

Namespace MainRobot

Classes

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[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 LLLMApiCall

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

Assembly: MainRobot.dll

```
public class LLLMApiCall
```

Inheritance

[object](#) ← LLLMApiCall

Inherited Members

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

Constructors

LLLMApiCall(string, string, string, string)

```
public LLLMApiCall(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](#) ,
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[Control.CheckForIllegalCrossThreadCalls](#) , [Control.ClientRectangle](#) , [Control.CompanyName](#) ,
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[Control.IsAncestorSiteInDesignMode](#) , [Control.IsMirrored](#) , [Control.Left](#) , [Control.Margin](#) ,
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[Control.PropagatingImeMode](#) , [Control.BackColorChanged](#) , [Control.BackgroundImageChanged](#) ,
[Control.BackgroundImageLayoutChanged](#) , [Control.BindingContextChanged](#) ,
[Control.CausesValidationChanged](#) , [Control.ClientSizeChanged](#) ,
[Control.ContextMenuStripChanged](#) , [Control.CursorChanged](#) , [Control.DockChanged](#) ,
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[Control.LocationChanged](#) , [Control.MarginChanged](#) , [Control.RegionChanged](#) ,
[Control.RightToLeftChanged](#) , [Control.SizeChanged](#) , [Control.TabIndexChanged](#) ,
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[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](#) ,
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[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\(bool\)](#) ,
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[Control.Invoke\(Delegate\)](#) , [Control.Invoke\(Delegate, params object\[\]\)](#) ,
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[Control.InvokePaintBackground\(Control, PaintEventArgs\)](#) , [Control.IsKeyLocked\(Keys\)](#) ,
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[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](#) ,
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[Control.CausesValidationChanged](#) , [Control.ClientSizeChanged](#) ,
[Control.ContextMenuStripChanged](#) , [Control.CursorChanged](#) , [Control.DockChanged](#) ,
[Control.EnabledChanged](#) , [Control.FontChanged](#) , [Control.ForeColorChanged](#) ,
[Control.LocationChanged](#) , [Control.MarginChanged](#) , [Control.RegionChanged](#) ,
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[Control.ControlAdded](#) , [Control.ControlRemoved](#) , [Control.DataContextChanged](#) ,

[Control.DragDrop](#) , [Control.DragEnter](#) , [Control.DragOver](#) , [Control.DragLeave](#) ,
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[Control.HelpRequested](#) , [Control.Invalidated](#) , [Control.PaddingChanged](#) , [Control.Paint](#) ,
[Control.QueryContinueDrag](#) , [Control.QueryAccessibilityHelp](#) , [Control.DoubleClick](#) ,
[Control.Enter](#) , [Control.GotFocus](#) , [Control.KeyDown](#) , [Control.KeyPress](#) , [Control.KeyUp](#) ,
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[Control.MouseDoubleClick](#) , [Control.MouseCaptureChanged](#) , [Control.MouseDown](#) ,
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[Control.DpiChangedAfterParent](#) , [Control.MouseHover](#) , [Control.MouseMove](#) , [Control.MouseUp](#) ,
[Control.MouseWheel](#) , [Control.Move](#) , [Control.PreviewKeyDown](#) , [Control.Resize](#) ,
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[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()
```