERS parameters { get; set; }
```

### Property Value

[LLMHFPARAMETERS](#)

# Class LLMHFInputImage

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class LLMHFInputImage
```

## Inheritance

[object](#) ← LLMHFInputImage

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## inputs

```
public InputsImage inputs { get; set; }
```

## Property Value

[InputsImage](#)

# Class LLMHParameters

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class LLMHParameters
```

## Inheritance

[object](#) ← LLMHParameters

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## do\_sample

```
public bool do_sample { get; set; }
```

### Property Value

[bool](#)

## max\_new\_tokens

```
public int max_new_tokens { get; set; }
```

### Property Value

[int](#)

## temperature

```
public double temperature { get; set; }
```

Property Value

double ↗

top\_p

```
public double top_p { get; set; }
```

Property Value

double ↗

# Class LLMRestCall

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class LLMRestCall : ILLMRestCall
```

Inheritance

[object](#) ← LLMRestCall

Implements

[ILLMRestCall](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

Init()

```
public void Init()
```

ProcessIntent(string)

```
public Task<List<IntentData>?> ProcessIntent(string sentence)
```

Parameters

sentence [string](#)

Returns

[Task](#) <[List](#) <[IntentData](#)>>

## ProcessIntentASK(string)

```
public Task<string> ProcessIntentASK(string sentence)
```

Parameters

**sentence** [string](#)

Returns

[Task](#)<[string](#)>

## ProcessIntentGOTO(string)

```
public Task<string> ProcessIntentGOTO(string sentence)
```

Parameters

**sentence** [string](#)

Returns

[Task](#)<[string](#)>

# Class ResultAction

Namespace: [MainRobot.Robot.ActionExec](#)

Assembly: MainRobot.dll

```
public class ResultAction
```

## Inheritance

[object](#) ← ResultAction

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## action

```
public string action { get; set; }
```

## Property Value

[string](#)

# Namespace MainRobot.Robot.ActionExec.LLM

## Classes

[LLMIntentRecognition](#)

[LlmStudioResponse](#)

[LlmStudioResponseChoiche](#)

[LlmStudioResponseMessage](#)

# Class LLMIntentRecognition

Namespace: [MainRobot.Robot.ActionExec.LLM](#)

Assembly: MainRobot.dll

```
public class LLMIntentRecognition : IIntentRecognition
```

## Inheritance

[object](#) ← LLMIntentRecognition

## Implements

[IIntentRecognition](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### LLMIntentRecognition(ILLMRestCall)

```
public LLMIntentRecognition(ILLMRestCall llmRestCall)
```

## Parameters

llmRestCall [ILLMRestCall](#)

## Methods

### Init()

```
public void Init()
```

### ProcessIntent(string)

```
public Task<List<IntentData>> ProcessIntent(string sentence)
```

Parameters

sentence [string](#)

Returns

[Task](#) <[List](#) <[IntentData](#)>>

# Class LlmStudioResponse

Namespace: [MainRobot.Robot.ActionExec.LLM](#)

Assembly: MainRobot.dll

```
public class LlmStudioResponse
```

## Inheritance

[object](#) ← LlmStudioResponse

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## choices

```
public List<LlmStudioResponseChoiche> choices { get; set; }
```

## Property Value

[List](#)<[LlmStudioResponseChoiche](#)>

## created

```
public double created { get; set; }
```

## Property Value

[double](#)

## id

```
public string id { get; set; }
```

Property Value

[string](#) ↗

model

```
public string model { get; set; }
```

Property Value

[string](#) ↗

# Class LlmStudioResponseChoiche

Namespace: [MainRobot.Robot.ActionExec.LLM](#)

Assembly: MainRobot.dll

```
public class LlmStudioResponseChoiche
```

## Inheritance

[object](#) ← LlmStudioResponseChoiche

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Properties

### finish\_reason

```
public string finish_reason { get; set; }
```

#### Property Value

[string](#)

### index

```
public int index { get; set; }
```

#### Property Value

[int](#)

### message

```
public LlmStudioResponseMessage message { get; set; }
```

Property Value

[LlmStudioResponseMessage](#)

# Class LlmStudioResponseMessage

Namespace: [MainRobot.Robot.ActionExec.LLM](#)

Assembly: MainRobot.dll

```
public class LlmStudioResponseMessage
```

## Inheritance

[object](#) ← LlmStudioResponseMessage

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Properties

### content

```
public string content { get; set; }
```

#### Property Value

[string](#)

### role

```
public string role { get; set; }
```

#### Property Value

[string](#)

# Namespace MainRobot.Robot.Battery

## Classes

[BatteryManager](#)

## Interfaces

[IBatteryManager](#)

# Class BatteryManager

Namespace: [MainRobot.Robot.Battery](#)

Assembly: MainRobot.dll

```
public class BatteryManager : IBatteryManager
```

Inheritance

[object](#) ← BatteryManager

Implements

[IBatteryManager](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

BatteryManager(ICommandCommunication, INavigation, ITextToSpeach)

```
public BatteryManager(ICommandCommunication communication, INavigation navigation,  
ITextToSpeach textToSpeach)
```

Parameters

communication [ICommandCommunication](#)

navigation [INavigation](#)

textToSpeach [ITextToSpeach](#)

# Interface IBatteryManager

Namespace: [MainRobot.Robot.Battery](#)

Assembly: MainRobot.dll

```
public interface IBatteryManager
```

# Namespace MainRobot.Robot.Communication

## Classes

### [CommandCommunication](#)

Implementazione comandi del robot per il movimento e la gestione delle funzionalità base

### [CommandQueue](#)

# Class CommandCommunication

Namespace: [MainRobot.Robot.Comunication](#)

Assembly: MainRobot.dll

Implementazione comandi del robot per il movimento e la gestione delle funzionalità base

```
public class CommandCommunication : ICommandCommunication
```

Inheritance

[object](#) ← CommandCommunication

Implements

[ICommandComunication](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

CommandComunication(ICommandQueue)

```
public CommandCommunication(ICommandQueue communication)
```

Parameters

communication [ICommandQueue](#)

## Methods

Backward(int)

Move Backward

```
public Task<CommunicationCommandReceived> Backward(int distance)
```

Parameters

`distance int`

distnce in cm

Returns

`Task <CommunicationCommandReceived>`

## DisableMoviment()

Disable Robot to move

```
public Task<CommunicationCommandReceived> DisableMoviment()
```

Returns

`Task <CommunicationCommandReceived>`

## DisableObstacleFind()

After disable no obstacle are detected

```
public Task<CommunicationCommandReceived> DisableObstacleFind()
```

Returns

`Task <CommunicationCommandReceived>`

## DisableRele1()

Open rele1

```
public Task<CommunicationCommandReceived> DisableRele1()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## DisableRele2()

Open Rele2

```
public Task<CommunicationCommandReceived> DisableRele2()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableFakeMoviment()

Opern Rele2

```
public Task<CommunicationCommandReceived> EnableFakeMoviment()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableMoviment()

Enable Moviment : Enable robot to move

```
public Task<CommunicationCommandReceived> EnableMoviment()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableObstacleFind()

Enable obstacle detection

```
public Task<CommunicationCommandReceived> EnableObstacleFind()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableRele1()

Close Rele2

```
public Task<CommunicationCommandReceived> EnableRele1()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableRele2()

Close Rele2

```
public Task<CommunicationCommandReceived> EnableRele2()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## ForceArduCleanStatus()

reset and clean arduino status

```
public Task<CommunicationCommandReceived> ForceArduCleanStatus()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## Forward(int)

Move forward

```
public Task<ResponseSerialForward> Forward(int distance)
```

Parameters

*distance* [int](#)

distance in Cm

Returns

[Task](#) <[ResponseSerialForward](#)>

## GetDistanceFrontSensor()

Read distance from Ultrasonic sensor front , center

```
public Task<float> GetDistanceFrontSensor()
```

Returns

[Task](#) <[float](#)>

distance in cm from the obstacle or 0 if there are none

## GetLevelOfAlimentation()

Get volts of battery alimentation

```
public Task<float?> GetLevelOfAlimentation()
```

Returns

[Task](#) <[float](#)?>

Volts of alimentation

## GetSourceOfAlimentation()

Return status of alimentation

```
public Task<int> GetSourceOfAlimentation()
```

Returns

[Task](#)<[int](#)>

"1 network 0 battery"

## IsInRecharge()

Check if robot is in recharge

```
public Task<CommunicationCommandReceived> IsInRecharge()
```

Returns

[Task](#)<[CommunicationCommandReceived](#)>

## MoveServo(int, int)

moves a servo by a set angle

```
public Task<CommunicationCommandReceived> MoveServo(int numServo, int angle)
```

Parameters

numServo [int](#)

angle [int](#)

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## OutInRecharge()

Exit from recharge

```
public Task<CommunicationCommandReceived> OutInRecharge()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## ReadLidar()

Get data from lidar

```
public Task<List<(float, float)>?> ReadLidar()
```

Returns

[Task](#) <[List](#) <(float, float)>>

List of tuple (angle, distance)

## StartLeftMotor(int)

Turn left

```
public Task<CommunicationCommandReceived> StartLeftMotor(int angle)
```

Parameters

angle int

angle to rotate

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## StartRightMotor(int)

Turn right

```
public Task<CommunicationCommandReceived> StartRightMotor(int angle)
```

Parameters

angle [int](#)

angle to rotate

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## Stop()

```
public Task<CommunicationCommandReceived> Stop()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## TestThreadSleep()

```
public Task<CommunicationCommandReceived> TestThreadSleep()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## TestThreadSleep1()

```
public Task<CommunicationCommandReceived> TestThreadSleep1()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

# Class CommandQueue

Namespace: [MainRobot.Robot.Communication](#)

Assembly: MainRobot.dll

```
public class CommandQueue : ICommandQueue
```

## Inheritance

[object](#) ← CommandQueue

## Implements

[ICommandQueue](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### CommandQueue(ICommunication)

```
public CommandQueue(ICommunication communication)
```

## Parameters

communication [ICommunication](#)

## Methods

### Enqueue(string, string)

```
public Task<CommunicationCommandReceived> Enqueue(string command, string logDescriptionCmd)
```

## Parameters

command [string](#)

`logDescriptionCmd` [string](#)

Returns

[Task](#) <[CommunicationCommandReceived](#)>

# Namespace MainRobot.Robot.Communication. CommunicationTransport

## Classes

[HttpCommunication](#)

[SerialCommunication](#)

## Interfaces

[ICommunication](#)

# Class HttpCommunication

Namespace: [MainRobot.Robot.Comunication.ComunicationTransport](#)

Assembly: MainRobot.dll

```
public class HttpCommunication : IComunication
```

## Inheritance

[object](#) ← HttpCommunication

## Implements

[IComunication](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### HttpCommunication(IHttpClientComunication)

```
public HttpCommunication(IHttpClientComunication httpClientCom)
```

## Parameters

httpClientCom [IHttpClientComunication](#)

## Methods

### RunCommand(CommunicationCommand)

```
public Task<string> RunCommand(CommunicationCommand currentCommand)
```

## Parameters

currentCommand [CommunicationCommand](#)

Returns

[Task](#) <[string](#)>

# Interface ICommunication

Namespace: [MainRobot.Robot.Comunication.ComunicationTransport](#)

Assembly: MainRobot.dll

```
public interface ICommunication
```

## Methods

### RunCommand(CommunicationCommand?)

```
Task<string> RunCommand(CommunicationCommand? currentCommand)
```

#### Parameters

`currentCommand` [CommunicationCommand](#)

#### Returns

[Task](#) <[string](#)>

# Class SerialCommunication

Namespace: [MainRobot.Robot.Comunication.ComunicationTransport](#)

Assembly: MainRobot.dll

```
public class SerialCommunication : ICommunication
```

## Inheritance

[object](#) ← SerialCommunication

## Implements

[ICommunication](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### SerialComunication(ISerial)

```
public SerialCommunication(ISerial serial)
```

## Parameters

serial [ISerial](#)

## Methods

### ParseCommandReceived(string)

```
public void ParseCommandReceived(string line)
```

## Parameters

line [string](#)

## RunCommand(CommunicationCommand?)

```
public Task<string> RunCommand(CommunicationCommand? currentCommand)
```

### Parameters

currentCommand [CommunicationCommand](#)

### Returns

[Task](#) <[string](#)>

# Namespace MainRobot.Robot.Communication. CommunicationTransport.HttpClient

## Classes

[FakeHttpClientCommunication](#)

[HttpClientCommunication](#)

[TcpClientCommunication](#)

## Interfaces

[IHttpClientComunication](#)

# Class FakeHttpClientCommunication

Namespace: [MainRobot.Robot.Comunication.CommunicationTransport.HttpClient](#)

Assembly: MainRobot.dll

```
public class FakeHttpClientCommunication : IHttpClientCommunication
```

## Inheritance

[object](#) ← FakeHttpClientCommunication

## Implements

[IHttpClientComunication](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

FakeHttpClientCommunication(IHttpClientFactory)

```
public FakeHttpClientCommunication(IHttpClientFactory httpClientFactory)
```

## Parameters

httpClientFactory [IHttpClientFactory](#)

## Methods

SendAsync(string)

```
public Task<string> SendAsync(string command)
```

## Parameters

command [string](#)

Returns

[Task](#) <[string](#)>

# Class HttpClientCommunication

Namespace: [MainRobot.Robot.Comunication.CommunicationTransport.HttpClient](#)

Assembly: MainRobot.dll

```
public class HttpClientCommunication : IHttpClientCommunication
```

## Inheritance

[object](#) ← HttpClientCommunication

## Implements

[IHttpClientComunication](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### HttpClientComunication(IHttpClientFactory)

```
public HttpClientComunication(IHttpClientFactory httpClientFactory)
```

## Parameters

httpClientFactory [IHttpClientFactory](#)

## Methods

### SendAsync(string)

```
public Task<string> SendAsync(string command)
```

## Parameters

command [string](#)

Returns

[Task](#) <[string](#)>

# Interface IHttpclientCommunication

Namespace: [MainRobot.Robot.Comunication.CommunicationTransport.HttpClient](#)

Assembly: MainRobot.dll

```
public interface IHttpclientCommunication
```

## Methods

### SendAsync(string)

```
Task<string> SendAsync(string command)
```

Parameters

command [string](#)

Returns

[Task](#) <[string](#)>

# Class TcpClientCommunication

Namespace: [MainRobot.Robot.Comunication.CommunicationTransport.HttpClient](#)

Assembly: MainRobot.dll

```
public class TcpClientCommunication : IHttpClientCommunication
```

## Inheritance

[object](#) ← TcpClientCommunication

## Implements

[IHttpClientCommunication](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

TcpClientCommunication()

```
public TcpClientCommunication()
```

## Methods

ConnectAsync()

```
public Task<bool> ConnectAsync()
```

## Returns

[Task](#)<[bool](#)>

SendAsync(string)

```
public Task<string> SendAsync(string message)
```

Parameters

message [string](#)

Returns

[Task](#) <[string](#)>

# Namespace MainRobot.Robot.Communication. Interface

## Interfaces

[ICommandCommunication](#)

[ICommandQueue](#)

# Interface ICommandCommunication

Namespace: [MainRobot.Robot.Comunication.Interface](#)

Assembly: MainRobot.dll

```
public interface ICommandCommunication
```

## Methods

### Backward(int)

Task<CommunicationCommandReceived> **Backward**(int distance)

Parameters

*distance* [int](#)

Returns

[Task](#) <[CommunicationCommandReceived](#)>

### DisableMoviment()

Task<CommunicationCommandReceived> **DisableMoviment**()

Returns

[Task](#) <[CommunicationCommandReceived](#)>

### DisableObstacleFind()

Task<CommunicationCommandReceived> **DisableObstacleFind**()

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## DisableRele1()

disable rele1

Task<CommunicationCommandReceived> **DisableRele1()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## DisableRele2()

Task<CommunicationCommandReceived> **DisableRele2()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableFakeMoviment()

Task<CommunicationCommandReceived> **EnableFakeMoviment()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableMoviment()

Task<CommunicationCommandReceived> **EnableMoviment()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableObstacleFind()

Task<CommunicationCommandReceived> **EnableObstacleFind()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableRele1()

Task<CommunicationCommandReceived> **EnableRele1()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## EnableRele2()

Task<CommunicationCommandReceived> **EnableRele2()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## ForceArduCleanStatus()

reset and clean arduino status

Task<CommunicationCommandReceived> **ForceArduCleanStatus()**

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## Forward(int)

Task<ResponseSerialForward> **Forward**(int distance)

Parameters

distance [int](#)

Returns

[Task](#) <[ResponseSerialForward](#)>

## GetDistanceFrontSensor()

Task<float> **GetDistanceFrontSensor**()

Returns

[Task](#) <[float](#)>

## GetLevelOfAlimentation()

Task<float?> **GetLevelOfAlimentation**()

Returns

[Task](#) <[float](#)?>

## GetSourceOfAlimentation()

```
Task<int> GetSourceOfAlimentation()
```

Returns

[Task](#) <[int](#)>

## IsInRecharge()

```
Task<CommunicationCommandReceived> IsInRecharge()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## MoveServo(int, int)

```
Task<CommunicationCommandReceived> MoveServo(int numServo, int angle)
```

Parameters

numServo [int](#)

angle [int](#)

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## OutInRecharge()

```
Task<CommunicationCommandReceived> OutInRecharge()
```

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## ReadLidar()

Task<List<(float, float)>> ReadLidar()

Returns

[Task](#) <[List](#) <(float, float)>>

## StartLeftMotor(int)

Task<CommunicationCommandReceived> StartLeftMotor(int angle)

Parameters

angle int

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## StartRightMotor(int)

Task<CommunicationCommandReceived> StartRightMotor(int angle)

Parameters

angle int

Returns

[Task](#) <[CommunicationCommandReceived](#)>

## Stop()

Task<CommunicationCommandReceived> **Stop()**

Returns

[Task](#) <CommunicationCommandReceived>

# Interface ICommandQueue

Namespace: [MainRobot.Robot.Comunication.Interface](#)

Assembly: MainRobot.dll

```
public interface ICommandQueue
```

## Methods

### Enqueue(string, string)

```
Task<CommunicationCommandReceived> Enqueue(string command, string logDescriptionCmd)
```

#### Parameters

command [string](#)

logDescriptionCmd [string](#)

#### Returns

[Task](#) <[CommunicationCommandReceived](#)>

# Namespace MainRobot.Robot.Communication. Model

## Classes

[CommunicationCommand](#)

[CommunicationCommandReceived](#)

[ResponseSerialForward](#)

# Class CommunicationCommand

Namespace: [MainRobot.Robot.Comunication.Model](#)

Assembly: MainRobot.dll

```
public class CommunicationCommand
```

## Inheritance

[object](#) ← CommunicationCommand

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Fields

### Id

```
public int Id
```

### Field Value

[int](#)

## Properties

### AliasCommand

```
public string? AliasCommand { get; set; }
```

### Property Value

[string](#)

## Command

```
public string? Command { get; set; }
```

Property Value

[string](#) ↗

## CommandReceived

```
public string? CommandReceived { get; set; }
```

Property Value

[string](#) ↗

## ReceivedResponseFromArduino

```
public bool ReceivedResponseFromArduino { get; set; }
```

Property Value

[bool](#) ↗

## SendDate

```
public DateTime SendDate { get; set; }
```

Property Value

[DateTime](#) ↗

## SendedConfirmReceive

```
public bool SendedConfirmReceive { get; set; }
```

Property Value

[bool](#)

## SendedToArduino

```
public bool SendedToArduino { get; set; }
```

Property Value

[bool](#)

## Task

```
public TaskCompletionSource<CommunicationCommandReceived> Task { get; set; }
```

Property Value

[TaskCompletionSource](#) <[CommunicationCommandReceived](#)>

# Class CommunicationCommandReceived

Namespace: [MainRobot.Robot.Communication.Model](#)

Assembly: MainRobot.dll

```
public class CommunicationCommandReceived
```

## Inheritance

[object](#) ← CommunicationCommandReceived

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### CommunicationCommandReceived()

```
public CommunicationCommandReceived()
```

### CommunicationCommandReceived(string[])

```
public CommunicationCommandReceived(string[] array)
```

## Parameters

array [string](#)[]

## Properties

### HaveError

```
public bool HaveError { get; set; }
```

Property Value

[bool](#) ↗

## ReceiveOrigin

ARDU or RPI

```
public string ReceiveOrigin { get; set; }
```

Property Value

[string](#) ↗

## ReceivedCmd

Command code

```
public string ReceivedCmd { get; set; }
```

Property Value

[string](#) ↗

## ReceivedId

Command id

```
public string ReceivedId { get; set; }
```

Property Value

[string](#) ↗

## ReceivedParam1

```
public string ReceivedParam1 { get; set; }
```

Property Value

[string](#) ↗

## ReceivedParam2

```
public string ReceivedParam2 { get; set; }
```

Property Value

[string](#) ↗

## ReceivedParam3

```
public string ReceivedParam3 { get; set; }
```

Property Value

[string](#) ↗

## ReceivedParam4

```
public string ReceivedParam4 { get; set; }
```

Property Value

[string](#) ↗

# Class ResponseSerialForward

Namespace: [MainRobot.Robot.Comunication.Model](#)

Assembly: MainRobot.dll

```
public class ResponseSerialForward
```

## Inheritance

[object](#) ← ResponseSerialForward

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Angle

```
public int Angle { get; set; }
```

### Property Value

[int](#)

## Completed

```
public bool Completed { get; set; }
```

### Property Value

[bool](#)

## DistanceObstacle

```
public string DistanceObstacle { get; set; }
```

Property Value

[string](#) ↗

DistanceRunned

```
public int DistanceRunned { get; set; }
```

Property Value

[int](#) ↗

# Namespace MainRobot.Robot.Communication. WebSocketTransport

## Classes

[ActionType](#)

[WebSocketCommand](#)

[WebSocketHandler](#)

[WebSocketOutputData](#)

## Interfaces

[IWebSocketCommand](#)

# Class ActionType

Namespace: [MainRobot.Robot.Comunication.WebSocketTransport](#)

Assembly: MainRobot.dll

```
public static class ActionType
```

## Inheritance

[object](#) ← ActionType

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Fields

### Photobase64

```
public static string Photobase64
```

#### Field Value

[string](#)

### Speak

```
public static string Speak
```

#### Field Value

[string](#)

# Interface IWebSocketCommand

Namespace: [MainRobot.Robot.Comunication.WebSocketTransport](#)

Assembly: MainRobot.dll

```
public interface IWebSocketCommand
```

## Methods

### Looks()

```
Task<string?> Looks()
```

Returns

[Task](#) <[string](#)>

### Talk(string)

```
Task Talk(string text)
```

Parameters

**text** [string](#)

Returns

[Task](#)

# Class WebSocketCommand

Namespace: [MainRobot.Robot.Comunication.WebSocketTransport](#)

Assembly: MainRobot.dll

```
public class WebSocketCommand : IWebSocketCommand
```

## Inheritance

[object](#) ← WebSocketCommand

## Implements

[IWebSocketCommand](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### WebSocketCommand(IWebSocketServer)

```
public WebSocketCommand(IWebSocketServer webSocket)
```

## Parameters

webSocket [IWebSocketServer](#)

## Methods

### Looks()

```
public Task<string?> Looks()
```

## Returns

[Task](#) <[string](#)>

## Talk(string)

```
public Task Talk(string text)
```

### Parameters

**text** [string](#)

### Returns

[Task](#)

# Class WebSocketHandler

Namespace: [MainRobot.Robot.Comunication.WebSocketTransport](#)

Assembly: MainRobot.dll

```
public class WebSocketHandler
```

## Inheritance

[object](#) ← WebSocketHandler

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

WebSocketHandler([INavigation](#), [INavigationMover](#), [IMovement](#),  
[IHelperInvisibleWall](#), [IActionExec](#), [ITextToSpeach](#))

```
public WebSocketHandler(INavigation navigation, INavigationMover navigationMover, IMovement  
movement, IHelperInvisibleWall invisibleWall, IActionExec actionExec, ITextToSpeach tts)
```

## Parameters

**navigation** [INavigation](#)

**navigationMover** [INavigationMover](#)

**movement** [IMovement](#)

**invisibleWall** [IHelperInvisibleWall](#)

**actionExec** [IActionExec](#)

**tts** [ITextToSpeach](#)

## Methods

## handler(WebSocketOutputData)

```
public Task<WebSocketOutputData> handler(WebSocketOutputData input)
```

### Parameters

**input** [WebSocketOutputData](#)

### Returns

[Task](#) <[WebSocketOutputData](#)>

# Class WebSocketOutputData

Namespace: [MainRobot.Robot.Comunication.WebSocketTransport](#)

Assembly: MainRobot.dll

```
public class WebSocketOutputData
```

## Inheritance

[object](#) ← WebSocketOutputData

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Properties

### command

```
public string command { get; set; }
```

#### Property Value

[string](#)

### data

```
public string data { get; set; }
```

#### Property Value

[string](#)

### id

```
public string id { get; set; }
```

Property Value

[string](#) ↗

# Namespace MainRobot.Robot.ControllerWeb

## Classes

[NavigationWebController](#)

# Class NavigationWebController

Namespace: [MainRobot.Robot.ControllerWeb](#)

Assembly: MainRobot.dll

```
public class NavigationWebController
```

## Inheritance

[object](#) ← NavigationWebController

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

NavigationWebController([INavigation](#), [INavigationMover](#),  
[IMovement](#), [IHelperInvisibleWall](#), [IActionExec](#), [ITextToSpeach](#))

```
public NavigationWebController(INavigation navigation, INavigationMover navigationMover,  
IMovement movement, IHelperInvisibleWall invisibleWall, IActionExec actionExec,  
ITextToSpeach tts)
```

## Parameters

[navigation](#) [INavigation](#)

[navigationMover](#) [INavigationMover](#)

[movement](#) [IMovement](#)

[invisibleWall](#) [IHelperInvisibleWall](#)

[actionExec](#) [IActionExec](#)

[tts](#) [ITextToSpeach](#)

# Methods

## AddWall(Dictionary<string, object>)

Add wall to point

```
[HttpMethod("GET")]
public object AddWall(Dictionary<string, object> data)
```

Parameters

data [Dictionary](#)<[string](#), [object](#)>

int x, int y

Returns

[object](#)

## Bck(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object Bck(Dictionary<string, object> data)
```

Parameters

data [Dictionary](#)<[string](#), [object](#)>

Returns

[object](#)

## Fwd(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object Fwd(Dictionary<string, object> data)
```

Parameters

`data Dictionary<string, object>`

Returns

`object`

## GetObstacleInMap(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object GetObstacleInMap(Dictionary<string, object> data)
```

Parameters

`data Dictionary<string, object>`

Returns

`object`

## Lft(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object Lft(Dictionary<string, object> data)
```

Parameters

`data Dictionary<string, object>`

Returns

`object`

## NavigateTo(Dictionary<string, object>)

Navigate to point

```
[HttpMethod("GET")]
public object NavigateTo(Dictionary<string, object> data)
```

## Parameters

**data** [Dictionary](#)<[string](#), [object](#)>

int x, int y

## Returns

[object](#)

## ReadObstacleFromLidar(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object ReadObstacleFromLidar(Dictionary<string, object> data)
```

## Parameters

**data** [Dictionary](#)<[string](#), [object](#)>

## Returns

[object](#)

## ReadRawLidar(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object ReadRawLidar(Dictionary<string, object> data)
```

## Parameters

**data** [Dictionary](#)<[string](#), [object](#)>

## Returns

[object](#)

## Recharge(Dictionary<string, object>)

navigate to recharge position

```
[HttpMethod("GET")]
public object Recharge(Dictionary<string, object> data)
```

Parameters

data [Dictionary](#)<[string](#), [object](#)>

Returns

[object](#)

## RemoveWall(Dictionary<string, object>)

Remove wall at point

```
[HttpMethod("GET")]
public object RemoveWall(Dictionary<string, object> data)
```

Parameters

data [Dictionary](#)<[string](#), [object](#)>

int x, int y

Returns

[object](#)

## Rht(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object Rht(Dictionary<string, object> data)
```

Parameters

data [Dictionary<string, object>](#)

Returns

[object](#)

## SentenceAction(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object SentenceAction(Dictionary<string, object> data)
```

Parameters

data [Dictionary<string, object>](#)

Returns

[object](#)

## SetPosition(Dictionary<string, object>)

set position of robot

```
[HttpMethod("GET")]
public object SetPosition(Dictionary<string, object> data)
```

Parameters

data [Dictionary<string, object>](#)

int x, int y

Returns

[object](#)

## Talk(Dictionary<string, object>)

```
[HttpMethod("GET")]
public object Talk(Dictionary<string, object> data)
```

Parameters

data [Dictionary](#)<[string](#), [object](#)>

Returns

[object](#)

# Namespace MainRobot.Robot.Custom Exception

## Classes

[ExceptionRunCommand](#)

# Class ExceptionRunCommand

Namespace: [MainRobot.Robot.CustomException](#)

Assembly: MainRobot.dll

```
public class ExceptionRunCommand : Exception, ISerializable
```

## Inheritance

[object](#) ← [Exception](#) ← ExceptionRunCommand

## Implements

[ISerializable](#)

## Inherited Members

[Exception.GetBaseException\(\)](#) , [Exception.GetObjectData\(SerializationInfo, StreamingContext\)](#) ,  
[Exception.GetType\(\)](#) , [Exception.ToString\(\)](#) , [Exception.Data](#) , [Exception.HelpLink](#) ,  
[Exception.HResult](#) , [Exception.InnerException](#) , [Exception.Message](#) , [Exception.Source](#) ,  
[Exception.StackTrace](#) , [Exception.TargetSite](#) , [Exception.SerializeObjectState](#) ,  
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

# Constructors

## ExceptionRunCommand(string)

```
public ExceptionRunCommand(string message)
```

## Parameters

message [string](#)

# Namespace MainRobot.Robot.Device

## Classes

[FakeSerial](#)

[Serial](#)

## Interfaces

[ISerial](#)

# Class FakeSerial

Namespace: [MainRobot.Robot.Device](#)

Assembly: MainRobot.dll

```
public class FakeSerial : ISerial
```

Inheritance

[object](#) ← FakeSerial

Implements

[ISerial](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

FakeSerial(string?, bool?)

```
public FakeSerial(string? fixedResponse = null, bool? remote = null)
```

Parameters

fixedResponse [string](#)?

remote [bool](#)?

## Methods

CloseSerial()

```
public void CloseSerial()
```

## OpenSerial(Action<string>)

```
public void OpenSerial(Action<string> dataReceivedHandler)
```

### Parameters

dataReceivedHandler [Action<string>](#)

## OpenSerialByte(string, int, Action<byte[]>)

```
public void OpenSerialByte(string serialName, int speed, Action<byte[]> dataReceivedHandler)
```

### Parameters

serialName [string](#)

speed [int](#)

dataReceivedHandler [Action<byte\[\]>](#)

## WriteLine(string)

```
public void WriteLine(string message)
```

### Parameters

message [string](#)

# Interface ISerial

Namespace: [MainRobot.Robot.Device](#)

Assembly: MainRobot.dll

```
public interface ISerial
```

## Methods

### CloseSerial()

```
void CloseSerial()
```

### OpenSerial(Action<string>)

```
void OpenSerial(Action<string> dataReceivedHandler)
```

#### Parameters

dataReceivedHandler [Action<string>](#)

### OpenSerialByte(string, int, Action<byte[]>)

```
void OpenSerialByte(string serialName, int speed, Action<byte[]> dataReceivedHandler)
```

#### Parameters

serialName [string](#)

speed [int](#)

dataReceivedHandler [Action<byte\[\]>](#)

## WriteLine(string)

```
void WriteLine(string message)
```

### Parameters

message [string](#)

# Class Serial

Namespace: [MainRobot.Robot.Device](#)

Assembly: MainRobot.dll

```
public class Serial : ISerial
```

Inheritance

[object](#) ← Serial

Implements

[ISerial](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### CloseSerial()

```
public void CloseSerial()
```

### OpenSerial(Action<string>)

```
public void OpenSerial(Action<string> dataReceivedHandler)
```

Parameters

dataReceivedHandler [Action](#)<[string](#)>

### OpenSerialByte(string, int, Action<byte[]>)

```
public void OpenSerialByte(string serialName, int speed, Action<byte[]> dataReceivedHandler)
```

Parameters

serialName [string](#)

speed [int](#)

dataReceivedHandler [Action<byte\[\]>](#)

## WriteLine(string)

`public void WriteLine(string message)`

Parameters

message [string](#)

# Namespace MainRobot.Robot.Device.IpCam

## Classes

### [FakelpCam](#)

Class fake ipcam for emulator

### [IpCam](#)

## Interfaces

### [IIpCam](#)

# Class FakelpCam

Namespace: [MainRobot.Robot.Device.IpCam](#)

Assembly: MainRobot.dll

Class fake ipcam for emulator

```
public class FakeIpCam : IIpCam
```

Inheritance

[object](#) ← FakelpCam

Implements

[IIpCam](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

FakelpCam()

```
public FakeIpCam()
```

## Methods

GetSnapshot()

get snapshot for ipCam configured

```
public Task<Image<Rgba32>> GetSnapshot()
```

Returns

[Task](#)<Image<Rgba32>>

## IsDark()

check if image is dark

```
public Task<bool> IsDark()
```

Returns

[Task](#)<[bool](#)>

## TryFindPointOfColor(Rgba32, Rgba32, short?)

find color into image get from ipcam image

```
public Task<RPoint> TryFindPointOfColor(Rgba32 color, Rgba32 tollerance, short? maxAttempts = 10)
```

Parameters

**color** Rgba32

**tollerance** Rgba32

**maxAttempts** [short](#)?

Returns

[Task](#)<[RPoint](#)>

# Interface IIpCam

Namespace: [MainRobot.Robot.Device.IpCam](#)

Assembly: MainRobot.dll

```
public interface IIpCam
```

## Methods

### GetSnapshot()

get snapshot for ipCam configured

```
Task<Image<Rgba32>> GetSnapshot()
```

Returns

[Task](#) <Image<Rgba32>>

### IsDark()

check if image is dark

```
Task<bool> IsDark()
```

Returns

[Task](#) <bool>

### TryFindPointOfColor(Rgba32, Rgba32, short?)

find color into image get from ipcam image

```
Task<RPoint> TryFindPointOfColor(Rgba32 color, Rgba32 tollerance, short? maxAttempts = 10)
```

## Parameters

**color** Rgba32

**tollerance** Rgba32

**maxAttempts** [short](#)?

## Returns

[Task](#)<RPoint>

# Class IpCam

Namespace: [MainRobot.Robot.Device.IpCam](#)

Assembly: MainRobot.dll

```
public class IpCam : IIpCam
```

## Inheritance

[object](#) ← IpCam

## Implements

[IIpCam](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

IpCam()

```
public IpCam()
```

## Methods

FindPointOfColor(Rgba32, Rgba32)

```
public Task<RPoint> FindPointOfColor(Rgba32 color, Rgba32 tollerance)
```

### Parameters

color Rgba32

tollerance Rgba32

### Returns

[Task](#) <RPoint>

## GetSnapshot()

get snapshot for ipCam configured

```
public Task<Image<Rgba32>> GetSnapshot()
```

Returns

[Task](#) <Image<Rgba32>>

## IsDark()

check if image is dark

```
public Task<bool> IsDark()
```

Returns

[Task](#) <bool>

## TryFindPointOfColor(Rgba32, Rgba32, short?)

```
public Task<RPoint> TryFindPointOfColor(Rgba32 color, Rgba32 tollerance, short? maxAttempts = 10)
```

Parameters

**color** Rgba32

color rgb to find in image

**tollerance** Rgba32

tollerance rgb to find a color

`maxAttempts` short?

max number of attempts , if no find color return nul

Returns

[Task](#) <[RPoint](#)>

# Namespace MainRobot.Robot.Device.Lidar

## Classes

[LidarManager](#)

[LidarUtility](#)

[LinesInfo](#)

## Interfaces

[ILidarManager](#)

# Interface ILidarManager

Namespace: [MainRobot.Robot.Device.Lidar](#)

Assembly: MainRobot.dll

```
public interface ILidarManager
```

## Methods

FindAngleFromLidar(RPoint, IEnumerable<(int, float)>,  
IEnumerable<(int, float)>)

```
int? FindAngleFromLidar(RPoint center, IEnumerable<(int, float)> before, IEnumerable<(int, float)> after)
```

Parameters

center [RPoint](#)

before [IEnumerable<\(int, float\)>](#)

after [IEnumerable<\(int, float\)>](#)

Returns

[int](#)?

MapRawLidar(IEnumerable<(int, float)>?, Action<int, int>)

```
IEnumerable<(int, float)>? MapRawLidar(IEnumerable<(int, float)>? rawData, Action<int, int> callbackPointReceived)
```

Parameters

rawData [IEnumerable<\(int, float\)>](#)

`callbackPointReceived Action<int, int>`

Returns

`IEnumerable<(int, float)>`

## ReadLidar(Action<int, int>)

`Task<IEnumerable<(int, float)>?> ReadLidar(Action<int, int> callbackPointReceived)`

Parameters

`callbackPointReceived Action<int, int>`

Returns

`Task<IEnumerable<(int, float)>>`

## ReadRawLidar()

`Task<IEnumerable<(int, float)>?> ReadRawLidar()`

Returns

`Task<IEnumerable<(int, float)>>`

# Class LidarManager

Namespace: [MainRobot.Robot.Device.Lidar](#)

Assembly: MainRobot.dll

```
public class LidarManager : ILidarManager
```

## Inheritance

[object](#) ← LidarManager

## Implements

[ILidarManager](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### LidarManager(ICommandCommunication)

```
public LidarManager(ICommandCommunication communication)
```

## Parameters

communication  [ICommandCommunication](#)

## Methods

### FindAngleFromLidar(RPoint, IEnumerable<(int, float)>, IEnumerable<(int, float)>)

```
public int? FindAngleFromLidar(RPoint center, IEnumerable<(int, float)> before,  
IEnumerable<(int, float)> after)
```

Parameters

center [RPoint](#)

before [IEnumerable<\(int, float\)>](#)

after [IEnumerable<\(int, float\)>](#)

Returns

[int?](#)

**MapRawLidar(IEnumerable<(int, float)>?, Action<int, int>)**

```
public IEnumerable<(int, float)>? MapRawLidar(IEnumerable<(int, float)>? rawData,  
Action<int, int> callbackPointReceived)
```

Parameters

rawData [IEnumerable<\(int, float\)>](#)

callbackPointReceived [Action<int, int>](#)

Returns

[IEnumerable<\(int, float\)>](#)

**ReadLidar(Action<int, int>)**

il rilevamento dei punti viene fatto in base alla direzione del robot

```
public Task<IEnumerable<(int, float)>?> ReadLidar(Action<int, int> callbackPointReceived)
```

Parameters

callbackPointReceived [Action<int, int>](#)

Returns

[Task](#) <IEnumerable<(int, float)>>>

## ReadRawLidar()

L'angolo è assoluto rispetto alla posizione del lidar , non rispetto alla direzione del robot

```
public Task<IEnumerable<(int, float)>>?> ReadRawLidar()
```

Returns

[Task](#) <IEnumerable<(int, float)>>>

# Class LidarUtility

Namespace: [MainRobot.Robot.Device.Lidar](#)

Assembly: MainRobot.dll

```
public static class LidarUtility
```

## Inheritance

[object](#) ← LidarUtility

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

AutoPostiionFromLidar(IEnumerable<(int, float)>, Func<RPoint, int, bool>)

```
public static RPoint? AutoPostiionFromLidar(IEnumerable<(int, float)> distances,  
Func<RPoint, int, bool> isPointOnWall)
```

### Parameters

**distances** [IEnumerable](#)<(int, float)>

**isPointOnWall** [Func](#)<RPoint, int, bool>

### Returns

[RPoint](#)

CalcolaRetta(RPoint, RPoint)

```
public static (double pendenza, double intercetta)? CalcolaRetta(RPoint punto1,  
RPoint punto2)
```

Parameters

punto1 [RPoint](#)

punto2 [RPoint](#)

Returns

([double](#), [pendenza](#), [double](#), [intercetta](#))?

## CalculateLineAngle(double?)

```
public static double? CalculateLineAngle(double? slope)
```

Parameters

slope [double](#)?

Returns

[double](#)?

## DistanceToPoints(RPoint, IEnumerable<(int, float)>?)

```
public static IEnumerable<RPoint>? DistanceToPoints(RPoint current, IEnumerable<(int, float)>? distances)
```

Parameters

current [RPoint](#)

distances [IEnumerable](#)<(int, float)>

Returns

[IEnumerable](#)<[RPoint](#)>

## GroupPointsByLine(IEnumerable<RPoint>)

```
public static LinesInfo? GroupPointsByLine(IEnumerable<RPoint> points)
```

Parameters

points [IEnumerable](#)<RPoint>

Returns

[LinesInfo](#)

# Class LinesInfo

Namespace: [MainRobot.Robot.Device.Lidar](#)

Assembly: MainRobot.dll

```
public class LinesInfo
```

## Inheritance

[object](#) ← LinesInfo

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Angle

```
public double? Angle { get; set; }
```

### Property Value

[double](#)?

## Intercept

```
public double? Intercept { get; set; }
```

### Property Value

[double](#)?

## Points

```
public IEnumerable<RPoint> Points { get; set; }
```

Property Value

[IEnumerable](#) <[RPoint](#)>

Slope

```
public double? Slope { get; set; }
```

Property Value

[double](#) ?

# Namespace MainRobot.Robot.LLM.HuggingFace

## Classes

[LLMApiCall](#)

[LLMHuggingFace](#)

# Class LLMApiCall

Namespace: [MainRobot.Robot.ILM.HuggingFace](#)

Assembly: MainRobot.dll

```
public class LLMApiCall
```

## Inheritance

[object](#) ← LLMApiCall

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

LLMApiCall(string, string, string, string)

```
public LLMApiCall(string UrlLLM, string modelLLM, string token, string prompt)
```

## Parameters

UrlLLM [string](#)

modelLLM [string](#)

token [string](#)

prompt [string](#)

## Methods

CallImage(string)

```
public Task<string> CallImage(string sentence)
```

Parameters

`sentence` [string](#)

Returns

[Task](#) <[string](#)>

## CallPrompt(string)

```
public Task<string> CallPrompt(string sentence)
```

Parameters

`sentence` [string](#)

Returns

[Task](#) <[string](#)>

# Class LLMHuggingFace

Namespace: [MainRobot.Robot.LLM.HuggingFace](#)

Assembly: MainRobot.dll

```
public class LLMHuggingFace : IIntentRecognition
```

## Inheritance

[object](#) ← LLMHuggingFace

## Implements

[IIntentRecognition](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### LLMHuggingFace(ILLMRestCall)

```
public LLMHuggingFace(ILLMRestCall llmRestCall)
```

## Parameters

llmRestCall [ILLMRestCall](#)

## Methods

### Init()

```
public void Init()
```

### ProcessIntent(string)

```
public Task<List<IntentData>> ProcessIntent(string sentence)
```

Parameters

**sentence** [string](#)

Returns

[Task](#) <[List](#) <[IntentData](#)>>

# Namespace MainRobot.Robot.Natural Language

## Classes

[IntentDefinition](#)

## Interfaces

[IIntentRecognition](#)

# Interface IIntentRecognition

Namespace: [MainRobot.Robot.NaturalLanguage](#)

Assembly: MainRobot.dll

```
public interface IIntentRecognition
```

## Methods

### Init()

```
void Init()
```

### ProcessIntent(string)

```
Task<List<IntentData>> ProcessIntent(string sentence)
```

#### Parameters

**sentence** [string](#)

#### Returns

[Task](#) <[List](#) <[IntentData](#)>>

# Class IntentDefinition

Namespace: [MainRobot.Robot.NaturalLanguage](#)

Assembly: MainRobot.dll

```
public static class IntentDefinition
```

## Inheritance

[object](#) ← IntentDefinition

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Fields

## ASK

```
public static string ASK
```

## Field Value

[string](#)

## GOTO

```
public static string GOTO
```

## Field Value

[string](#)

## MOVE

```
public static string MOVE
```

Field Value

[string](#) ↗

REPEAT

```
public static string REPEAT
```

Field Value

[string](#) ↗

# Namespace MainRobot.Robot.Natural Language.Intent

## Classes

### [IntentGoto](#)

```
{"action":"GOTO","destination":STRING}\n
```

### [IntentMove](#)

```
{"action":"move","direction":"forward","distance":INT}\n
```

```
{"action":"move","direction":"backward","distance":INT}\n
```

```
{"action":"move","direction":"left","angle":INT}\n {"action":"move","direction":"right","angle":INT}\n
```

### [IntentSpeech](#)

```
{"action":"speech","text":STRING}
```

# Class IntentGoto

Namespace: [MainRobot.Robot.NaturalLanguage.Intent](#)

Assembly: MainRobot.dll

{"action":"GOTO","destination":STRING}\n

```
public class IntentGoto
```

## Inheritance

[object](#) ← IntentGoto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## destination

```
public string destination { get; set; }
```

## Property Value

[string](#)

# Class IntentMove

Namespace: [MainRobot.Robot.NaturalLanguage.Intent](#)

Assembly: MainRobot.dll

```
{"action":"move","direction":"forward","distance":INT}\n{"action":"move","direction":"backward","distance":INT}\n{"action":"move","direction":"left","angle":INT} {"action":"move","direction":"right","angle":INT}\n
```

```
public class IntentMove
```

## Inheritance

[object](#) ← IntentMove

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## direction

```
public string direction { get; set; }
```

### Property Value

[string](#)

## distance

```
public int distance { get; set; }
```

### Property Value

[int](#)

# Class IntentSpeech

Namespace: [MainRobot.Robot.NaturalLanguage.Intent](#)

Assembly: MainRobot.dll

{"action":"speech","text":STRING}

```
public class IntentSpeech
```

## Inheritance

[object](#) ← IntentSpeech

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## text

```
public string text { get; set; }
```

## Property Value

[string](#)

# Namespace MainRobot.Robot.Natural Language.SpacyNet

## Classes

[IntentData](#)

# Class IntentData

Namespace: [MainRobot.Robot.NaturalLanguage.SpacyNet](#)

Assembly: MainRobot.dll

```
public class IntentData
```

## Inheritance

[object](#) ← IntentData

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Data

```
public string Data { get; set; }
```

### Property Value

[string](#)

## Intent

```
public string Intent { get; set; }
```

### Property Value

[string](#)

# Namespace MainRobot.Robot.Navigation

## Classes

[Movement](#)

[Navigation](#)

Class to find path and navigate

[NavigationMover](#)

[PathFinding](#)

# Class Movement

Namespace: [MainRobot.Robot.Navigation](#)

Assembly: MainRobot.dll

```
public class Movement : IMovement
```

Inheritance

[object](#) ← Movement

Implements

[IMovement](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### Movement(ICommandCommunication, IPathFinding)

```
public Movement(ICommandCommunication communication, IPathFinding pathFinding)
```

Parameters

communication [ICommandCommunication](#)

pathFinding [IPathFinding](#)

## Fields

### AutoPositionCheck

```
public bool AutoPositionCheck
```

Field Value

[bool](#) ↗

## MoveToAutoPositionCheck

`public bool MoveToAutoPositionCheck`

Field Value

[bool](#) ↗

## RecalculatePath

`public bool RecalculatePath`

Field Value

[bool](#) ↗

## distanceFrontSensor

`public int distanceFrontSensor`

Field Value

[int](#) ↗

## Methods

### Backward(int)

move backward

`public Task<EndMovModel> Backward(int distance)`

Parameters

`distance int`

Returns

`Task <EndMovModel>`

## EnableMoviment()

```
public Task EnableMoviment()
```

Returns

`Task`

## Forward(int)

```
public Task<EndMovModel> Forward(int distance)
```

Parameters

`distance int`

Returns

`Task <EndMovModel>`

## ObstacleFinded(string, int, int, int)

This method is called when an obstacle encountering an obstacle on the road, Collisions are checked with bump sensor or ultrasonic sensor

```
public RPoint ObstacleFinded(string distance, int angle, int distanceForward, int backward)
```

Parameters

## **distance** [string](#)

999;0;0 => left bump sensor pressed; 0;0;999 => right bump sensor pressed; 50;20;0 => [0] left distance from ultrasonic sensor [1] center distance from ultrasonic sensor [2] right distance from right ultrasonic sensor

## **angle** [int](#)

## **distanceForward** [int](#)

## **backward** [int](#)

Returns

## [RPoint](#)

## **Rotate(bool, int)**

Rotate robot of deltaAngle

```
public Task<EndMovModel> Rotate(bool left, int deltaAngle)
```

Parameters

## **left** [bool](#)

if true turn left

## **deltaAngle** [int](#)

angle to rotate

Returns

## [Task](#) <[EndMovModel](#)>

## **RotateXCell(int)**

```
public Task RotateXCell(int angle)
```

Parameters

angle [int](#)

Returns

[Task](#)

## RotateYCell(int)

```
public Task RotateYCell(int angle)
```

Parameters

angle [int](#)

Returns

[Task](#)

## SetObstacle(int, int)

```
public void SetObstacle(int x, int y)
```

Parameters

x [int](#)

y [int](#)

## Stop()

Stop

```
public Task Stop()
```

Returns

[Task](#)

## TurnLeft(int, int)

Rotate Robot to left

```
public Task<EndMovModel> TurnLeft(int angleToStop, int deltaAngle)
```

Parameters

angleToStop [int](#)

deltaAngle [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## TurnRight(int, int)

Rotate Robot to right

```
public Task<EndMovModel> TurnRight(int angleToStop, int deltaAngle)
```

Parameters

angleToStop [int](#)

deltaAngle [int](#)

Returns

[Task](#) <[EndMovModel](#)>

# Class Navigation

Namespace: [MainRobot.Robot.Navigation](#)

Assembly: MainRobot.dll

Class to find path and navigate

```
public class Navigation : INavigation
```

Inheritance

[object](#) ← Navigation

Implements

[INavigation](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

Navigation([INavigationMover](#), [IMovement](#),  
[ICommandCommunication](#), [IRechargeManager](#), [ILidarManager](#),  
[IPathFinding](#), [ITextToSpeech](#), [IIpCam](#))

```
public Navigation(INavigationMover navigationMover, IMovement movement, ICommandCommunication communication, IRechargeManager rechargeManager, ILidarManager lidarManager, IPathFinding pathFinding, ITextToSpeech textToSpeech, IIpCam ipCam)
```

Parameters

[navigationMover](#) [INavigationMover](#)

[movement](#) [IMovement](#)

Class for moviment

[communication](#) [ICommandCommunication](#)

Class for communication

rechargeManager [IRechargeManager](#)

lidarManager [ILidarManager](#)

pathFinding [IPathFinding](#)

Class for pathfinding

textToSpeach [ITextToSpeach](#)

class for speach

ipCam [IpCam](#)

class for ipcam

## Methods

GetObstacleInMap()

```
public bool[,] GetObstacleInMap()
```

Returns

[bool](#)[,]

NavigateTo(RPoint, bool?, bool?)

search path and navigate to point

```
public Task NavigateTo(RPoint end, bool? isForRecharge = false, bool? continueNavigation = false)
```

Parameters

end [RPoint](#)

isForRecharge [bool](#)?

`continueNavigation bool?`

Returns

[Task](#)

## NavigateToRecharge()

Si muove fino alla posizione da dove deve iniziare l'avvicinamento alla ricarica

```
public Task NavigateToRecharge()
```

Returns

[Task](#)

## ReadObstacleFromLidar()

```
public Task<IEnumerable<(int, float)>?> ReadObstacleFromLidar()
```

Returns

[Task](#)<[IEnumerable](#)<(int, float)>>

## ReadRawLidar()

```
public Task<IEnumerable<(int, float)>?> ReadRawLidar()
```

Returns

[Task](#)<[IEnumerable](#)<(int, float)>>

## ResetNavigation(RPoint?, bool?)

Stop current navigation and restart new navigation

```
public Task ResetNavigation(RPoint? endPoint = null, bool? isForRecharge = false)
```

## Parameters

endPoint [RPoint](#)

Facoltative if is null destination is endPosition

isForRecharge [bool](#)?

## Returns

[Task](#)

# Class NavigationMover

Namespace: [MainRobot.Robot.Navigation](#)

Assembly: MainRobot.dll

```
public class NavigationMover : INavigationMover
```

## Inheritance

[object](#) ← NavigationMover

## Implements

[INavigationMover](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### NavigationMover(IMovement)

```
public NavigationMover(IMovement movement)
```

#### Parameters

**movement** [IMovement](#)

## Methods

### Backward(int)

```
public Task<EndMovModel> Backward(int distance)
```

#### Parameters

**distance** [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## Forward(int)

move forward

```
public Task<EndMovModel> Forward(int distance)
```

Parameters

*distance* [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## Rotate(bool, int)

rotate

```
public Task<EndMovModel> Rotate(bool left, int deltaAngle)
```

Parameters

*left* [bool](#)

*deltaAngle* [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## UpdatePosition(RPoint, int)

update current position and angle

```
public void UpdatePosition(RPoint nextPoint, int angle)
```

Parameters

nextPoint [RPoint](#)

angle [int](#)

# Class PathFinding

Namespace: [MainRobot.Robot.Navigation](#)

Assembly: MainRobot.dll

```
public class PathFinding : IPathFinding
```

Inheritance

[object](#) ← PathFinding

Implements

[IPathFinding](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### PathFinding(IAstar)

```
public PathFinding(IAstar pathFinding)
```

Parameters

pathFinding [IAstar](#)

## Methods

### ClearObstacle()

clear all obstacle

```
public void ClearObstacle()
```

## FindPath(RPoint, RPoint)

Calculate the path from a starting point to a destination using an A\* algorithm

```
public List<RPoint> FindPath(RPoint start, RPoint end)
```

Parameters

`start` [RPoint](#)

`end` [RPoint](#)

Returns

[List](#) <[RPoint](#)>

## GetObstacleInMap()

Return all obstacle in map

```
public bool[,] GetObstacleInMap()
```

Returns

[bool](#) [,]

## IsObstacle(RPoint)

```
public bool IsObstacle(RPoint point)
```

Parameters

`point` [RPoint](#)

Returns

[bool](#)

## IsWall(RPoint, int)

```
public bool IsWall(RPoint point, int tolerance)
```

Parameters

point [RPoint](#)

tolerance [int](#)

Returns

[bool](#)

## ObstacleAdd(RPoint)

Set obstacle at point specified without change weight

```
public void ObstacleAdd(RPoint point)
```

Parameters

point [RPoint](#)

## ObstacleEncountered(RPoint)

Set obstacle at point specified

```
public void ObstacleEncountered(RPoint point)
```

Parameters

point [RPoint](#)

## SetWeight(RPoint, bool)

Increment weight of a point

```
public void SetWeight(RPoint point, bool increment)
```

Parameters

point [RPoint](#)

increment [bool](#)

## SetWeightPoints(IEnumerable<RPoint>, bool)

Set weight of list points

```
public void SetWeightPoints(IEnumerable<RPoint> points, bool increment)
```

Parameters

points [IEnumerable](#)<[RPoint](#)>

increment [bool](#)

# Namespace MainRobot.Robot.Navigation.Astar

## Classes

[Astar](#)

[Path](#)

[PointPath](#)

[TempObstacle](#)

[Weight](#)

## Interfaces

[IAstar](#)

# Class Astar

Namespace: [MainRobot.Robot.Navigation.Astar](#)

Assembly: MainRobot.dll

```
public class Astar : IAstar
```

## Inheritance

[object](#) ← Astar

## Implements

[IAstar](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### Astar(IHelperInvisibleWall)

```
public Astar(IHelperInvisibleWall helperInvisibleWall = null)
```

## Parameters

helperInvisibleWall [IHelperInvisibleWall](#)

## Fields

### obstacleInMap

```
public bool[,] obstacleInMap
```

## Field Value

[bool](#)[][,]

# Properties

## AstarWeight

```
public List<Weight> AstarWeight { get; }
```

### Property Value

[List](#) <[Weight](#)>

# Methods

## CalculateScore(Path)

```
public double CalculateScore(Path p)
```

### Parameters

p [Path](#)

### Returns

[double](#)

## CalculateValidity(Path)

```
public bool CalculateValidity(Path p)
```

### Parameters

p [Path](#)

### Returns

[bool](#)

## ClearObstacle()

```
public void ClearObstacle()
```

## FindClosest(Path)

```
public List<Path> FindClosest(Path p)
```

### Parameters

p [Path](#)

### Returns

[List](#)<[Path](#)>

## FindPath(RPoint, RPoint)

```
public Path FindPath(RPoint s, RPoint e)
```

### Parameters

s [RPoint](#)

e [RPoint](#)

### Returns

[Path](#)

## GetObstacleInMap()

```
public bool[,] GetObstacleInMap()
```

Returns

[bool](#) [,]

## IsObstacle(RPoint)

```
public bool IsObstacle(RPoint point)
```

Parameters

[point](#) [RPoint](#)

Returns

[bool](#) [,]

## IsWall(RPoint, int)

```
public bool IsWall(RPoint point, int tolerance)
```

Parameters

[point](#) [RPoint](#)

[tolerance](#) [int](#) [,]

Returns

[bool](#) [,]

## ObstacleAdd(RPoint)

Set obstacle in map but not change weight

```
public void ObstacleAdd(RPoint point)
```

Parameters

point [RPoint](#)

## ObstacleEncountered(RPoint)

```
public void ObstacleEncountered(RPoint point)
```

Parameters

point [RPoint](#)

## Search()

```
public Path Search()
```

Returns

[Path](#)

## SetWeight(RPoint, bool)

```
public void SetWeight(RPoint point, bool increment)
```

Parameters

point [RPoint](#)

increment [bool](#) ↗

## SetWeightPoints(IEnumerable<RPoint>, bool)

```
public void SetWeightPoints(IEnumerable<RPoint> points, bool increment)
```

## Parameters

points [IEnumerable](#)<[RPoint](#)>

increment [bool](#)

# Interface IAstar

Namespace: [MainRobot.Robot.Navigation.Astar](#)

Assembly: MainRobot.dll

```
public interface IAstar
```

## Methods

### ClearObstacle()

```
void ClearObstacle()
```

### FindPath(RPoint, RPoint)

```
Path FindPath(RPoint s, RPoint e)
```

#### Parameters

s [RPoint](#)

e [RPoint](#)

#### Returns

[Path](#)

### GetObstacleInMap()

```
bool[,] GetObstacleInMap()
```

#### Returns

`bool` [,]

## IsObstacle(RPoint)

`bool IsObstacle(RPoint point)`

Parameters

`point RPoint`

Returns

`bool` [,]

## IsWall(RPoint, int)

`bool IsWall(RPoint point, int tolerance)`

Parameters

`point RPoint`

`tolerance int` [,]

Returns

`bool` [,]

## ObstacleAdd(RPoint)

Set obstacle in map but not change weight

`void ObstacleAdd(RPoint point)`

Parameters

`point` [RPoint](#)

## ObstacleEncountered(RPoint)

`void` [ObstacleEncountered](#)(RPoint point)

### Parameters

`point` [RPoint](#)

## SetWeight(RPoint, bool)

`void` [SetWeight](#)(RPoint point, `bool` increment)

### Parameters

`point` [RPoint](#)

`increment` [bool](#)

## SetWeightPoints(IEnumerable<RPoint>, bool)

`void` [SetWeightPoints](#)(IEnumerable<RPoint> points, `bool` increment)

### Parameters

`points` [IEnumerable](#)<RPoint>

`increment` [bool](#)

# Class Path

Namespace: [MainRobot.Robot.Navigation.Astar](#)

Assembly: MainRobot.dll

```
public class Path
```

Inheritance

[object](#) ← Path

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

Path(RPoint)

```
public Path(RPoint p)
```

Parameters

p [RPoint](#)

Path(PointPath)

```
public Path(PointPath p)
```

Parameters

p [PointPath](#)

## Fields

## CurrentPoint

```
public PointPath CurrentPoint
```

Field Value

[PointPath](#)

## Order

```
public int Order
```

Field Value

[int](#)

## Parent

```
public Path Parent
```

Field Value

[Path](#)

## PathPoint

```
public List<PointPath> PathPoint
```

Field Value

[List](#)<[PointPath](#)>

## Score

```
public double Score
```

Field Value

[double](#) ↗

## Tentative\_G

```
public int Tentative_G
```

Field Value

[int](#) ↗

# Class PointPath

Namespace: [MainRobot.Robot.Navigation.Astar](#)

Assembly: MainRobot.dll

```
public class PointPath
```

## Inheritance

[object](#) ← PointPath

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Constructors

PointPath(int, int)

```
public PointPath(int x, int y)
```

## Parameters

x [int](#)

y [int](#)

# Fields

X

```
public int X
```

## Field Value

[int](#)

Y

```
public int Y
```

Field Value

[int ↗](#)

W

```
public int w
```

Field Value

[int ↗](#)

# Class TempObstacle

Namespace: [MainRobot.Robot.Navigation.Astar](#)

Assembly: MainRobot.dll

```
public class TempObstacle
```

## Inheritance

[object](#) ← TempObstacle

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Id

```
public int Id { get; set; }
```

## Property Value

[int](#)

## X

```
public int X { get; set; }
```

## Property Value

[int](#)

## Y

```
public int Y { get; set; }
```

Property Value

[int ↗](#)

# Class Weight

Namespace: [MainRobot.Robot.Navigation.Astar](#)

Assembly: MainRobot.dll

```
public class Weight
```

## Inheritance

[object](#) ← Weight

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## W

```
public int W { get; set; }
```

### Property Value

[int](#)

## X

```
public int X { get; set; }
```

### Property Value

[int](#)

## Y

```
public int Y { get; set; }
```

Property Value

[int ↗](#)

# Namespace MainRobot.Robot.Navigation.Helpers

## Classes

[HelperInvisibleWall](#)

## Interfaces

[IHelperInvisibleWall](#)

# Class HelperInvisibleWall

Namespace: [MainRobot.Robot.Navigation.Helpers](#)

Assembly: MainRobot.dll

```
public class HelperInvisibleWall : IHelperInvisibleWall
```

## Inheritance

[object](#) ← HelperInvisibleWall

## Implements

[IHelperInvisibleWall](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

HelperInvisibleWall()

```
public HelperInvisibleWall()
```

## Methods

Add(RPoint)

```
public void Add(RPoint point)
```

### Parameters

point [RPoint](#)

Find(RPoint)

```
public bool Find(RPoint point)
```

Parameters

point [RPoint](#)

Returns

[bool](#)

Load()

```
public void Load()
```

Remove(RPoint)

```
public void Remove(RPoint point)
```

Parameters

point [RPoint](#)

Save()

```
public void Save()
```

# Interface IHelperInvisibleWall

Namespace: [MainRobot.Robot.Navigation.Helpers](#)

Assembly: MainRobot.dll

```
public interface IHelperInvisibleWall
```

## Methods

### Add(RPoint)

```
void Add(RPoint point)
```

Parameters

point [RPoint](#)

### Find(RPoint)

```
bool Find(RPoint point)
```

Parameters

point [RPoint](#)

Returns

[bool](#) ↗

### Load()

```
void Load()
```

## Remove(RPoint)

```
void Remove(RPoint point)
```

### Parameters

point [RPoint](#)

## Save()

```
void Save()
```

# Namespace MainRobot.Robot.Navigation.Interface

## Interfaces

[IMovement](#)

[INavigation](#)

[INavigationMover](#)

[IPathFinding](#)

# Interface IMovement

Namespace: [MainRobot.Robot.Navigation.Interface](#)

Assembly: MainRobot.dll

```
public interface IMovement
```

## Methods

### Backward(int)

move backward

```
Task<EndMovModel> Backward(int distance)
```

Parameters

*distance* [int](#)

Returns

[Task](#) <[EndMovModel](#)>

### EnableMoviment()

```
Task EnableMoviment()
```

Returns

[Task](#)

### Forward(int)

```
Task<EndMovModel> Forward(int distance)
```

Parameters

distance [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## ObstacleFinded(string, int, int, int)

```
RPoint ObstacleFinded(string distance, int angle, int distanceForward, int backward)
```

Parameters

distance [string](#)

angle [int](#)

distanceForward [int](#)

backward [int](#)

Returns

[RPoint](#)

## Rotate(bool, int)

Rotate robot left or right

```
Task<EndMovModel> Rotate(bool left, int deltaAngle)
```

Parameters

left [bool](#)

true for left false for Right

`deltaAngle` [int ↗](#)

Returns

[Task ↗](#) <[EndMovModel](#)>

## RotateXCell(int)

Task `RotateXCell(int angle)`

Parameters

`angle` [int ↗](#)

Returns

[Task ↗](#)

## RotateYCell(int)

Task `RotateYCell(int angle)`

Parameters

`angle` [int ↗](#)

Returns

[Task ↗](#)

## SetObstacle(int, int)

`void SetObstacle(int x, int y)`

Parameters

x [int](#)

y [int](#)

## Stop()

Stop

Task [Stop\(\)](#)

Returns

[Task](#)

## TurnLeft(int, int)

Rotate Robot to left

Task<EndMovModel> [TurnLeft\(int angleToStop, int deltaAngle\)](#)

Parameters

angleToStop [int](#)

deltaAngle [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## TurnRight(int, int)

Rotate Robot to right

Task<EndMovModel> [TurnRight\(int angleToStop, int deltaAngle\)](#)

## Parameters

angleToStop [int](#)

deltaAngle [int](#)

## Returns

[Task](#) <[EndMovModel](#)>

# Interface INavigation

Namespace: [MainRobot.Robot.Navigation.Interface](#)

Assembly: MainRobot.dll

```
public interface INavigation
```

## Methods

### GetObstacleInMap()

```
bool[,] GetObstacleInMap()
```

Returns

[bool](#) []

### NavigateTo(RPoint, bool?, bool?)

Navigate to point

```
Task NavigateTo(RPoint end, bool? isForRecharge = false, bool? continueNavigation = false)
```

Parameters

**end** [RPoint](#)

Point to navigate

**isForRecharge** [bool](#) ?

**continueNavigation** [bool](#) ?

Returns

[Task](#) []

## NavigateToRecharge()

Navigate to recharge position

Task `NavigateToRecharge()`

Returns

[Task](#)

## ReadObstacleFromLidar()

Task<IEnumerable<(int, float)>?> `ReadObstacleFromLidar()`

Returns

[Task](#) <[IEnumerable](#)<(int, float)>>

## ReadRawLidar()

Task<IEnumerable<(int, float)>?> `ReadRawLidar()`

Returns

[Task](#) <[IEnumerable](#)<(int, float)>>

## ResetNavigation(RPoint?, bool?)

Stop navigation and restart

Task `ResetNavigation(RPoint? endPoint = null, bool? isForRecharge = false)`

Parameters

`endPoint` [RPoint](#)

`isForRecharge` [bool](#)?

Returns

[Task](#)

# Interface INavigationMover

Namespace: [MainRobot.Robot.Navigation.Interface](#)

Assembly: MainRobot.dll

```
public interface INavigationMover
```

## Methods

### Backward(int)

Task<EndMovModel> **Backward**(int distance)

Parameters

**distance** [int](#)

Returns

[Task](#) <[EndMovModel](#)>

### Forward(int)

Task<EndMovModel> **Forward**(int distance)

Parameters

**distance** [int](#)

Returns

[Task](#) <[EndMovModel](#)>

## Rotate(bool, int)

Task<EndMovModel> **Rotate**(bool left, int deltaAngle)

### Parameters

left [bool](#)

deltaAngle [int](#)

### Returns

[Task](#) <[EndMovModel](#)>

## UpdatePosition(RPoint, int)

void **UpdatePosition**(RPoint nextPoint, int angle)

### Parameters

nextPoint [RPoint](#)

angle [int](#)

# Interface IPathFinding

Namespace: [MainRobot.Robot.Navigation.Interface](#)

Assembly: MainRobot.dll

```
public interface IPathFinding
```

## Methods

### ClearObstacle()

clear all obstacle

```
void ClearObstacle()
```

### FindPath(RPoint, RPoint)

Calculate the path from a starting point to a destination using an A\* algorithm

```
List<RPoint> FindPath(RPoint start, RPoint end)
```

#### Parameters

**start** [RPoint](#)

**end** [RPoint](#)

#### Returns

[List](#) <[RPoint](#)>

### GetObstacleInMap()

Return all obstacle in map

```
bool[,] GetObstacleInMap()
```

Returns

[bool](#)

## IsObstacle(RPoint)

```
bool IsObstacle(RPoint point)
```

Parameters

[point](#) [RPoint](#)

Returns

[bool](#)

## IsWall(RPoint, int)

```
bool IsWall(RPoint point, int tolerance)
```

Parameters

[point](#) [RPoint](#)

[tolerance](#) [int](#)

Returns

[bool](#)

## ObstacleAdd(RPoint)

Set obstacle at point specified without change weight

```
void ObstacleAdd(RPoint point)
```

Parameters

point [RPoint](#)

## ObstacleEncountered(RPoint)

Set obstacle at point specified

```
void ObstacleEncountered(RPoint point)
```

Parameters

point [RPoint](#)

## SetWeight(RPoint, bool)

Increment weight of a point

```
void SetWeight(RPoint point, bool increment)
```

Parameters

point [RPoint](#)

increment [bool](#) ↗

## SetWeightPoints(IEnumerable<RPoint>, bool)

Set weight of list points

```
void SetWeightPoints(IEnumerable<RPoint> points, bool increment)
```

Parameters

points [IEnumerable](#)<RPoint>

increment [bool](#)

# Namespace MainRobot.Robot.Navigation. Model

## Classes

[DoMovimentEndModel](#)

[EndMovModel](#)

# Class DoMovimentEndModel

Namespace: [MainRobot.Robot.Navigation.Model](#)

Assembly: MainRobot.dll

```
public class DoMovimentEndModel
```

## Inheritance

[object](#) ← DoMovimentEndModel

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Angle

```
public int Angle { get; set; }
```

### Property Value

[int](#)

## AngleMoved

```
public int? AngleMoved { get; }
```

### Property Value

[int](#)?

## EndMovModel

```
public EndMovModel EndMovModel { get; set; }
```

Property Value

[EndMovModel](#)

## NextMovement

```
public bool NextMovement { get; set; }
```

Property Value

[bool](#)

## Point

```
public RPoint Point { get; set; }
```

Property Value

[RPoint](#)

# Class EndMovModel

Namespace: [MainRobot.Robot.Navigation.Model](#)

Assembly: MainRobot.dll

```
public class EndMovModel
```

## Inheritance

[object](#) ← EndMovModel

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Angle

```
public int Angle { get; set; }
```

### Property Value

[int](#)

## Completed

```
public bool Completed { get; set; }
```

### Property Value

[bool](#)

## Point

```
public RPoint Point { get; set; }
```

Property Value

[RPoint](#)

Recalculate

```
public bool Recalculate { get; set; }
```

Property Value

[bool](#)

Skipped

```
public bool Skipped { get; set; }
```

Property Value

[bool](#)

# Namespace MainRobot.Robot.Navigation. Recharge

## Classes

[RechargeManager](#)

[RechargeNavigation](#)

# Class RechargeManager

Namespace: [MainRobot.Robot.Navigation.Recharge](#)

Assembly: MainRobot.dll

```
public class RechargeManager : IRechargeManager
```

## Inheritance

[object](#) ← RechargeManager

## Implements

[IRechargeManager](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

RechargeManager([INavigationMover](#),  [ICommandCommunication](#),  
[IRechargeNavigation](#))

```
public RechargeManager(INavigationMover navigationMover, ICommandCommunication communication,  
IRechargeNavigation rechargeNavigation)
```

## Parameters

navigationMover [INavigationMover](#)

communication  [ICommandCommunication](#)

rechargeNavigation [IRechargeNavigation](#)

## Methods

ExitFromRecharge()

```
public Task ExitFromRecharge()
```

Returns

[Task ↗](#)

## NavigateToRecharge()

Inizia l'avvicinamento alla base di ricarica

```
public Task NavigateToRecharge()
```

Returns

[Task ↗](#)

## PlaceInRecharge()

il robot è arrivato in ricarica setto gli stati in ricarica

```
public Task PlaceInRecharge()
```

Returns

[Task ↗](#)

# Class RechargeNavigation

Namespace: [MainRobot.Robot.Navigation.Recharge](#)

Assembly: MainRobot.dll

```
public class RechargeNavigation : IRechargeNavigation
```

## Inheritance

[object](#) ← RechargeNavigation

## Implements

[IRechargeNavigation](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

RechargeNavigation([INavigationMover](#), [IMovement](#),  
 [ICommandCommunication](#), [ITextToSpeach](#), [IIpCam](#))

```
public RechargeNavigation(INavigationMover navigationMover, IMovement movement,  
 ICommandCommunication communication, ITextToSpeach textToSpeach, IIpCam ipcam)
```

## Parameters

[navigationMover](#) [INavigationMover](#)

[movement](#) [IMovement](#)

[communication](#)  [ICommandCommunication](#)

[textToSpeach](#) [ITextToSpeach](#)

[ipcam](#) [IIpCam](#)

## Methods

### RotateToAngleStartRecharge()

```
public Task<bool> RotateToAngleStartRecharge()
```

Returns

[Task](#) <[bool](#)>

### StartPositioningInRecharge()

Esegue i movimenti di avvicinamento fino alla base di ricarica

```
public Task StartPositioningInRecharge()
```

Returns

[Task](#)

### centerOnBaseChargeDirection(bool)

```
public Task centerOnBaseChargeDirection(bool small)
```

Parameters

**small** [bool](#)

Returns

[Task](#)

### centerOnBaseLateralLed()

```
public Task centerOnBaseLateralLed()
```

Returns

[Task ↗](#)

## rotateToFindCentralLed(bool)

```
public Task<RPoint> rotateToFindCentralLed(bool left)
```

Parameters

**left** [bool ↗](#)

Returns

[Task ↗ <RPoint>](#)

## startApproach()

```
public Task startApproach()
```

Returns

[Task ↗](#)

# Namespace MainRobot.Robot.Navigation. Recharge.Interface

## Interfaces

[IRechargeManager](#)

[IRechargeNavigation](#)

# Interface IRechargeManager

Namespace: [MainRobot.Robot.Navigation.Recharge.Interface](#)

Assembly: MainRobot.dll

```
public interface IRechargeManager
```

## Methods

### ExitFromRecharge()

Task [ExitFromRecharge\(\)](#)

Returns

[Task](#)

### NavigateToRecharge()

Task [NavigateToRecharge\(\)](#)

Returns

[Task](#)

### PlaceInRecharge()

Task [PlaceInRecharge\(\)](#)

Returns

[Task](#)

# Interface IRechargeNavigation

Namespace: [MainRobot.Robot.Navigation.Recharge.Interface](#)

Assembly: MainRobot.dll

```
public interface IRechargeNavigation
```

## Methods

### StartPositioningInRecharge()

Task [StartPositionInRecharge\(\)](#)

Returns

[Task](#)

# Namespace MainRobot.Robot.Room

## Classes

[RoomInfo](#)

## Interfaces

[IRoomInfo](#)

# Interface IRoomInfo

Namespace: [MainRobot.Robot.Room](#)

Assembly: MainRobot.dll

```
public interface IRoomInfo
```

## Methods

### GetPointRoom(string)

```
RPoint? GetPointRoom(string room)
```

Parameters

room [string](#) ↗

Returns

[RPoint](#)

# Class RoomInfo

Namespace: [MainRobot.Robot.Room](#)

Assembly: MainRobot.dll

```
public class RoomInfo : IRoomInfo
```

Inheritance

[object](#) ← RoomInfo

Implements

[IRoomInfo](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

RoomInfo()

```
public RoomInfo()
```

## Methods

GetPointRoom(string)

```
public RPoint? GetPointRoom(string room)
```

Parameters

room [string](#)

Returns

[RPoint](#)



# Namespace MainRobot.Robot.WebSocket

## Classes

[RobotWebSocketHandler](#)

# Class RobotWebSocketHandler

Namespace: [MainRobot.Robot.WebSocket](#)

Assembly: MainRobot.dll

```
public class RobotWebSocketHandler : IWebSocketHandler
```

## Inheritance

[object](#) ← RobotWebSocketHandler

## Implements

[IWebSocketHandler](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### RobotWebSocketHandler(IActionExec)

```
public RobotWebSocketHandler(IActionExec actionExec)
```

## Parameters

**actionExec** [IActionExec](#)

## Methods

### Exec(WebSocketOutputData?)

```
public WebSocketOutputData? Exec(WebSocketOutputData? dataReceived)
```

## Parameters

**dataReceived** [WebSocketOutputData](#)

Returns

[WebSocketOutputData](#)

# Namespace MainRobot.TTS

## Classes

[TextToSpeach](#)

## Interfaces

[ITextToSpeach](#)

# Interface ITextToSpeach

Namespace: [MainRobot.TTS](#)

Assembly: MainRobot.dll

```
public interface ITextToSpeach
```

## Methods

### TalkAsync(string)

```
void TalkAsync(string textToSpeach)
```

Parameters

textToSpeach [string](#)

# Class TextToSpeach

Namespace: [MainRobot.TTS](#)

Assembly: MainRobot.dll

```
public class TextToSpeach : ITextToSpeach
```

## Inheritance

[object](#) ← TextToSpeach

## Implements

[ITextToSpeach](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### TextToSpeach(IWebSocketServer)

```
public TextToSpeach(IWebSocketServer webSocket)
```

## Parameters

webSocket [IWebSocketServer](#)

## Methods

### TalkAsync(string)

```
public void TalkAsync(string textToSpeach)
```

## Parameters

textToSpeach [string](#)



# Namespace MainRobot.WebSocketServer

## Classes

[WebSocketServer](#)

## Interfaces

[IWebSocketServer](#)

# Interface IWebSocketServer

Namespace: [MainRobot.WebSocketServer](#)

Assembly: MainRobot.dll

```
public interface IWebSocketServer
```

## Methods

### Connected()

```
bool Connected()
```

Returns

[bool](#)

### Echo()

```
Task Echo()
```

Returns

[Task](#)

### Init()

```
Task Init()
```

Returns

[Task](#)

## SendAsync(WebSocketOutputData)

Task `SendAsync(WebSocketOutputData outputdata)`

Parameters

`outputdata` [WebSocketOutputData](#)

Returns

[Task](#)

## SendWithResponseAsync(WebSocketOutputData)

Task<`string`?> `SendWithResponseAsync(WebSocketOutputData message)`

Parameters

`message` [WebSocketOutputData](#)

Returns

[Task](#)<[string](#)>

## SetHandler(IWebSocketHandler)

`void SetHandler(IWebSocketHandler handler)`

Parameters

`handler` [IWebSocketHandler](#)

# Class WebSocketServer

Namespace: [MainRobot](#).[WebSocketServer](#)

Assembly: MainRobot.dll

```
public class WebSocketServer : IWebSocketServer
```

## Inheritance

[object](#) ← WebSocketServer

## Implements

[IWebSocketServer](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

WebSocketServer()

```
public WebSocketServer()
```

## Methods

Connected()

```
public bool Connected()
```

Returns

[bool](#)

Echo()

```
public Task Echo()
```

Returns

[Task](#)

## Init()

```
public Task Init()
```

Returns

[Task](#)

## SendAsync(WebSocketOutputData)

```
public Task SendAsync(WebSocketOutputData message)
```

Parameters

message [WebSocketOutputData](#)

Returns

[Task](#)

## SendWithResponseAsync(WebSocketOutputData)

```
public Task<string?> SendWithResponseAsync(WebSocketOutputData message)
```

Parameters

message [WebSocketOutputData](#)

Returns

[Task](#) <[string](#)>

## SetHandler(IWebSocketHandler)

```
public void SetHandler(IWebSocketHandler handler)
```

Parameters

handler [IWebSocketHandler](#)

# Namespace Robot.Common

## Classes

[CommandJson](#)

# Class CommandJson

Namespace: [Robot.Common](#)

Assembly: Robot.Common.dll

```
public class CommandJson
```

## Inheritance

[object](#) ← CommandJson

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## Command

```
public string Command { get; set; }
```

## Property Value

[string](#)

# Namespace Robot.Common.IO

## Classes

[FileMonitor<T>](#)

## Delegates

[FileMonitor<T>.FileChangedEventHandler](#)

# Class FileMonitor<T>

Namespace: [Robot.Common.IO](#)

Assembly: Robot.Common.dll

```
public class FileMonitor<T> where T : class
```

## Type Parameters

T

### Inheritance

[object](#) ← FileMonitor<T>

### Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### FileMonitor(string, string)

```
public FileMonitor(string path, string file)
```

## Parameters

path [string](#)

file [string](#)

## Methods

### Start()

```
public void Start()
```

## Stop()

```
public void Stop()
```

## Events

### FileChanged

```
public event FileMonitor<T>.FileChangedEventHandler FileChanged
```

#### Event Type

[FileMonitor<T>.FileChangedEventHandler](#)

# Delegate FileMonitor<T>.FileChangedEventHandler

Namespace: [Robot.Common.IO](#)

Assembly: Robot.Common.dll

```
public delegate void FileMonitor<T>.FileChangedEventHandler(object sender, T json)
```

Parameters

sender [object](#)

json T

# Namespace Robot.Robot.Device.FakeArduino

## Classes

[FakeArduino](#)

[FakeRemoteArduino](#)

[StatusRobotArdu](#)

## Interfaces

[IFakeArduino](#)

# Class FakeArduino

Namespace: [Robot.Robot.Device.FakeArduino](#)

Assembly: MainRobot.dll

```
public class FakeArduino : IFakeArduino
```

## Inheritance

[object](#) ← FakeArduino

## Implements

[IFakeArduino](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### FakeArduino(string?)

```
public FakeArduino(string? fixedResponse = null)
```

## Parameters

fixedResponse [string](#)

## Methods

### OpenSerial(Action<string>)

```
public void OpenSerial(Action<string> dataReceivedHandler)
```

## Parameters

dataReceivedHandler [Action](#)<[string](#)>

## WriteLine(string)

```
public void WriteLine(string message)
```

### Parameters

message [string](#)

# Class FakeRemoteArduino

Namespace: [Robot.Robot.Device.FakeArduino](#)

Assembly: MainRobot.dll

```
public class FakeRemoteArduino : IFakeArduino
```

## Inheritance

[object](#) ← FakeRemoteArduino

## Implements

[IFakeArduino](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

FakeRemoteArduino()

```
public FakeRemoteArduino()
```

## Methods

OpenSerial(Action<string>)

```
public void OpenSerial(Action<string> dataReceivedHandler)
```

### Parameters

dataReceivedHandler [Action](#)<[string](#)>

WriteLine(string)

```
public void WriteLine(string message)
```

## Parameters

message [string](#)

# Interface IFakeArduino

Namespace: [Robot.Robot.Device.FakeArduino](#)

Assembly: MainRobot.dll

```
public interface IFakeArduino
```

## Methods

### OpenSerial(Action<string>)

```
void OpenSerial(Action<string> dataReceivedHandler)
```

#### Parameters

**dataReceivedHandler** [Action<string>](#)

### WriteLine(string)

```
void WriteLine(string message)
```

#### Parameters

**message** [string](#)

# Class StatusRobotArdu

Namespace: [Robot.Robot.Device.FakeArduino](#)

Assembly: MainRobot.dll

```
public static class StatusRobotArdu
```

## Inheritance

[object](#) ← StatusRobotArdu

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## FakeMoviment

```
public static bool FakeMoviment { get; set; }
```

### Property Value

[bool](#)

## Rele1

```
public static bool Rele1 { get; set; }
```

### Property Value

[bool](#)

## Rele2

```
public static bool Rele2 { get; set; }
```

Property Value

[bool](#) ↗

# Namespace Robot.Test

## Classes

[AstarTest](#)

[CommunicationTest](#)

[ImageUtilityTest](#)

[IpCamTest](#)

[MathUtilityTest](#)

[MovementTest](#)

[NavigationRecharge](#)

[NavigationTest](#)

# Class AstarTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class AstarTest
```

## Inheritance

[object](#) ← AstarTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### ObstacleEncounterd()

```
[Test]  
public void ObstacleEncounterd()
```

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```

### TestAstar()

```
[Test]  
public Task TestAstar()
```

Returns

[Task](#) ↗

# Class CommunicationTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class CommunicationTest
```

## Inheritance

[object](#) ← CommunicationTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```

### TestDisableRele1()

```
[Test]  
public Task TestDisableRele1()
```

## Returns

[Task](#)

## TestOverflowTimeout()

Simula che arduino non risponda mai

```
[Test]  
public Task TestOverflowTimeout()
```

Returns

[Task](#)

## TestTooManyRequestNotification()

Simula che arduino non riceva mai la notifica e la richiede sempre

```
[Test]  
public Task TestTooManyRequestNotification()
```

Returns

[Task](#)

## TestTwoTimeConcurrentDisableRele1()

```
[Test]  
public Task TestTwoTimeConcurrentDisableRele1()
```

Returns

[Task](#)

## TestTwoTimeDisableRele1()

```
[Test]  
public Task TestTwoTimeDisableRele1()
```

Returns

[Task↗](#)

# Class ImageUtilityTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class ImageUtilityTest
```

## Inheritance

[object](#) ← ImageUtilityTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```

### TestAstar()

```
[Test]  
public Task TestAstar()
```

## Returns

[Task](#)



# Class IpCamTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class IpCamTest
```

## Inheritance

[object](#) ← IpCamTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Methods

## OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

## Setup()

```
[SetUp]  
public void Setup()
```

## TryFindPointOfColorCentral()

```
[Test]  
public Task TryFindPointOfColorCentral()
```

## Returns

[Task](#)



# Class MathUtilityTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class MathUtilityTest
```

## Inheritance

[object](#) ← MathUtilityTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### DifferenceTwoAngleZero()

```
[Test]  
public Task DifferenceTwoAngleZero()
```

Returns

[Task](#)

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```



# Class MovementTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class MovementTest
```

## Inheritance

[object](#) ← MovementTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```

### TestForward()

```
[Test]  
public Task TestForward()
```

## Returns

[Task](#)

## TestForwardWithObstacleFixed()

```
[Test]  
public Task TestForwardWithObstacleFixed()
```

Returns

[Task](#)

## TestObstacleFinded()

```
[Test]  
public Task TestObstacleFinded()
```

Returns

[Task](#)

## TestStop()

```
[Test]  
public Task TestStop()
```

Returns

[Task](#)

## TestTurnLeft()

```
[Test]  
public Task TestTurnLeft()
```

Returns

[Task](#)

## TestTurnRight()

```
[Test]  
public Task TestTurnRight()
```

Returns

[Task](#)

# Class NavigationRecharge

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class NavigationRecharge
```

## Inheritance

[object](#) ← NavigationRecharge

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```

### StartApproach()

```
[Test]  
public Task StartApproach()
```

## Returns

[Task](#)

## TestCenterOnBaseLateralLed()

```
[Test]  
public Task TestCenterOnBaseLateralLed()
```

Returns

[Task](#)

## TestCenterOnBaseLateralLed1()

```
[Test]  
public Task TestCenterOnBaseLateralLed1()
```

Returns

[Task](#)

## TestRotateToFindCentralLed()

```
[Test]  
public Task TestRotateToFindCentralLed()
```

Returns

[Task](#)

## TestStartPositionInRecharge()

```
[Test]  
public Task TestStartPositionInRecharge()
```

Returns

[Task ↗](#)

## TestStartPositioningInRecharge1()

```
[Test]
public Task TestStartPositioningInRecharge1()
```

Returns

[Task ↗](#)

## centerOnBaseChargeDirection()

```
[Test]
public Task centerOnBaseChargeDirection()
```

Returns

[Task ↗](#)

## centerOnBaseChargeDirectionOk()

```
[Test]
public Task centerOnBaseChargeDirectionOk()
```

Returns

[Task ↗](#)

## centerOnBaseChargeDirectionOk1()

```
[Test]
public Task centerOnBaseChargeDirectionOk1()
```

## Returns

[Task ↗](#)

# Class NavigationTest

Namespace: [Robot.Test](#)

Assembly: Robot.Test.dll

```
public class NavigationTest
```

## Inheritance

[object](#) ← NavigationTest

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Methods

### OneTimeSetUp()

```
[OneTimeSetUp]  
public void OneTimeSetUp()
```

### Setup()

```
[SetUp]  
public void Setup()
```

### TestNavigation1()

```
[Test]  
public Task TestNavigation1()
```

## Returns

[Task](#)

## TestNavigation2()

```
[Test]  
public Task TestNavigation2()
```

Returns

[Task ↗](#)

## TestNavigation3()

```
[Test]  
public Task TestNavigation3()
```

Returns

[Task ↗](#)

## TestNavigation4()

```
[Test]  
public Task TestNavigation4()
```

Returns

[Task ↗](#)

## TestNavigation5()

```
[Test]  
public Task TestNavigation5()
```

Returns

[Task ↗](#)

## TestNavigation6()

```
[Test]  
public Task TestNavigation6()
```

Returns

[Task ↗](#)

# Namespace WinFormsApp1

## Classes

[Form1](#)

# Class Form1

Namespace: [WinFormsApp1](#)

Assembly: WindowFormRobotEmulator.dll

```
public class Form1 : Form, IDropTarget, ISynchronizeInvoke, IWin32Window,  
IBindableComponent, IComponent, IDisposable, IContainerControl
```

## Inheritance

[object](#) ← [MarshalByRefObject](#) ← [Component](#) ← [Control](#) ← [ScrollableControl](#) ←  
[ContainerControl](#) ← [Form](#) ← Form1

## Implements

[IDropTarget](#), [ISynchronizeInvoke](#), [IWin32Window](#), [IBindableComponent](#), [IComponent](#),  
[IDisposable](#), [IContainerControl](#)

## Inherited Members

[Form.SetVisibleCore\(bool\)](#), [Form.Activate\(\)](#), [Form.ActivateMdiChild\(Form\)](#),  
[Form.AddOwnedForm\(Form\)](#), [Form.AdjustFormScrollbars\(bool\)](#), [Form.Close\(\)](#),  
[Form.CreateAccessibilityInstance\(\)](#), [Form.CreateControlsInstance\(\)](#), [Form.CreateHandle\(\)](#),  
[Form.DefWndProc\(ref Message\)](#), [Form.ProcessMnemonic\(char\)](#), [Form.CenterToParent\(\)](#),  
[Form.CenterToScreen\(\)](#), [Form.LayoutMdi\(MdiLayout\)](#), [Form.OnActivated\(EventArgs\)](#),  
[Form.OnBackgroundImageChanged\(EventArgs\)](#),  
[Form.OnBackgroundImageLayoutChanged\(EventArgs\)](#), [Form.OnClosing\(CancelEventArgs\)](#),  
[Form.OnClosed\(EventArgs\)](#), [Form.OnFormClosing\(FormClosingEventArgs\)](#),  
[Form.OnFormClosed\(FormClosedEventArgs\)](#), [Form.OnCreateControl\(\)](#),  
[Form.OnDeactivate\(EventArgs\)](#), [Form.OnEnabledChanged\(EventArgs\)](#), [Form.OnEnter\(EventArgs\)](#),  
[Form.OnFontChanged\(EventArgs\)](#), [Form.OnGotFocus\(EventArgs\)](#),  
[Form.OnHandleCreated\(EventArgs\)](#), [Form.OnHandleDestroyed\(EventArgs\)](#),  
[Form.OnHelpButtonClicked\(CancelEventArgs\)](#), [Form.OnLayout\(LayoutEventArgs\)](#),  
[Form.OnLoad\(EventArgs\)](#), [Form.OnMaximizedBoundsChanged\(EventArgs\)](#),  
[Form.OnMaximumSizeChanged\(EventArgs\)](#), [Form.OnMinimumSizeChanged\(EventArgs\)](#),  
[Form.OnInputLanguageChanged\(InputLanguageChangedEventArgs\)](#),  
[Form.OnInputLanguageChanging\(InputLanguageChangingEventArgs\)](#),  
[Form.OnVisibleChanged\(EventArgs\)](#), [Form.OnMdiChildActivate\(EventArgs\)](#),  
[Form.OnMenuStart\(EventArgs\)](#), [Form.OnMenuComplete\(EventArgs\)](#),  
[Form.OnPaint\(PaintEventArgs\)](#), [Form.OnResize\(EventArgs\)](#),  
[Form.OnDpiChanged\(DpiChangedEventArgs\)](#), [Form.OnGetDpiScaledSize\(int, int, ref Size\)](#),  
[Form.OnRightToLeftLayoutChanged\(EventArgs\)](#), [Form.OnShown\(EventArgs\)](#),

[Form.OnTextChanged\(EventArgs\)](#) , [Form.ProcessCmdKey\(ref Message, Keys\)](#) ,  
[Form.ProcessDialogKey\(Keys\)](#) , [Form.ProcessDialogChar\(char\)](#) ,  
[Form.ProcessKeyPreview\(ref Message\)](#) , [Form.ProcessTabKey\(bool\)](#) ,  
[Form.RemoveOwnedForm\(Form\)](#) , [Form.Select\(bool, bool\)](#) ,  
[Form.ScaleMinAxisSize\(float, float, bool\)](#) ,  
[Form.GetScaledBounds\(Rectangle, SizeF, BoundsSpecified\)](#) ,  
[Form.ScaleControl\(SizeF, BoundsSpecified\)](#) , [Form.SetBoundsCore\(int, int, int, int, BoundsSpecified\)](#) ,  
[Form.SetClientSizeCore\(int, int\)](#) , [Form.SetDesktopBounds\(int, int, int, int\)](#) ,  
[Form.SetDesktopLocation\(int, int\)](#) , [Form.Show\(IWin32Window\)](#) , [Form.ShowDialog\(\)](#) ,  
[Form.ShowDialog\(IWin32Window\)](#) , [Form.ToString\(\)](#) , [Form.UpdateDefaultButton\(\)](#) ,  
[Form.OnResizeBeginEventArgs](#) , [Form.OnResizeEndEventArgs](#) ,  
[Form.OnStyleChangedEventArgs](#) , [Form.ValidateChildren\(\)](#) ,  
[Form.ValidateChildren\(ValidationConstraints\)](#) , [Form.WndProc\(ref Message\)](#) , [Form.AcceptButton](#) ,  
[Form.ActiveForm](#) , [Form.ActiveMdiChild](#) , [Form.AllowTransparency](#) , [Form.AutoScroll](#) ,  
[Form.AutoSize](#) , [Form.AutoSizeMode](#) , [Form.AutoValidate](#) , [Form.BackColor](#) ,  
[Form.FormBorderStyle](#) , [Form.CancelButton](#) , [Form.ClientSize](#) , [Form.ControlBox](#) ,  
[Form.CreateParams](#) , [Form.DefaultImeMode](#) , [Form.DefaultSize](#) , [Form.DesktopBounds](#) ,  
[Form.DesktopLocation](#) , [Form.DialogResult](#) , [Form.HelpButton](#) , [Form.Icon](#) , [Form.IsMdiChild](#) ,  
[Form.IsMdiContainer](#) , [Form.IsRestrictedWindow](#) , [Form.KeyPreview](#) , [Form.Location](#) ,  
[Form.MaximizedBounds](#) , [Form.MaximumSize](#) , [Form.MainMenuStrip](#) , [Form.MinimumSize](#) ,  
[Form.MaximizeBox](#) , [Form.MdiChildren](#) , [Form.MdiChildrenMinimizedAnchorBottom](#) ,  
[Form.MdiParent](#) , [Form.MinimizeBox](#) , [Form.Modal](#) , [Form.Opacity](#) , [Form.OwnedForms](#) ,  
[Form.Owner](#) , [Form.RestoreBounds](#) , [Form.RightToLeftLayout](#) , [Form.ShowInTaskbar](#) ,  
[Form.ShowIcon](#) , [Form.ShowWithoutActivation](#) , [Form.Size](#) , [Form.SizeGripStyle](#) ,  
[Form.StartPosition](#) , [Form.Text](#) , [Form.TopLevel](#) , [Form.TopMost](#) , [Form.TransparencyKey](#) ,  
[Form.WindowState](#) , [Form.AutoSizeChanged](#) , [Form.AutoValidateChanged](#) ,  
[Form.HelpButtonClicked](#) , [Form.MaximizedBoundsChanged](#) , [Form.MaximumSizeChanged](#) ,  
[Form.MinimumSizeChanged](#) , [Form.Activated](#) , [Form.Deactivate](#) , [Form.FormClosing](#) ,  
[Form.FormClosed](#) , [Form.Load](#) , [Form.MdiChildActivate](#) , [Form.MenuComplete](#) ,  
[Form.MenuStart](#) , [Form.InputLanguageChanged](#) , [Form.InputLanguageChanging](#) ,  
[Form.RightToLeftLayoutChanged](#) , [Form.Shown](#) , [Form.DpiChanged](#) , [Form.ResizeBegin](#) ,  
[Form.ResizeEnd](#) , [ContainerControl.OnAutoValidateChanged\(EventArgs\)](#) ,  
[ContainerControl.OnMoveEventArgs](#) , [ContainerControl.OnParentChangedEventArgs](#) ,  
[ContainerControl.PerformLayout\(\)](#) , [ContainerControl.RescaleConstantsForDpi\(int, int\)](#) ,  
[ContainerControl.Validate\(\)](#) , [ContainerControl.Validate\(bool\)](#) ,  
[ContainerControl.AutoScaleDimensions](#) , [ContainerControl.AutoScaleFactor](#) ,  
[ContainerControl.AutoScaleMode](#) , [ContainerControl.BindingContext](#) ,  
[ContainerControl.CanEnableIme](#) , [ContainerControl.ActiveControl](#) ,  
[ContainerControl.CurrentAutoSizeDimensions](#) , [ContainerControl.ParentForm](#) ,  
[ScrollableControl.ScrollStateAutoScrolling](#) , [ScrollableControl.ScrollStateHScrollVisible](#) ,

[ScrollableControl.ScrollStateVScrollVisible](#) , [ScrollableControl.ScrollStateUserHasScrolled](#) ,  
[ScrollableControl.ScrollStateFullDrag](#) , [ScrollableControl.GetScrollState\(int\)](#) ,  
[ScrollableControl.OnMouseWheel\(MouseEventArgs\)](#) ,  
[ScrollableControl.OnRightToLeftChanged\(EventArgs\)](#) ,  
[ScrollableControl.OnPaintBackground\(PaintEventArgs\)](#) ,  
[ScrollableControl.OnPaddingChanged\(EventArgs\)](#) , [ScrollableControl.SetDisplayRectLocation\(int, int\)](#) ,  
[ScrollableControl.ScrollControlIntoView\(Control\)](#) , [ScrollableControl.ScrollToControl\(Control\)](#) ,  
[ScrollableControl.OnScroll\(ScrollEventArgs\)](#) , [ScrollableControl.SetAutoScrollMargin\(int, int\)](#) ,  
[ScrollableControl.SetScrollState\(int, bool\)](#) , [ScrollableControl.AutoScrollMargin](#) ,  
[ScrollableControl.AutoScrollPosition](#) , [ScrollableControl.AutoScrollMinSize](#) ,  
[ScrollableControl.DisplayRectangle](#) , [ScrollableControl.HScroll](#) , [ScrollableControl.HorizontalScroll](#) ,  
[ScrollableControl.VScroll](#) , [ScrollableControl.VerticalScroll](#) , [ScrollableControl.Scroll](#) ,  
[Control.GetAccessibilityObjectByld\(int\)](#) , [Control.SetAutoSizeMode\(AutoSizeMode\)](#) ,  
[Control.GetAutoSizeMode\(\)](#) , [Control.GetPreferredSize\(Size\)](#) ,  
[Control.AccessibilityNotifyClients\(AccessibleEvents, int\)](#) ,  
[Control.AccessibilityNotifyClients\(AccessibleEvents, int, int\)](#) , [Control.BeginInvoke\(Delegate\)](#) ,  
[Control.BeginInvoke\(Action\)](#) , [Control.BeginInvoke\(Delegate, params object\[\]\)](#) ,  
[Control.BringToFront\(\)](#) , [Control.Contains\(Control\)](#) , [Control.CreateGraphics\(\)](#) ,  
[Control.CreateControl\(\)](#) , [Control.DestroyHandle\(\)](#) , [Control.DoDragDrop\(object, DragDropEffects\)](#) ,  
[Control.DoDragDrop\(object, DragDropEffects, Bitmap, Point, bool\)](#) ,  
[Control.DrawToBitmap\(Bitmap, Rectangle\)](#) , [Control.EndInvoke\(IAsyncResult\)](#) , [Control.FindForm\(\)](#) ,  
[Control.GetTopLevel\(\)](#) , [Control.RaiseKeyEvent\(object, KeyEventArgs\)](#) ,  
[Control.RaiseMouseEvent\(object, MouseEventArgs\)](#) , [Control.Focus\(\)](#) ,  
[Control.FromChildHandle\(nint\)](#) , [Control.FromHandle\(nint\)](#) ,  
[Control.GetChildAtPoint\(Point, GetChildAtPointSkip\)](#) , [Control.GetChildAtPoint\(Point\)](#) ,  
[Control.GetContainerControl\(\)](#) , [Control.GetNextControl\(Control, bool\)](#) ,  
[Control.GetStyle\(ControlStyles\)](#) , [Control.Hide\(\)](#) , [Control.InitLayout\(\)](#) , [Control.Invalidate\(Region\)](#) ,  
[Control.Invalidate\(Region, bool\)](#) , [Control.Invalidate\(\)](#) , [Control.Invalidate\(bool\)](#) ,  
[Control.Invalidate\(Rectangle\)](#) , [Control.Invalidate\(Rectangle, bool\)](#) , [Control.Invoke\(Action\)](#) ,  
[Control.Invoke\(Delegate\)](#) , [Control.Invoke\(Delegate, params object\[\]\)](#) ,  
[Control.Invoke<T>\(Func<T>\)](#) , [Control.InvokePaint\(Control, PaintEventArgs\)](#) ,  
[Control.InvokePaintBackground\(Control, PaintEventArgs\)](#) , [Control.IsKeyLocked\(Keys\)](#) ,  
[Control.IsInputChar\(char\)](#) , [Control.IsInputKey\(Keys\)](#) , [Control.IsMnemonic\(char, string\)](#) ,  
[Control.LogicalToDeviceUnits\(int\)](#) , [Control.LogicalToDeviceUnits\(Size\)](#) ,  
[Control.ScaleBitmapLogicalToDevice\(ref Bitmap\)](#) , [Control.NotifyInvalidate\(Rectangle\)](#) ,  
[Control.InvokeOnClick\(Control, EventArgs\)](#) , [Control.OnAutoSizeChanged\(EventArgs\)](#) ,  
[Control.OnBackColorChanged\(EventArgs\)](#) , [Control.OnBindingContextChanged\(EventArgs\)](#) ,  
[Control.OnCausesValidationChanged\(EventArgs\)](#) , [Control.OnContextMenuStripChanged\(EventArgs\)](#) ,  
[Control.OnCursorChanged\(EventArgs\)](#) , [Control.OnDataContextChanged\(EventArgs\)](#) ,  
[Control.OnDockChanged\(EventArgs\)](#) , [Control.OnForeColorChanged\(EventArgs\)](#) ,

[Control.OnNotifyMessage\(Message\)](#) , [Control.OnParentBackColorChanged\(EventArgs\)](#) ,  
[Control.OnParentBackgroundImageChanged\(EventArgs\)](#) ,  
[Control.OnParentBindingContextChanged\(EventArgs\)](#) , [Control.OnParentCursorChanged\(EventArgs\)](#) ,  
[Control.OnParentDataContextChanged\(EventArgs\)](#) , [Control.OnParentEnabledChanged\(EventArgs\)](#) ,  
[Control.OnParentFontChanged\(EventArgs\)](#) , [Control.OnParentForeColorChanged\(EventArgs\)](#) ,  
[Control.OnParentRightToLeftChanged\(EventArgs\)](#) , [Control.OnParentVisibleChanged\(EventArgs\)](#) ,  
[Control.OnPrint\(PaintEventArgs\)](#) , [Control.OnTabIndexChanged\(EventArgs\)](#) ,  
[Control.OnTabStopChanged\(EventArgs\)](#) , [Control.OnClick\(EventArgs\)](#) ,  
[Control.OnClientSizeChanged\(EventArgs\)](#) , [Control.OnControlAdded\(ControlEventArgs\)](#) ,  
[Control.OnControlRemoved\(ControlEventArgs\)](#) , [Control.OnLocationChanged\(EventArgs\)](#) ,  
[Control.OnDoubleClick\(EventArgs\)](#) , [Control.OnDragEnter\(DragEventArgs\)](#) ,  
[Control.OnDragOver\(DragEventArgs\)](#) , [Control.OnDragLeave\(EventArgs\)](#) ,  
[Control.OnDragDrop\(DragEventArgs\)](#) , [Control.OnGiveFeedback\(GiveFeedbackEventArgs\)](#) ,  
[Control.InvokeGotFocus\(Control, EventArgs\)](#) , [Control.OnHelpRequested\(HelpEventArgs\)](#) ,  
[Control.OnInvalidate\(InvalidEventArgs\)](#) , [Control.OnKeyDown\(KeyEventArgs\)](#) ,  
[Control.OnKeyPress\(KeyPressEventArgs\)](#) , [Control.OnKeyUp\(KeyEventArgs\)](#) ,  
[Control.OnLeave\(EventArgs\)](#) , [Control.InvokeLostFocus\(Control, EventArgs\)](#) ,  
[Control.OnLostFocus\(EventArgs\)](#) , [Control.OnMarginChanged\(EventArgs\)](#) ,  
[Control.OnMouseDoubleClick\(MouseEventArgs\)](#) , [Control.OnMouseClick\(MouseEventArgs\)](#) ,  
[Control.OnMouseCaptureChanged\(EventArgs\)](#) , [Control.OnMouseDown\(MouseEventArgs\)](#) ,  
[Control.OnMouseEnter\(EventArgs\)](#) , [Control.OnMouseLeave\(EventArgs\)](#) ,  
[Control.OnDpiChangedBeforeParent\(EventArgs\)](#) , [Control.OnDpiChangedAfterParent\(EventArgs\)](#) ,  
[Control.OnMouseHover\(EventArgs\)](#) , [Control.OnMouseMove\(MouseEventArgs\)](#) ,  
[Control.OnMouseUp\(MouseEventArgs\)](#) ,  
[Control.OnQueryContinueDrag\(QueryContinueDragEventArgs\)](#) ,  
[Control.OnRegionChanged\(EventArgs\)](#) , [Control.OnPreviewKeyDown\(PreviewKeyDownEventArgs\)](#) ,  
[Control.OnSizeChanged\(EventArgs\)](#) , [Control.OnChangeUICues\(UICuesEventArgs\)](#) ,  
[Control.OnSystemColorsChanged\(EventArgs\)](#) , [Control.OnValidating\(CancelEventArgs\)](#) ,  
[Control.OnValidated\(EventArgs\)](#) , [Control.PerformLayout\(\)](#) , [Control.PerformLayout\(Control, string\)](#) ,  
[Control.PointToClient\(Point\)](#) , [Control.PointToScreen\(Point\)](#) ,  
[Control.PreProcessMessage\(ref Message\)](#) , [Control.PreProcessControlMessage\(ref Message\)](#) ,  
[Control.ProcessKeyEventArgs\(ref Message\)](#) , [Control.ProcessKeyMessage\(ref Message\)](#) ,  
[Control.RaiseDragEvent\(object, DragEventArgs\)](#) , [Control.RaisePaintEvent\(object, PaintEventArgs\)](#) ,  
[Control.RecreateHandle\(\)](#) , [Control.RectangleToClient\(Rectangle\)](#) ,  
[Control.RectangleToScreen\(Rectangle\)](#) , [Control.ReflectMessage\(nint, ref Message\)](#) ,  
[Control.Refresh\(\)](#) , [Control.ResetMouseEventArgs\(\)](#) , [Control.ResetText\(\)](#) , [Control.ResumeLayout\(\)](#) ,  
[Control.ResumeLayout\(bool\)](#) , [Control.Scale\(SizeF\)](#) , [Control.Select\(\)](#) ,  
[Control.SelectNextControl\(Control, bool, bool, bool, bool\)](#) , [Control.SendToBack\(\)](#) ,  
[Control.SetBounds\(int, int, int, int\)](#) , [Control.SetBounds\(int, int, int, int, BoundsSpecified\)](#) ,  
[Control.SizeFromClientSize\(Size\)](#) , [Control.SetStyle\(ControlStyles, bool\)](#) , [Control.SetTopLevel\(bool\)](#) ,

[Control.RtlTranslateAlignment\(HorizontalAlignment\)](#) ,  
[Control.RtlTranslateAlignment\(LeftRightAlignment\)](#) ,  
[Control.RtlTranslateAlignment\(ContentAlignment\)](#) ,  
[Control.RtlTranslateHorizontal\(HorizontalAlignment\)](#) ,  
[Control.RtlTranslateLeftRight\(LeftRightAlignment\)](#) , [Control.RtlTranslateContent\(ContentAlignment\)](#) ,  
[Control.Show\(\)](#) , [Control.SuspendLayout\(\)](#) , [Control.Update\(\)](#) , [Control.UpdateBounds\(\)](#) ,  
[Control.UpdateBounds\(int, int, int, int\)](#) , [Control.UpdateBounds\(int, int, int, int, int, int\)](#) ,  
[Control.UpdateZOrder\(\)](#) , [Control.UpdateStyles\(\)](#) , [Control.OnImeModeChanged\(EventArgs\)](#) ,  
[Control.AccessibilityObject](#) , [Control.AccessibleDefaultActionDescription](#) ,  
[Control.AccessibleDescription](#) , [Control.AccessibleName](#) , [Control.AccessibleRole](#) ,  
[Control.AllowDrop](#) , [Control.Anchor](#) , [Control.AutoScrollOffset](#) , [Control.LayoutEngine](#) ,  
[Control.DataContext](#) , [Control.BackgroundImage](#) , [Control.BackgroundImageLayout](#) ,  
[Control.Bottom](#) , [Control.Bounds](#) , [Control.CanFocus](#) , [Control.CanRaiseEvents](#) ,  
[Control.CanSelect](#) , [Control.Capture](#) , [Control.CausesValidation](#) ,  
[Control.CheckForIllegalCrossThreadCalls](#) , [Control.ClientRectangle](#) , [Control.CompanyName](#) ,  
[Control.ContainsFocus](#) , [Control.ContextMenuStrip](#) , [Control.Controls](#) , [Control.Created](#) ,  
[Control.Cursor](#) , [Control.DataBindings](#) , [Control.DefaultBackColor](#) , [Control.DefaultCursor](#) ,  
[Control.DefaultFont](#) , [Control.DefaultForeColor](#) , [Control.DefaultMargin](#) ,  
[Control.DefaultMaximumSize](#) , [Control.DefaultMinimumSize](#) , [Control.DefaultPadding](#) ,  
[Control.DeviceDpi](#) , [Control.IsDisposed](#) , [Control.Disposing](#) , [Control.Dock](#) ,  
[Control.DoubleBuffered](#) , [Control.Enabled](#) , [Control.Focused](#) , [Control.Font](#) ,  
[Control.FontHeight](#) , [Control.ForeColor](#) , [Control.Handle](#) , [Control.HasChildren](#) , [Control.Height](#) ,  
[Control.IsHandleCreated](#) , [Control.InvokeRequired](#) , [Control.IsAccessible](#) ,  
[Control.IsAncestorSiteInDesignMode](#) , [Control.IsMirrored](#) , [Control.Left](#) , [Control.Margin](#) ,  
[Control.ModifierKeys](#) , [Control.MouseButtons](#) , [Control.mousePosition](#) , [Control.Name](#) ,  
[Control.Parent](#) , [Control.ProductName](#) , [Control.ProductVersion](#) , [Control.RecreatingHandle](#) ,  
[Control.Region](#) , [Control.RenderRightToLeft](#) , [Control.ResizeRedraw](#) , [Control.Right](#) ,  
[Control.RightToLeft](#) , [Control.ScaleChildren](#) , [Control.Site](#) , [Control.TabIndex](#) , [Control.TabStop](#) ,  
[Control.Tag](#) , [Control.Top](#) , [Control.TopLevelControl](#) , [Control.ShowKeyboardCues](#) ,  
[Control.ShowFocusCues](#) , [Control.UseWaitCursor](#) , [Control.Visible](#) , [Control.Width](#) ,  
[Control.PreferredSize](#) , [Control.Padding](#) , [Control.ImeMode](#) , [Control.ImeModeBase](#) ,  
[Control.PropagatingImeMode](#) , [Control.BackColorChanged](#) , [Control.BackgroundImageChanged](#) ,  
[Control.BackgroundImageLayoutChanged](#) , [Control.BindingContextChanged](#) ,  
[Control.CausesValidationChanged](#) , [Control.ClientSizeChanged](#) ,  
[Control.ContextMenuStripChanged](#) , [Control.CursorChanged](#) , [Control.DockChanged](#) ,  
[Control.EnabledChanged](#) , [Control.FontChanged](#) , [Control.ForeColorChanged](#) ,  
[Control.LocationChanged](#) , [Control.MarginChanged](#) , [Control.RegionChanged](#) ,  
[Control.RightToLeftChanged](#) , [Control.SizeChanged](#) , [Control.TabIndexChanged](#) ,  
[Control.TabStopChanged](#) , [Control.TextChanged](#) , [Control.VisibleChanged](#) , [Control.Click](#) ,  
[Control.ControlAdded](#) , [Control.ControlRemoved](#) , [Control.DataContextChanged](#) ,

[Control.DragDrop](#) , [Control.DragEnter](#) , [Control.DragOver](#) , [Control.DragLeave](#) ,  
[Control.GiveFeedback](#) , [Control.HandleCreated](#) , [Control.HandleDestroyed](#) ,  
[Control.HelpRequested](#) , [Control.Invalidated](#) , [Control.PaddingChanged](#) , [Control.Paint](#) ,  
[Control.QueryContinueDrag](#) , [Control.QueryAccessibilityHelp](#) , [Control.DoubleClick](#) ,  
[Control.Enter](#) , [Control.GotFocus](#) , [Control.KeyDown](#) , [Control.KeyPress](#) , [Control.KeyUp](#) ,  
[Control.Layout](#) , [Control.Leave](#) , [Control.LostFocus](#) , [Control.MouseClick](#) ,  
[Control.MouseDoubleClick](#) , [Control.MouseCaptureChanged](#) , [Control.MouseDown](#) ,  
[Control.MouseEnter](#) , [Control.MouseLeave](#) , [Control.DpiChangedBeforeParent](#) ,  
[Control.DpiChangedAfterParent](#) , [Control.MouseHover](#) , [Control.MouseMove](#) , [Control.MouseUp](#) ,  
[Control.MouseWheel](#) , [Control.Move](#) , [Control.PreviewKeyDown](#) , [Control.Resize](#) ,  
[Control.ChangeUICues](#) , [Control.StyleChanged](#) , [Control.SystemColorsChanged](#) ,  
[Control.Validating](#) , [Control.Validated](#) , [Control.ParentChanged](#) , [Control.ImeModeChanged](#) ,  
[Component.Dispose\(\)](#) , [Component.GetService\(Type\)](#) , [Component.Container](#) ,  
[Component.DesignMode](#) , [Component.Events](#) , [Component.Disposed](#) ,  
[MarshalByRefObject.GetLifetimeService\(\)](#) , [MarshalByRefObject.InitializeLifetimeService\(\)](#) ,  
[MarshalByRefObject.MemberwiseClone\(bool\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,  
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,  
[object.ReferenceEquals\(object, object\)](#)

## Constructors

### Form1()

```
public Form1()
```

## Fields

### BaseUrlService

```
public static string BaseUrlService
```

### Field Value

[string](#)

# Methods

## Dispose(bool)

Clean up any resources being used.

```
protected override void Dispose(bool disposing)
```

Parameters

**disposing** [bool](#)

true if managed resources should be disposed; otherwise, false.

# Namespace WindowFormRobotEmulator

## Classes

[ArduinoEmulator](#)

[ControlMove](#)

[IdeLidar](#)

[Info](#)

# Class ArduinoEmulator

Namespace: [WindowFormRobotEmulator](#)

Assembly: WindowFormRobotEmulator.dll

```
public class ArduinoEmulator
```

## Inheritance

[object](#) ← ArduinoEmulator

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

ArduinoEmulator()

```
public ArduinoEmulator()
```

## Fields

arrayObstacle

```
public bool[,] arrayObstacle
```

Field Value

[bool](#)[][,]

## Properties

BatteryLevel

```
public float BatteryLevel { get; set; }
```

Property Value

[float](#)

## EnableMoviment

```
public bool EnableMoviment { get; set; }
```

Property Value

[bool](#)

## IsInRecharge

```
public bool IsInRecharge { get; set; }
```

Property Value

[bool](#)

## ObstacleFind

```
public bool ObstacleFind { get; set; }
```

Property Value

[bool](#)

## Rele1

```
public bool Rele1 { get; set; }
```

Property Value

[bool](#)

Rele2

```
public bool Rele2 { get; set; }
```

Property Value

[bool](#)

SimulatedAngle

```
public double SimulatedAngle { get; set; }
```

Property Value

[double](#)

SimulatedPosition

```
public RPoint SimulatedPosition { get; set; }
```

Property Value

[RPoint](#)

TeoricAngle

```
public double TeoricAngle { get; set; }
```

Property Value

[double](#) ↗

## TeoricPosition

```
public RPoint TeoricPosition { get; set; }
```

Property Value

[RPoint](#)

## UpdateSimulatedPosition

```
public Action UpdateSimulatedPosition { get; set; }
```

Property Value

[Action](#) ↗

## Methods

### CalculatePosition(RPoint, double)

```
public void CalculatePosition(RPoint position, double angle)
```

Parameters

position [RPoint](#)

angle [double](#) ↗

## RunCommand(string, bool?)

```
public Task<string> RunCommand(string message, bool? parseOnlyName = null)
```

Parameters

message [string](#)

parseOnlyName [bool](#)?

Returns

[Task](#) <[string](#)>

## SimulateForward(CommunicationCommandReceived, bool)

```
public Task<string> SimulateForward(CommunicationCommandReceived cmd, bool back = false)
```

Parameters

cmd [CommunicationCommandReceived](#)

back [bool](#)

Returns

[Task](#) <[string](#)>

## SimulateLidar()

```
public Task<string> SimulateLidar()
```

Returns

[Task](#) <[string](#)>

## SimulateRotate(CommunicationCommandReceived, bool)

```
public Task SimulateRotate(CommunicationCommandReceived cmd, bool left)
```

### Parameters

cmd [CommunicationCommandReceived](#)

left [bool](#)

### Returns

[Task](#)

## checkFrontalObstacle(int, int, RPoint?)

```
public (string? obs, bool baffo) checkFrontalObstacle(int distance, int remaingDistance,  
RPoint? point = null)
```

### Parameters

distance [int](#)

remaingDistance [int](#)

point [RPoint](#)

### Returns

([string](#), [obs](#), [bool](#), [baffo](#))

# Class ControlMove

Namespace: [WindowFormRobotEmulator](#)

Assembly: WindowFormRobotEmulator.dll

```
public class ControlMove : Form, IDropTarget, ISynchronizeInvoke, IWin32Window,  
IBindableComponent, IComponent, IDisposable, IContainerControl
```

## Inheritance

[object](#) ← [MarshalByRefObject](#) ← [Component](#) ← [Control](#) ← [ScrollableControl](#) ←  
[ContainerControl](#) ← [Form](#) ← ControlMove

## Implements

[IDropTarget](#), [ISynchronizeInvoke](#), [IWin32Window](#), [IBindableComponent](#), [IComponent](#),  
[IDisposable](#), [IContainerControl](#)

## Inherited Members

[Form.SetVisibleCore\(bool\)](#), [Form.Activate\(\)](#), [Form.ActivateMdiChild\(Form\)](#),  
[Form.AddOwnedForm\(Form\)](#), [Form.AdjustFormScrollbars\(bool\)](#), [Form.Close\(\)](#),  
[Form.CreateAccessibilityInstance\(\)](#), [Form.CreateControlsInstance\(\)](#), [Form.CreateHandle\(\)](#),  
[Form.DefWndProc\(ref Message\)](#), [Form.ProcessMnemonic\(char\)](#), [Form.CenterToParent\(\)](#),  
[Form.CenterToScreen\(\)](#), [Form.LayoutMdi\(MdiLayout\)](#), [Form.OnActivated\(EventArgs\)](#),  
[Form.OnBackgroundImageChanged\(EventArgs\)](#),  
[Form.OnBackgroundImageLayoutChanged\(EventArgs\)](#), [Form.OnClosing\(CancelEventArgs\)](#),  
[Form.OnClosed\(EventArgs\)](#), [Form.OnFormClosing\(FormClosingEventArgs\)](#),  
[Form.OnFormClosed\(FormClosedEventArgs\)](#), [Form.OnCreateControl\(\)](#),  
[Form.OnDeactivate\(EventArgs\)](#), [Form.OnEnabledChanged\(EventArgs\)](#), [Form.OnEnter\(EventArgs\)](#),  
[Form.OnFontChanged\(EventArgs\)](#), [Form.OnGotFocus\(EventArgs\)](#),  
[Form.OnHandleCreated\(EventArgs\)](#), [Form.OnHandleDestroyed\(EventArgs\)](#),  
[Form.OnHelpButtonClicked\(CancelEventArgs\)](#), [Form.OnLayout\(LayoutEventArgs\)](#),  
[Form.OnLoad\(EventArgs\)](#), [Form.OnMaximizedBoundsChanged\(EventArgs\)](#),  
[Form.OnMaximumSizeChanged\(EventArgs\)](#), [Form.OnMinimumSizeChanged\(EventArgs\)](#),  
[Form.OnInputLanguageChanged\(InputLanguageChangedEventArgs\)](#),  
[Form.OnInputLanguageChanging\(InputLanguageChangingEventArgs\)](#),  
[Form.OnVisibleChanged\(EventArgs\)](#), [Form.OnMdiChildActivate\(EventArgs\)](#),  
[Form.OnMenuStart\(EventArgs\)](#), [Form.OnMenuComplete\(EventArgs\)](#),  
[Form.OnPaint\(PaintEventArgs\)](#), [Form.OnResize\(EventArgs\)](#),  
[Form.OnDpiChanged\(DpiChangedEventArgs\)](#), [Form.OnGetDpiScaledSize\(int, int, ref Size\)](#),  
[Form.OnRightToLeftLayoutChanged\(EventArgs\)](#), [Form.OnShown\(EventArgs\)](#),

[Form.OnTextChanged\(EventArgs\)](#) , [Form.ProcessCmdKey\(ref Message, Keys\)](#) ,  
[Form.ProcessDialogKey\(Keys\)](#) , [Form.ProcessDialogChar\(char\)](#) ,  
[Form.ProcessKeyPreview\(ref Message\)](#) , [Form.ProcessTabKey\(bool\)](#) ,  
[Form.RemoveOwnedForm\(Form\)](#) , [Form.Select\(bool, bool\)](#) ,  
[Form.ScaleMinAxisSize\(float, float, bool\)](#) ,  
[Form.GetScaledBounds\(Rectangle, SizeF, BoundsSpecified\)](#) ,  
[Form.ScaleControl\(SizeF, BoundsSpecified\)](#) , [Form.SetBoundsCore\(int, int, int, int, BoundsSpecified\)](#) ,  
[Form.SetClientSizeCore\(int, int\)](#) , [Form.SetDesktopBounds\(int, int, int, int\)](#) ,  
[Form.SetDesktopLocation\(int, int\)](#) , [Form.Show\(IWin32Window\)](#) , [Form.ShowDialog\(\)](#) ,  
[Form.ShowDialog\(IWin32Window\)](#) , [Form.ToString\(\)](#) , [Form.UpdateDefaultButton\(\)](#) ,  
[Form.OnResizeBeginEventArgs](#) , [Form.OnResizeEndEventArgs](#) ,  
[Form.OnStyleChangedEventArgs](#) , [Form.ValidateChildren\(\)](#) ,  
[Form.ValidateChildren\(ValidationConstraints\)](#) , [Form.WndProc\(ref Message\)](#) , [Form.AcceptButton](#) ,  
[Form.ActiveForm](#) , [Form.ActiveMdiChild](#) , [Form.AllowTransparency](#) , [Form.AutoScroll](#) ,  
[Form.AutoSize](#) , [Form.AutoSizeMode](#) , [Form.AutoValidate](#) , [Form.BackColor](#) ,  
[Form.FormBorderStyle](#) , [Form.CancelButton](#) , [Form.ClientSize](#) , [Form.ControlBox](#) ,  
[Form.CreateParams](#) , [Form.DefaultImeMode](#) , [Form.DefaultSize](#) , [Form.DesktopBounds](#) ,  
[Form.DesktopLocation](#) , [Form.DialogResult](#) , [Form.HelpButton](#) , [Form.Icon](#) , [Form.IsMdiChild](#) ,  
[Form.IsMdiContainer](#) , [Form.IsRestrictedWindow](#) , [Form.KeyPreview](#) , [Form.Location](#) ,  
[Form.MaximizedBounds](#) , [Form.MaximumSize](#) , [Form.MainMenuStrip](#) , [Form.MinimumSize](#) ,  
[Form.MaximizeBox](#) , [Form.MdiChildren](#) , [Form.MdiChildrenMinimizedAnchorBottom](#) ,  
[Form.MdiParent](#) , [Form.MinimizeBox](#) , [Form.Modal](#) , [Form.Opacity](#) , [Form.OwnedForms](#) ,  
[Form.Owner](#) , [Form.RestoreBounds](#) , [Form.RightToLeftLayout](#) , [Form.ShowInTaskbar](#) ,  
[Form.ShowIcon](#) , [Form.ShowWithoutActivation](#) , [Form.Size](#) , [Form.SizeGripStyle](#) ,  
[Form.StartPosition](#) , [Form.Text](#) , [Form.TopLevel](#) , [Form.TopMost](#) , [Form.TransparencyKey](#) ,  
[Form.WindowState](#) , [Form.AutoSizeChanged](#) , [Form.AutoValidateChanged](#) ,  
[Form.HelpButtonClicked](#) , [Form.MaximizedBoundsChanged](#) , [Form.MaximumSizeChanged](#) ,  
[Form.MinimumSizeChanged](#) , [Form.Activated](#) , [Form.Deactivate](#) , [Form.FormClosing](#) ,  
[Form.FormClosed](#) , [Form.Load](#) , [Form.MdiChildActivate](#) , [Form.MenuComplete](#) ,  
[Form.MenuStart](#) , [Form.InputLanguageChanged](#) , [Form.InputLanguageChanging](#) ,  
[Form.RightToLeftLayoutChanged](#) , [Form.Shown](#) , [Form.DpiChanged](#) , [Form.ResizeBegin](#) ,  
[Form.ResizeEnd](#) , [ContainerControl.OnAutoValidateChanged\(EventArgs\)](#) ,  
[ContainerControl.OnMoveEventArgs](#) , [ContainerControl.OnParentChangedEventArgs](#) ,  
[ContainerControl.PerformLayout\(\)](#) , [ContainerControl.RescaleConstantsForDpi\(int, int\)](#) ,  
[ContainerControl.Validate\(\)](#) , [ContainerControl.Validate\(bool\)](#) ,  
[ContainerControl.AutoScaleDimensions](#) , [ContainerControl.AutoScaleFactor](#) ,  
[ContainerControl.AutoScaleMode](#) , [ContainerControl.BindingContext](#) ,  
[ContainerControl.CanEnableIme](#) , [ContainerControl.ActiveControl](#) ,  
[ContainerControl.CurrentAutoSizeDimensions](#) , [ContainerControl.ParentForm](#) ,  
[ScrollableControl.ScrollStateAutoScrolling](#) , [ScrollableControl.ScrollStateHScrollVisible](#) ,

[ScrollableControl.ScrollStateVScrollVisible](#) , [ScrollableControl.ScrollStateUserHasScrolled](#) ,  
[ScrollableControl.ScrollStateFullDrag](#) , [ScrollableControl.GetScrollState\(int\)](#) ,  
[ScrollableControl.OnMouseWheel\(MouseEventArgs\)](#) ,  
[ScrollableControl.OnRightToLeftChanged\(EventArgs\)](#) ,  
[ScrollableControl.OnPaintBackground\(PaintEventArgs\)](#) ,  
[ScrollableControl.OnPaddingChanged\(EventArgs\)](#) , [ScrollableControl.SetDisplayRectLocation\(int, int\)](#) ,  
[ScrollableControl.ScrollControlIntoView\(Control\)](#) , [ScrollableControl.ScrollToControl\(Control\)](#) ,  
[ScrollableControl.OnScroll\(ScrollEventArgs\)](#) , [ScrollableControl.SetAutoScrollMargin\(int, int\)](#) ,  
[ScrollableControl.SetScrollState\(int, bool\)](#) , [ScrollableControl.AutoScrollMargin](#) ,  
[ScrollableControl.AutoScrollPosition](#) , [ScrollableControl.AutoScrollMinSize](#) ,  
[ScrollableControl.DisplayRectangle](#) , [ScrollableControl.HScroll](#) , [ScrollableControl.HorizontalScroll](#) ,  
[ScrollableControl.VScroll](#) , [ScrollableControl.VerticalScroll](#) , [ScrollableControl.Scroll](#) ,  
[Control.GetAccessibilityObjectByld\(int\)](#) , [Control.SetAutoSizeMode\(AutoSizeMode\)](#) ,  
[Control.GetAutoSizeMode\(\)](#) , [Control.GetPreferredSize\(Size\)](#) ,  
[Control.AccessibilityNotifyClients\(AccessibleEvents, int\)](#) ,  
[Control.AccessibilityNotifyClients\(AccessibleEvents, int, int\)](#) , [Control.BeginInvoke\(Delegate\)](#) ,  
[Control.BeginInvoke\(Action\)](#) , [Control.BeginInvoke\(Delegate, params object\[\]\)](#) ,  
[Control.BringToFront\(\)](#) , [Control.Contains\(Control\)](#) , [Control.CreateGraphics\(\)](#) ,  
[Control.CreateControl\(\)](#) , [Control.DestroyHandle\(\)](#) , [Control.DoDragDrop\(object, DragDropEffects\)](#) ,  
[Control.DoDragDrop\(object, DragDropEffects, Bitmap, Point, bool\)](#) ,  
[Control.DrawToBitmap\(Bitmap, Rectangle\)](#) , [Control.EndInvoke\(IAsyncResult\)](#) , [Control.FindForm\(\)](#) ,  
[Control.GetTopLevel\(\)](#) , [Control.RaiseKeyEvent\(object, KeyEventArgs\)](#) ,  
[Control.RaiseMouseEvent\(object, MouseEventArgs\)](#) , [Control.Focus\(\)](#) ,  
[Control.FromChildHandle\(nint\)](#) , [Control.FromHandle\(nint\)](#) ,  
[Control.GetChildAtPoint\(Point, GetChildAtPointSkip\)](#) , [Control.GetChildAtPoint\(Point\)](#) ,  
[Control.GetContainerControl\(\)](#) , [Control.GetNextControl\(Control, bool\)](#) ,  
[Control.GetStyle\(ControlStyles\)](#) , [Control.Hide\(\)](#) , [Control.InitLayout\(\)](#) , [Control.Invalidate\(Region\)](#) ,  
[Control.Invalidate\(Region, bool\)](#) , [Control.Invalidate\(\)](#) , [Control.Invalidate\(bool\)](#) ,  
[Control.Invalidate\(Rectangle\)](#) , [Control.Invalidate\(Rectangle, bool\)](#) , [Control.Invoke\(Action\)](#) ,  
[Control.Invoke\(Delegate\)](#) , [Control.Invoke\(Delegate, params object\[\]\)](#) ,  
[Control.Invoke<T>\(Func<T>\)](#) , [Control.InvokePaint\(Control, PaintEventArgs\)](#) ,  
[Control.InvokePaintBackground\(Control, PaintEventArgs\)](#) , [Control.IsKeyLocked\(Keys\)](#) ,  
[Control.IsInputChar\(char\)](#) , [Control.IsInputKey\(Keys\)](#) , [Control.IsMnemonic\(char, string\)](#) ,  
[Control.LogicalToDeviceUnits\(int\)](#) , [Control.LogicalToDeviceUnits\(Size\)](#) ,  
[Control.ScaleBitmapLogicalToDevice\(ref Bitmap\)](#) , [Control.NotifyInvalidate\(Rectangle\)](#) ,  
[Control.InvokeOnClick\(Control, EventArgs\)](#) , [Control.OnAutoSizeChanged\(EventArgs\)](#) ,  
[Control.OnBackColorChanged\(EventArgs\)](#) , [Control.OnBindingContextChanged\(EventArgs\)](#) ,  
[Control.OnCausesValidationChanged\(EventArgs\)](#) , [Control.OnContextMenuStripChanged\(EventArgs\)](#) ,  
[Control.OnCursorChanged\(EventArgs\)](#) , [Control.OnDataContextChanged\(EventArgs\)](#) ,  
[Control.OnDockChanged\(EventArgs\)](#) , [Control.OnForeColorChanged\(EventArgs\)](#) ,

[Control.OnNotifyMessage\(Message\)](#) , [Control.OnParentBackColorChanged\(EventArgs\)](#) ,  
[Control.OnParentBackgroundImageChanged\(EventArgs\)](#) ,  
[Control.OnParentBindingContextChanged\(EventArgs\)](#) , [Control.OnParentCursorChanged\(EventArgs\)](#) ,  
[Control.OnParentDataContextChanged\(EventArgs\)](#) , [Control.OnParentEnabledChanged\(EventArgs\)](#) ,  
[Control.OnParentFontChanged\(EventArgs\)](#) , [Control.OnParentForeColorChanged\(EventArgs\)](#) ,  
[Control.OnParentRightToLeftChanged\(EventArgs\)](#) , [Control.OnParentVisibleChanged\(EventArgs\)](#) ,  
[Control.OnPrint\(PaintEventArgs\)](#) , [Control.OnTabIndexChanged\(EventArgs\)](#) ,  
[Control.OnTabStopChanged\(EventArgs\)](#) , [Control.OnClick\(EventArgs\)](#) ,  
[Control.OnClientSizeChanged\(EventArgs\)](#) , [Control.OnControlAdded\(ControlEventArgs\)](#) ,  
[Control.OnControlRemoved\(ControlEventArgs\)](#) , [Control.OnLocationChanged\(EventArgs\)](#) ,  
[Control.OnDoubleClick\(EventArgs\)](#) , [Control.OnDragEnter\(DragEventArgs\)](#) ,  
[Control.OnDragOver\(DragEventArgs\)](#) , [Control.OnDragLeave\(EventArgs\)](#) ,  
[Control.OnDragDrop\(DragEventArgs\)](#) , [Control.OnGiveFeedback\(GiveFeedbackEventArgs\)](#) ,  
[Control.InvokeGotFocus\(Control, EventArgs\)](#) , [Control.OnHelpRequested\(HelpEventArgs\)](#) ,  
[Control.OnInvalidate\(InvalidEventArgs\)](#) , [Control.OnKeyDown\(KeyEventArgs\)](#) ,  
[Control.OnKeyPress\(KeyPressEventArgs\)](#) , [Control.OnKeyUp\(KeyEventArgs\)](#) ,  
[Control.OnLeave\(EventArgs\)](#) , [Control.InvokeLostFocus\(Control, EventArgs\)](#) ,  
[Control.OnLostFocus\(EventArgs\)](#) , [Control.OnMarginChanged\(EventArgs\)](#) ,  
[Control.OnMouseDoubleClick\(MouseEventArgs\)](#) , [Control.OnMouseClick\(MouseEventArgs\)](#) ,  
[Control.OnMouseCaptureChanged\(EventArgs\)](#) , [Control.OnMouseDown\(MouseEventArgs\)](#) ,  
[Control.OnMouseEnter\(EventArgs\)](#) , [Control.OnMouseLeave\(EventArgs\)](#) ,  
[Control.OnDpiChangedBeforeParent\(EventArgs\)](#) , [Control.OnDpiChangedAfterParent\(EventArgs\)](#) ,  
[Control.OnMouseHover\(EventArgs\)](#) , [Control.OnMouseMove\(MouseEventArgs\)](#) ,  
[Control.OnMouseUp\(MouseEventArgs\)](#) ,  
[Control.OnQueryContinueDrag\(QueryContinueDragEventArgs\)](#) ,  
[Control.OnRegionChanged\(EventArgs\)](#) , [Control.OnPreviewKeyDown\(PreviewKeyDownEventArgs\)](#) ,  
[Control.OnSizeChanged\(EventArgs\)](#) , [Control.OnChangeUICues\(UICuesEventArgs\)](#) ,  
[Control.OnSystemColorsChanged\(EventArgs\)](#) , [Control.OnValidating\(CancelEventArgs\)](#) ,  
[Control.OnValidated\(EventArgs\)](#) , [Control.PerformLayout\(\)](#) , [Control.PerformLayout\(Control, string\)](#) ,  
[Control.PointToClient\(Point\)](#) , [Control.PointToScreen\(Point\)](#) ,  
[Control.PreProcessMessage\(ref Message\)](#) , [Control.PreProcessControlMessage\(ref Message\)](#) ,  
[Control.ProcessKeyEventArgs\(ref Message\)](#) , [Control.ProcessKeyMessage\(ref Message\)](#) ,  
[Control.RaiseDragEvent\(object, DragEventArgs\)](#) , [Control.RaisePaintEvent\(object, PaintEventArgs\)](#) ,  
[Control.RecreateHandle\(\)](#) , [Control.RectangleToClient\(Rectangle\)](#) ,  
[Control.RectangleToScreen\(Rectangle\)](#) , [Control.ReflectMessage\(nint, ref Message\)](#) ,  
[Control.Refresh\(\)](#) , [Control.ResetMouseEventArgs\(\)](#) , [Control.ResetText\(\)](#) , [Control.ResumeLayout\(\)](#) ,  
[Control.ResumeLayout\(bool\)](#) , [Control.Scale\(SizeF\)](#) , [Control.Select\(\)](#) ,  
[Control.SelectNextControl\(Control, bool, bool, bool, bool\)](#) , [Control.SendToBack\(\)](#) ,  
[Control.SetBounds\(int, int, int, int\)](#) , [Control.SetBounds\(int, int, int, int, BoundsSpecified\)](#) ,  
[Control.SizeFromClientSize\(Size\)](#) , [Control.SetStyle\(ControlStyles, bool\)](#) , [Control.SetTopLevel\(bool\)](#) ,

[Control.RtlTranslateAlignment\(HorizontalAlignment\)](#) ,  
[Control.RtlTranslateAlignment\(LeftRightAlignment\)](#) ,  
[Control.RtlTranslateAlignment\(ContentAlignment\)](#) ,  
[Control.RtlTranslateHorizontal\(HorizontalAlignment\)](#) ,  
[Control.RtlTranslateLeftRight\(LeftRightAlignment\)](#) , [Control.RtlTranslateContent\(ContentAlignment\)](#) ,  
[Control.Show\(\)](#) , [Control.SuspendLayout\(\)](#) , [Control.Update\(\)](#) , [Control.UpdateBounds\(\)](#) ,  
[Control.UpdateBounds\(int, int, int, int\)](#) , [Control.UpdateBounds\(int, int, int, int, int, int\)](#) ,  
[Control.UpdateZOrder\(\)](#) , [Control.UpdateStyles\(\)](#) , [Control.OnImeModeChanged\(EventArgs\)](#) ,  
[Control.AccessibilityObject](#) , [Control.AccessibleDefaultActionDescription](#) ,  
[Control.AccessibleDescription](#) , [Control.AccessibleName](#) , [Control.AccessibleRole](#) ,  
[Control.AllowDrop](#) , [Control.Anchor](#) , [Control.AutoScrollOffset](#) , [Control.LayoutEngine](#) ,  
[Control.DataContext](#) , [Control.BackgroundImage](#) , [Control.BackgroundImageLayout](#) ,  
[Control.Bottom](#) , [Control.Bounds](#) , [Control.CanFocus](#) , [Control.CanRaiseEvents](#) ,  
[Control.CanSelect](#) , [Control.Capture](#) , [Control.CausesValidation](#) ,  
[Control.CheckForIllegalCrossThreadCalls](#) , [Control.ClientRectangle](#) , [Control.CompanyName](#) ,  
[Control.ContainsFocus](#) , [Control.ContextMenuStrip](#) , [Control.Controls](#) , [Control.Created](#) ,  
[Control.Cursor](#) , [Control.DataBindings](#) , [Control.DefaultBackColor](#) , [Control.DefaultCursor](#) ,  
[Control.DefaultFont](#) , [Control.DefaultForeColor](#) , [Control.DefaultMargin](#) ,  
[Control.DefaultMaximumSize](#) , [Control.DefaultMinimumSize](#) , [Control.DefaultPadding](#) ,  
[Control.DeviceDpi](#) , [Control.IsDisposed](#) , [Control.Disposing](#) , [Control.Dock](#) ,  
[Control.DoubleBuffered](#) , [Control.Enabled](#) , [Control.Focused](#) , [Control.Font](#) ,  
[Control.FontHeight](#) , [Control.ForeColor](#) , [Control.Handle](#) , [Control.HasChildren](#) , [Control.Height](#) ,  
[Control.IsHandleCreated](#) , [Control.InvokeRequired](#) , [Control.IsAccessible](#) ,  
[Control.IsAncestorSiteInDesignMode](#) , [Control.IsMirrored](#) , [Control.Left](#) , [Control.Margin](#) ,  
[Control.ModifierKeys](#) , [Control.MouseButtons](#) , [Control.mousePosition](#) , [Control.Name](#) ,  
[Control.Parent](#) , [Control.ProductName](#) , [Control.ProductVersion](#) , [Control.RecreatingHandle](#) ,  
[Control.Region](#) , [Control.RenderRightToLeft](#) , [Control.ResizeRedraw](#) , [Control.Right](#) ,  
[Control.RightToLeft](#) , [Control.ScaleChildren](#) , [Control.Site](#) , [Control.TabIndex](#) , [Control.TabStop](#) ,  
[Control.Tag](#) , [Control.Top](#) , [Control.TopLevelControl](#) , [Control.ShowKeyboardCues](#) ,  
[Control.ShowFocusCues](#) , [Control.UseWaitCursor](#) , [Control.Visible](#) , [Control.Width](#) ,  
[Control.PreferredSize](#) , [Control.Padding](#) , [Control.ImeMode](#) , [Control.ImeModeBase](#) ,  
[Control.PropagatingImeMode](#) , [Control.BackColorChanged](#) , [Control.BackgroundImageChanged](#) ,  
[Control.BackgroundImageLayoutChanged](#) , [Control.BindingContextChanged](#) ,  
[Control.CausesValidationChanged](#) , [Control.ClientSizeChanged](#) ,  
[Control.ContextMenuStripChanged](#) , [Control.CursorChanged](#) , [Control.DockChanged](#) ,  
[Control.EnabledChanged](#) , [Control.FontChanged](#) , [Control.ForeColorChanged](#) ,  
[Control.LocationChanged](#) , [Control.MarginChanged](#) , [Control.RegionChanged](#) ,  
[Control.RightToLeftChanged](#) , [Control.SizeChanged](#) , [Control.TabIndexChanged](#) ,  
[Control.TabStopChanged](#) , [Control.TextChanged](#) , [Control.VisibleChanged](#) , [Control.Click](#) ,  
[Control.ControlAdded](#) , [Control.ControlRemoved](#) , [Control.DataContextChanged](#) ,

[Control.DragDrop](#) , [Control.DragEnter](#) , [Control.DragOver](#) , [Control.DragLeave](#) ,  
[Control.GiveFeedback](#) , [Control.HandleCreated](#) , [Control.HandleDestroyed](#) ,  
[Control.HelpRequested](#) , [Control.Invalidated](#) , [Control.PaddingChanged](#) , [Control.Paint](#) ,  
[Control.QueryContinueDrag](#) , [Control.QueryAccessibilityHelp](#) , [Control.DoubleClick](#) ,  
[Control.Enter](#) , [Control.GotFocus](#) , [Control.KeyDown](#) , [Control.KeyPress](#) , [Control.KeyUp](#) ,  
[Control.Layout](#) , [Control.Leave](#) , [Control.LostFocus](#) , [Control.MouseClick](#) ,  
[Control.MouseDoubleClick](#) , [Control.MouseCaptureChanged](#) , [Control.MouseDown](#) ,  
[Control.MouseEnter](#) , [Control.MouseLeave](#) , [Control.DpiChangedBeforeParent](#) ,  
[Control.DpiChangedAfterParent](#) , [Control.MouseHover](#) , [Control.MouseMove](#) , [Control.MouseUp](#) ,  
[Control.MouseWheel](#) , [Control.Move](#) , [Control.PreviewKeyDown](#) , [Control.Resize](#) ,  
[Control.ChangeUICues](#) , [Control.StyleChanged](#) , [Control.SystemColorsChanged](#) ,  
[Control.Validating](#) , [Control.Validated](#) , [Control.ParentChanged](#) , [Control.ImeModeChanged](#) ,  
[Component.Dispose\(\)](#) , [Component.GetService\(Type\)](#) , [Component.Container](#) ,  
[Component.DesignMode](#) , [Component.Events](#) , [Component.Disposed](#) ,  
[MarshalByRefObject.GetLifetimeService\(\)](#) , [MarshalByRefObject.InitializeLifetimeService\(\)](#) ,  
[MarshalByRefObject.MemberwiseClone\(bool\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,  
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,  
[object.ReferenceEquals\(object, object\)](#)

## Constructors

### ControlMove()

```
public ControlMove()
```

## Methods

### Dispose(bool)

Clean up any resources being used.

```
protected override void Dispose(bool disposing)
```

#### Parameters

disposing [bool](#)

true if managed resources should be disposed; otherwise, false.

# Class IdeLidar

Namespace: [WindowFormRobotEmulator](#)

Assembly: WindowFormRobotEmulator.dll

```
public class IdeLidar : Form, IDropTarget, ISynchronizeInvoke, IWin32Window,  
IBindableComponent, IComponent, IDisposable,.IContainerControl
```

## Inheritance

```
object ↪ ← MarshalByRefObject ↪ ← Component ↪ ← Control ↪ ← ScrollableControl ↪ ←  
ContainerControl ↪ ← Form ↪ ← IdeLidar
```

## Implements

```
IDropTarget, ISynchronizeInvoke, IWin32Window, IBindableComponent, IComponent,  
IDisposable, IContainerControl
```

## Inherited Members

```
Form.SetVisibleCore(bool), Form.Activate(), Form.ActivateMdiChild(Form),  
Form.AddOwnedForm(Form), Form.AdjustFormScrollbars(bool), Form.Close(),  
Form.CreateAccessibilityInstance(), Form.CreateControlsInstance(), Form.CreateHandle(),  
Form.DefWndProc(ref Message), Form.ProcessMnemonic(char), Form.CenterToParent(),  
Form.CenterToScreen(), Form.LayoutMdi(MdiLayout), Form.OnActivated(EventArgs),  
Form.OnBackgroundImageChanged(EventArgs),  
Form.OnBackgroundImageLayoutChanged(EventArgs), Form.OnClosing(CancelEventArgs),  
Form.OnClosed(EventArgs), Form.OnFormClosing(FormClosingEventArgs),  
Form.OnFormClosed(FormClosedEventArgs), Form.OnCreateControl(),  
Form.OnDeactivate(EventArgs), Form.OnEnabledChanged(EventArgs), Form.OnEnter(EventArgs),  
Form.OnFontChanged(EventArgs), Form.OnGotFocus(EventArgs),  
Form.OnHandleCreated(EventArgs), Form.OnHandleDestroyed(EventArgs),  
Form.OnHelpButtonClicked(CancelEventArgs), Form.OnLayout(LayoutEventArgs),  
Form.OnLoad(EventArgs), Form.OnMaximizedBoundsChanged(EventArgs),  
Form.OnMaximumSizeChanged(EventArgs), Form.OnMinimumSizeChanged(EventArgs),  
Form.OnInputLanguageChanged(InputLanguageChangedEventArgs),  
Form.OnInputLanguageChanging(InputLanguageChangingEventArgs),  
Form.OnVisibleChanged(EventArgs), Form.OnMdiChildActivate(EventArgs),  
Form.OnMenuStart(EventArgs), Form.OnMenuComplete(EventArgs),  
Form.OnPaint(PaintEventArgs), Form.OnResize(EventArgs),  
Form.OnDpiChanged(DpiChangedEventArgs), Form.OnGetDpiScaledSize(int, int, ref Size),  
Form.OnRightToLeftLayoutChanged(EventArgs), Form.OnShown(EventArgs),
```

[Form.OnTextChanged\(EventArgs\)](#) , [Form.ProcessCmdKey\(ref Message, Keys\)](#) ,  
[Form.ProcessDialogKey\(Keys\)](#) , [Form.ProcessDialogChar\(char\)](#) ,  
[Form.ProcessKeyPreview\(ref Message\)](#) , [Form.ProcessTabKey\(bool\)](#) ,  
[Form.RemoveOwnedForm\(Form\)](#) , [Form.Select\(bool, bool\)](#) ,  
[Form.ScaleMinAxisSize\(float, float, bool\)](#) ,  
[Form.GetScaledBounds\(Rectangle, SizeF, BoundsSpecified\)](#) ,  
[Form.ScaleControl\(SizeF, BoundsSpecified\)](#) , [Form.SetBoundsCore\(int, int, int, int, BoundsSpecified\)](#) ,  
[Form.SetClientSizeCore\(int, int\)](#) , [Form.SetDesktopBounds\(int, int, int, int\)](#) ,  
[Form.SetDesktopLocation\(int, int\)](#) , [Form.Show\(IWin32Window\)](#) , [Form.ShowDialog\(\)](#) ,  
[Form.ShowDialog\(IWin32Window\)](#) , [Form.ToString\(\)](#) , [Form.UpdateDefaultButton\(\)](#) ,  
[Form.OnResizeBeginEventArgs](#) , [Form.OnResizeEndEventArgs](#) ,  
[Form.OnStyleChangedEventArgs](#) , [Form.ValidateChildren\(\)](#) ,  
[Form.ValidateChildren\(ValidationConstraints\)](#) , [Form.WndProc\(ref Message\)](#) , [Form.AcceptButton](#) ,  
[Form.ActiveForm](#) , [Form.ActiveMdiChild](#) , [Form.AllowTransparency](#) , [Form.AutoScroll](#) ,  
[Form.AutoSize](#) , [Form.AutoSizeMode](#) , [Form.AutoValidate](#) , [Form.BackColor](#) ,  
[Form.FormBorderStyle](#) , [Form.CancelButton](#) , [Form.ClientSize](#) , [Form.ControlBox](#) ,  
[Form.CreateParams](#) , [Form.DefaultImeMode](#) , [Form.DefaultSize](#) , [Form.DesktopBounds](#) ,  
[Form.DesktopLocation](#) , [Form.DialogResult](#) , [Form.HelpButton](#) , [Form.Icon](#) , [Form.IsMdiChild](#) ,  
[Form.IsMdiContainer](#) , [Form.IsRestrictedWindow](#) , [Form.KeyPreview](#) , [Form.Location](#) ,  
[Form.MaximizedBounds](#) , [Form.MaximumSize](#) , [Form.MainMenuStrip](#) , [Form.MinimumSize](#) ,  
[Form.MaximizeBox](#) , [Form.MdiChildren](#) , [Form.MdiChildrenMinimizedAnchorBottom](#) ,  
[Form.MdiParent](#) , [Form.MinimizeBox](#) , [Form.Modal](#) , [Form.Opacity](#) , [Form.OwnedForms](#) ,  
[Form.Owner](#) , [Form.RestoreBounds](#) , [Form.RightToLeftLayout](#) , [Form.ShowInTaskbar](#) ,  
[Form.ShowIcon](#) , [Form.ShowWithoutActivation](#) , [Form.Size](#) , [Form.SizeGripStyle](#) ,  
[Form.StartPosition](#) , [Form.Text](#) , [Form.TopLevel](#) , [Form.TopMost](#) , [Form.TransparencyKey](#) ,  
[Form.WindowState](#) , [Form.AutoSizeChanged](#) , [Form.AutoValidateChanged](#) ,  
[Form.HelpButtonClicked](#) , [Form.MaximizedBoundsChanged](#) , [Form.MaximumSizeChanged](#) ,  
[Form.MinimumSizeChanged](#) , [Form.Activated](#) , [Form.Deactivate](#) , [Form.FormClosing](#) ,  
[Form.FormClosed](#) , [Form.Load](#) , [Form.MdiChildActivate](#) , [Form.MenuComplete](#) ,  
[Form.MenuStart](#) , [Form.InputLanguageChanged](#) , [Form.InputLanguageChanging](#) ,  
[Form.RightToLeftLayoutChanged](#) , [Form.Shown](#) , [Form.DpiChanged](#) , [Form.ResizeBegin](#) ,  
[Form.ResizeEnd](#) , [ContainerControl.OnAutoValidateChanged\(EventArgs\)](#) ,  
[ContainerControl.OnMoveEventArgs](#) , [ContainerControl.OnParentChangedEventArgs](#) ,  
[ContainerControl.PerformLayout\(\)](#) , [ContainerControl.RescaleConstantsForDpi\(int, int\)](#) ,  
[ContainerControl.Validate\(\)](#) , [ContainerControl.Validate\(bool\)](#) ,  
[ContainerControl.AutoScaleDimensions](#) , [ContainerControl.AutoScaleFactor](#) ,  
[ContainerControl.AutoScaleMode](#) , [ContainerControl.BindingContext](#) ,  
[ContainerControl.CanEnableIme](#) , [ContainerControl.ActiveControl](#) ,  
[ContainerControl.CurrentAutoSizeDimensions](#) , [ContainerControl.ParentForm](#) ,  
[ScrollableControl.ScrollStateAutoScrolling](#) , [ScrollableControl.ScrollStateHScrollVisible](#) ,

[ScrollableControl.ScrollStateVScrollVisible](#) , [ScrollableControl.ScrollStateUserHasScrolled](#) ,  
[ScrollableControl.ScrollStateFullDrag](#) , [ScrollableControl.GetScrollState\(int\)](#) ,  
[ScrollableControl.OnMouseWheel\(MouseEventArgs\)](#) ,  
[ScrollableControl.OnRightToLeftChanged\(EventArgs\)](#) ,  
[ScrollableControl.OnPaintBackground\(PaintEventArgs\)](#) ,  
[ScrollableControl.OnPaddingChanged\(EventArgs\)](#) , [ScrollableControl.SetDisplayRectLocation\(int, int\)](#) ,  
[ScrollableControl.ScrollControlIntoView\(Control\)](#) , [ScrollableControl.ScrollToControl\(Control\)](#) ,  
[ScrollableControl.OnScroll\(ScrollEventArgs\)](#) , [ScrollableControl.SetAutoScrollMargin\(int, int\)](#) ,  
[ScrollableControl.SetScrollState\(int, bool\)](#) , [ScrollableControl.AutoScrollMargin](#) ,  
[ScrollableControl.AutoScrollPosition](#) , [ScrollableControl.AutoScrollMinSize](#) ,  
[ScrollableControl.DisplayRectangle](#) , [ScrollableControl.HScroll](#) , [ScrollableControl.HorizontalScroll](#) ,  
[ScrollableControl.VScroll](#) , [ScrollableControl.VerticalScroll](#) , [ScrollableControl.Scroll](#) ,  
[Control.GetAccessibilityObjectByld\(int\)](#) , [Control.SetAutoSizeMode\(AutoSizeMode\)](#) ,  
[Control.GetAutoSizeMode\(\)](#) , [Control.GetPreferredSize\(Size\)](#) ,  
[Control.AccessibilityNotifyClients\(AccessibleEvents, int\)](#) ,  
[Control.AccessibilityNotifyClients\(AccessibleEvents, int, int\)](#) , [Control.BeginInvoke\(Delegate\)](#) ,  
[Control.BeginInvoke\(Action\)](#) , [Control.BeginInvoke\(Delegate, params object\[\]\)](#) ,  
[Control.BringToFront\(\)](#) , [Control.Contains\(Control\)](#) , [Control.CreateGraphics\(\)](#) ,  
[Control.CreateControl\(\)](#) , [Control.DestroyHandle\(\)](#) , [Control.DoDragDrop\(object, DragDropEffects\)](#) ,  
[Control.DoDragDrop\(object, DragDropEffects, Bitmap, Point, bool\)](#) ,  
[Control.DrawToBitmap\(Bitmap, Rectangle\)](#) , [Control.EndInvoke\(IAsyncResult\)](#) , [Control.FindForm\(\)](#) ,  
[Control.GetTopLevel\(\)](#) , [Control.RaiseKeyEvent\(object, KeyEventArgs\)](#) ,  
[Control.RaiseMouseEvent\(object, MouseEventArgs\)](#) , [Control.Focus\(\)](#) ,  
[Control.FromChildHandle\(nint\)](#) , [Control.FromHandle\(nint\)](#) ,  
[Control.GetChildAtPoint\(Point, GetChildAtPointSkip\)](#) , [Control.GetChildAtPoint\(Point\)](#) ,  
[Control.GetContainerControl\(\)](#) , [Control.GetNextControl\(Control, bool\)](#) ,  
[Control.GetStyle\(ControlStyles\)](#) , [Control.Hide\(\)](#) , [Control.InitLayout\(\)](#) , [Control.Invalidate\(Region\)](#) ,  
[Control.Invalidate\(Region, bool\)](#) , [Control.Invalidate\(\)](#) , [Control.Invalidate\(bool\)](#) ,  
[Control.Invalidate\(Rectangle\)](#) , [Control.Invalidate\(Rectangle, bool\)](#) , [Control.Invoke\(Action\)](#) ,  
[Control.Invoke\(Delegate\)](#) , [Control.Invoke\(Delegate, params object\[\]\)](#) ,  
[Control.Invoke<T>\(Func<T>\)](#) , [Control.InvokePaint\(Control, PaintEventArgs\)](#) ,  
[Control.InvokePaintBackground\(Control, PaintEventArgs\)](#) , [Control.IsKeyLocked\(Keys\)](#) ,  
[Control.IsInputChar\(char\)](#) , [Control.IsInputKey\(Keys\)](#) , [Control.IsMnemonic\(char, string\)](#) ,  
[Control.LogicalToDeviceUnits\(int\)](#) , [Control.LogicalToDeviceUnits\(Size\)](#) ,  
[Control.ScaleBitmapLogicalToDevice\(ref Bitmap\)](#) , [Control.NotifyInvalidate\(Rectangle\)](#) ,  
[Control.InvokeOnClick\(Control, EventArgs\)](#) , [Control.OnAutoSizeChanged\(EventArgs\)](#) ,  
[Control.OnBackColorChanged\(EventArgs\)](#) , [Control.OnBindingContextChanged\(EventArgs\)](#) ,  
[Control.OnCausesValidationChanged\(EventArgs\)](#) , [Control.OnContextMenuStripChanged\(EventArgs\)](#) ,  
[Control.OnCursorChanged\(EventArgs\)](#) , [Control.OnDataContextChanged\(EventArgs\)](#) ,  
[Control.OnDockChanged\(EventArgs\)](#) , [Control.OnForeColorChanged\(EventArgs\)](#) ,

[Control.OnNotifyMessage\(Message\)](#) , [Control.OnParentBackColorChanged\(EventArgs\)](#) ,  
[Control.OnParentBackgroundImageChanged\(EventArgs\)](#) ,  
[Control.OnParentBindingContextChanged\(EventArgs\)](#) , [Control.OnParentCursorChanged\(EventArgs\)](#) ,  
[Control.OnParentDataContextChanged\(EventArgs\)](#) , [Control.OnParentEnabledChanged\(EventArgs\)](#) ,  
[Control.OnParentFontChanged\(EventArgs\)](#) , [Control.OnParentForeColorChanged\(EventArgs\)](#) ,  
[Control.OnParentRightToLeftChanged\(EventArgs\)](#) , [Control.OnParentVisibleChanged\(EventArgs\)](#) ,  
[Control.OnPrint\(PaintEventArgs\)](#) , [Control.OnTabIndexChanged\(EventArgs\)](#) ,  
[Control.OnTabStopChanged\(EventArgs\)](#) , [Control.OnClick\(EventArgs\)](#) ,  
[Control.OnClientSizeChanged\(EventArgs\)](#) , [Control.OnControlAdded\(ControlEventArgs\)](#) ,  
[Control.OnControlRemoved\(ControlEventArgs\)](#) , [Control.OnLocationChanged\(EventArgs\)](#) ,  
[Control.OnDoubleClick\(EventArgs\)](#) , [Control.OnDragEnter\(DragEventArgs\)](#) ,  
[Control.OnDragOver\(DragEventArgs\)](#) , [Control.OnDragLeave\(EventArgs\)](#) ,  
[Control.OnDragDrop\(DragEventArgs\)](#) , [Control.OnGiveFeedback\(GiveFeedbackEventArgs\)](#) ,  
[Control.InvokeGotFocus\(Control, EventArgs\)](#) , [Control.OnHelpRequested\(HelpEventArgs\)](#) ,  
[Control.OnInvalidate\(InvalidEventArgs\)](#) , [Control.OnKeyDown\(KeyEventArgs\)](#) ,  
[Control.OnKeyPress\(KeyPressEventArgs\)](#) , [Control.OnKeyUp\(KeyEventArgs\)](#) ,  
[Control.OnLeave\(EventArgs\)](#) , [Control.InvokeLostFocus\(Control, EventArgs\)](#) ,  
[Control.OnLostFocus\(EventArgs\)](#) , [Control.OnMarginChanged\(EventArgs\)](#) ,  
[Control.OnMouseDoubleClick\(MouseEventArgs\)](#) , [Control.OnMouseClick\(MouseEventArgs\)](#) ,  
[Control.OnMouseCaptureChanged\(EventArgs\)](#) , [Control.OnMouseDown\(MouseEventArgs\)](#) ,  
[Control.OnMouseEnter\(EventArgs\)](#) , [Control.OnMouseLeave\(EventArgs\)](#) ,  
[Control.OnDpiChangedBeforeParent\(EventArgs\)](#) , [Control.OnDpiChangedAfterParent\(EventArgs\)](#) ,  
[Control.OnMouseHover\(EventArgs\)](#) , [Control.OnMouseMove\(MouseEventArgs\)](#) ,  
[Control.OnMouseUp\(MouseEventArgs\)](#) ,  
[Control.OnQueryContinueDrag\(QueryContinueDragEventArgs\)](#) ,  
[Control.OnRegionChanged\(EventArgs\)](#) , [Control.OnPreviewKeyDown\(PreviewKeyDownEventArgs\)](#) ,  
[Control.OnSizeChanged\(EventArgs\)](#) , [Control.OnChangeUICues\(UICuesEventArgs\)](#) ,  
[Control.OnSystemColorsChanged\(EventArgs\)](#) , [Control.OnValidating\(CancelEventArgs\)](#) ,  
[Control.OnValidated\(EventArgs\)](#) , [Control.PerformLayout\(\)](#) , [Control.PerformLayout\(Control, string\)](#) ,  
[Control.PointToClient\(Point\)](#) , [Control.PointToScreen\(Point\)](#) ,  
[Control.PreProcessMessage\(ref Message\)](#) , [Control.PreProcessControlMessage\(ref Message\)](#) ,  
[Control.ProcessKeyEventArgs\(ref Message\)](#) , [Control.ProcessKeyMessage\(ref Message\)](#) ,  
[Control.RaiseDragEvent\(object, DragEventArgs\)](#) , [Control.RaisePaintEvent\(object, PaintEventArgs\)](#) ,  
[Control.RecreateHandle\(\)](#) , [Control.RectangleToClient\(Rectangle\)](#) ,  
[Control.RectangleToScreen\(Rectangle\)](#) , [Control.ReflectMessage\(nint, ref Message\)](#) ,  
[Control.Refresh\(\)](#) , [Control.ResetMouseEventArgs\(\)](#) , [Control.ResetText\(\)](#) , [Control.ResumeLayout\(\)](#) ,  
[Control.ResumeLayout\(bool\)](#) , [Control.Scale\(SizeF\)](#) , [Control.Select\(\)](#) ,  
[Control.SelectNextControl\(Control, bool, bool, bool, bool\)](#) , [Control.SendToBack\(\)](#) ,  
[Control.SetBounds\(int, int, int, int\)](#) , [Control.SetBounds\(int, int, int, int, BoundsSpecified\)](#) ,  
[Control.SizeFromClientSize\(Size\)](#) , [Control.SetStyle\(ControlStyles, bool\)](#) , [Control.SetTopLevel\(bool\)](#) ,

[Control.RtlTranslateAlignment\(HorizontalAlignment\)](#) ,  
[Control.RtlTranslateAlignment\(LeftRightAlignment\)](#) ,  
[Control.RtlTranslateAlignment\(ContentAlignment\)](#) ,  
[Control.RtlTranslateHorizontal\(HorizontalAlignment\)](#) ,  
[Control.RtlTranslateLeftRight\(LeftRightAlignment\)](#) , [Control.RtlTranslateContent\(ContentAlignment\)](#) ,  
[Control.Show\(\)](#) , [Control.SuspendLayout\(\)](#) , [Control.Update\(\)](#) , [Control.UpdateBounds\(\)](#) ,  
[Control.UpdateBounds\(int, int, int, int\)](#) , [Control.UpdateBounds\(int, int, int, int, int, int\)](#) ,  
[Control.UpdateZOrder\(\)](#) , [Control.UpdateStyles\(\)](#) , [Control.OnImeModeChanged\(EventArgs\)](#) ,  
[Control.AccessibilityObject](#) , [Control.AccessibleDefaultActionDescription](#) ,  
[Control.AccessibleDescription](#) , [Control.AccessibleName](#) , [Control.AccessibleRole](#) ,  
[Control.AllowDrop](#) , [Control.Anchor](#) , [Control.AutoScrollOffset](#) , [Control.LayoutEngine](#) ,  
[Control.DataContext](#) , [Control.BackgroundImage](#) , [Control.BackgroundImageLayout](#) ,  
[Control.Bottom](#) , [Control.Bounds](#) , [Control.CanFocus](#) , [Control.CanRaiseEvents](#) ,  
[Control.CanSelect](#) , [Control.Capture](#) , [Control.CausesValidation](#) ,  
[Control.CheckForIllegalCrossThreadCalls](#) , [Control.ClientRectangle](#) , [Control.CompanyName](#) ,  
[Control.ContainsFocus](#) , [Control.ContextMenuStrip](#) , [Control.Controls](#) , [Control.Created](#) ,  
[Control.Cursor](#) , [Control.DataBindings](#) , [Control.DefaultBackColor](#) , [Control.DefaultCursor](#) ,  
[Control.DefaultFont](#) , [Control.DefaultForeColor](#) , [Control.DefaultMargin](#) ,  
[Control.DefaultMaximumSize](#) , [Control.DefaultMinimumSize](#) , [Control.DefaultPadding](#) ,  
[Control.DeviceDpi](#) , [Control.IsDisposed](#) , [Control.Disposing](#) , [Control.Dock](#) ,  
[Control.DoubleBuffered](#) , [Control.Enabled](#) , [Control.Focused](#) , [Control.Font](#) ,  
[Control.FontHeight](#) , [Control.ForeColor](#) , [Control.Handle](#) , [Control.HasChildren](#) , [Control.Height](#) ,  
[Control.IsHandleCreated](#) , [Control.InvokeRequired](#) , [Control.IsAccessible](#) ,  
[Control.IsAncestorSiteInDesignMode](#) , [Control.IsMirrored](#) , [Control.Left](#) , [Control.Margin](#) ,  
[Control.ModifierKeys](#) , [Control.MouseButtons](#) , [Control.mousePosition](#) , [Control.Name](#) ,  
[Control.Parent](#) , [Control.ProductName](#) , [Control.ProductVersion](#) , [Control.RecreatingHandle](#) ,  
[Control.Region](#) , [Control.RenderRightToLeft](#) , [Control.ResizeRedraw](#) , [Control.Right](#) ,  
[Control.RightToLeft](#) , [Control.ScaleChildren](#) , [Control.Site](#) , [Control.TabIndex](#) , [Control.TabStop](#) ,  
[Control.Tag](#) , [Control.Top](#) , [Control.TopLevelControl](#) , [Control.ShowKeyboardCues](#) ,  
[Control.ShowFocusCues](#) , [Control.UseWaitCursor](#) , [Control.Visible](#) , [Control.Width](#) ,  
[Control.PreferredSize](#) , [Control.Padding](#) , [Control.ImeMode](#) , [Control.ImeModeBase](#) ,  
[Control.PropagatingImeMode](#) , [Control.BackColorChanged](#) , [Control.BackgroundImageChanged](#) ,  
[Control.BackgroundImageLayoutChanged](#) , [Control.BindingContextChanged](#) ,  
[Control.CausesValidationChanged](#) , [Control.ClientSizeChanged](#) ,  
[Control.ContextMenuStripChanged](#) , [Control.CursorChanged](#) , [Control.DockChanged](#) ,  
[Control.EnabledChanged](#) , [Control.FontChanged](#) , [Control.ForeColorChanged](#) ,  
[Control.LocationChanged](#) , [Control.MarginChanged](#) , [Control.RegionChanged](#) ,  
[Control.RightToLeftChanged](#) , [Control.SizeChanged](#) , [Control.TabIndexChanged](#) ,  
[Control.TabStopChanged](#) , [Control.TextChanged](#) , [Control.VisibleChanged](#) , [Control.Click](#) ,  
[Control.ControlAdded](#) , [Control.ControlRemoved](#) , [Control.DataContextChanged](#) ,

[Control.DragDrop](#) , [Control.DragEnter](#) , [Control.DragOver](#) , [Control.DragLeave](#) ,  
[Control.GiveFeedback](#) , [Control.HandleCreated](#) , [Control.HandleDestroyed](#) ,  
[Control.HelpRequested](#) , [Control.Invalidated](#) , [Control.PaddingChanged](#) , [Control.Paint](#) ,  
[Control.QueryContinueDrag](#) , [Control.QueryAccessibilityHelp](#) , [Control.DoubleClick](#) ,  
[Control.Enter](#) , [Control.GotFocus](#) , [Control.KeyDown](#) , [Control.KeyPress](#) , [Control.KeyUp](#) ,  
[Control.Layout](#) , [Control.Leave](#) , [Control.LostFocus](#) , [Control.MouseClick](#) ,  
[Control.MouseDoubleClick](#) , [Control.MouseCaptureChanged](#) , [Control.MouseDown](#) ,  
[Control.MouseEnter](#) , [Control.MouseLeave](#) , [Control.DpiChangedBeforeParent](#) ,  
[Control.DpiChangedAfterParent](#) , [Control.MouseHover](#) , [Control.MouseMove](#) , [Control.MouseUp](#) ,  
[Control.MouseWheel](#) , [Control.Move](#) , [Control.PreviewKeyDown](#) , [Control.Resize](#) ,  
[Control.ChangeUICues](#) , [Control.StyleChanged](#) , [Control.SystemColorsChanged](#) ,  
[Control.Validating](#) , [Control.Validated](#) , [Control.ParentChanged](#) , [Control.ImeModeChanged](#) ,  
[Component.Dispose\(\)](#) , [Component.GetService\(Type\)](#) , [Component.Container](#) ,  
[Component.DesignMode](#) , [Component.Events](#) , [Component.Dispose](#) ,  
[MarshalByRefObject.GetLifetimeService\(\)](#) , [MarshalByRefObject.InitializeLifetimeService\(\)](#) ,  
[MarshalByRefObject.MemberwiseClone\(bool\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,  
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,  
[object.ReferenceEquals\(object, object\)](#)

## Constructors

### IdeLidar()

```
public IdeLidar()
```

## Methods

### Dispose(bool)

Clean up any resources being used.

```
protected override void Dispose(bool disposing)
```

#### Parameters

disposing [bool](#)

true if managed resources should be disposed; otherwise, false.

## FindOrigin(List<(int, float)>)

```
public static RPoint FindOrigin(List<(int, float)> points)
```

Parameters

points [List<\(int, float\)>](#)

Returns

[RPoint](#)

## PolarToCartesian((int, float))

```
public static RPoint PolarToCartesian((int, float) polar)
```

Parameters

polar [\(int, float\)](#)

Returns

[RPoint](#)

## TrovaPuntiSovrapposti(List<RPoint>, List<RPoint>, int)

```
public List<RPoint> TrovaPuntiSovrapposti(List<RPoint> before, List<RPoint> after,  
int tolleranza)
```

Parameters

before [List<RPoint>](#)

after [List<RPoint>](#)

tolleranza [int](#)

Returns

[List](#) <[RPoint](#)>

# Class Info

Namespace: [WindowFormRobotEmulator](#)

Assembly: WindowFormRobotEmulator.dll

```
public class Info
```

## Inheritance

[object](#) ← Info

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Properties

## data

```
public string data { get; set; }
```

### Property Value

[string](#)

## message

```
public string message { get; set; }
```

### Property Value

[string](#)

# Namespace WindowFormRobotEmulatorTest

## Classes

[Tests](#)

# Class Tests

Namespace: [WindowFormRobotEmulatorTest](#)

Assembly: WindowFormRobotEmulatorTest.dll

```
public class Tests
```

## Inheritance

[object](#) ← Tests

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

# Methods

## CheckBaffiObstacle()

Angolo 0 (destra) collisione 300,340

```
[Test]  
public Task CheckBaffiObstacle()
```

Returns

[Task](#)

## CheckBaffiObstacle1()

Angolo 180 (sx) collisione 260,340

```
[Test]  
public Task CheckBaffiObstacle1()
```

Returns

[Task ↗](#)

## CheckBaffiObstacle2()

Angolo 90 (dx) collisione 260,340

[Test]

```
public Task CheckBaffiObstacle2()
```

Returns

[Task ↗](#)

## CheckBaffiObstacle3()

Angolo 270 (sx) collisione 260,340

[Test]

```
public Task CheckBaffiObstacle3()
```

Returns

[Task ↗](#)

## CheckBaffiObstacleZeroDistance()

Angolo 0 (destra) collisione 280,320

[Test]

```
public Task CheckBaffiObstacleZeroDistance()
```

Returns

[Task ↗](#)

## CheckFrontObstacle()

```
[Test]  
public Task CheckFrontObstacle()
```

Returns

[Task](#)

## CheckSimulateForwardBaffoCollision()

```
[Test]  
public Task CheckSimulateForwardBaffoCollision()
```

Returns

[Task](#)

## CheckSimulateForwardBaffoCollision1()

```
[Test]  
public Task CheckSimulateForwardBaffoCollision1()
```

Returns

[Task](#)

## CheckSimulateForwardSensorCollision1()

```
[Test]  
public Task CheckSimulateForwardSensorCollision1()
```

Returns

[Task](#)

## CheckSimulateForwardZeroDistance()

```
[Test]  
public Task CheckSimulateForwardZeroDistance()
```

Returns

[Task](#)

## Setup()

```
[SetUp]  
public void Setup()
```