RWA2_ENPM809Y

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

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

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

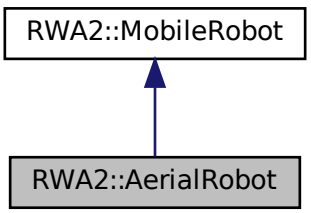
Class Documentation

3.1 RWA2::AerialRobot Class Reference

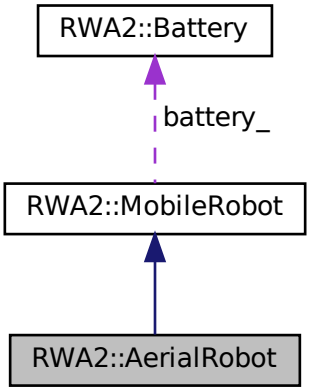
Class to represent the aerial robot.

`#include <aerial_robot.h>`

Inheritance diagram for RWA2::AerialRobot:



Collaboration diagram for RWA2::AerialRobot:



Public Member Functions

- AerialRobot (double x, double y, double orientation, double speed, std::string model, std::string battery_↩ model, int battery_charge, double altitude)

  Construct a new Legged Robot object.
- void move (double distance, double angle) override

  Overriding function to move the aerial robot.
- void print_Status () override

  Overriding function to print the status of the aerial robot.

Protected Member Functions

- void rotate (double angle) override

  Overriding function to rotate the aquatic robot.

Additional Inherited Members

3.1.1 Detailed Description

Class to represent the aerial robot.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 AerialRobot()

```
RWA2::AerialRobot::AerialRobot (
            double x,
            double y,
            double orientation,
            double speed,
            std::string model,
            std::string battery_model,
            int battery_charge,
            double altitude )  [inline]
```

Construct a new Legged Robot object.

Parameters

x	// x coordinate of the robot
y	// y coordinate of the robot
orientation	// orientation of the robot
speed	// speed of the robot
model	// model of the robot
battery_model	// battery model of the robot
battery_charge	// battery charge of the robot
*altitude_*	// altitude of the robot in meter

3.1.3 Member Function Documentation

3.1.3.1 move()

```
void RWA2::AerialRobot::move (
            double distance,
            double angle )  [override], [virtual]
```

Overriding function to move the aerial robot.

Parameters

distance	// distance to move
angle	// angle to move

Implements RWA2::MobileRobot.

3.1.3.2 print_Status()

```
void RWA2::AerialRobot::print_Status ( )  [override], [virtual]
```

Overriding function to print the status of the aerial robot.

Reimplemented from RWA2::MobileRobot.

3.1.3.3 rotate()

```
void RWA2::AerialRobot::rotate (
            double angle )  [override], [protected], [virtual]
```

Overriding function to rotate the aquatic robot.

Parameters

angle	// angle to rotate

Reimplemented from RWA2::MobileRobot.

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

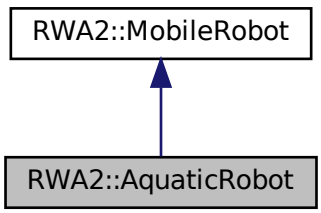
- include/aerial_robot.h

3.2 RWA2::AquaticRobot Class Reference

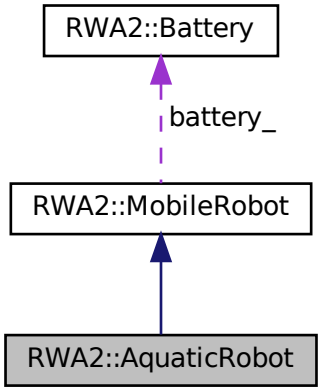
Class to represent the aquatic robot.

```
#include <aquatic_robot.h>
```

Inheritance diagram for RWA2::AquaticRobot:



Collaboration diagram for RWA2::AquaticRobot:



Public Member Functions

- AquaticRobot (double x, double y, double orientation, double speed, std::string model, std::string battery_↩ model, int battery_charge, double depth)

  Construct a new Legged Robot object.
- void move (double distance, double angle) override

  Overriding function to move the aquatic robot.
- void print_Status () override

  Overriding function to print the status of the aquatic robot.

Protected Member Functions

- void rotate (double angle) override

  Overriding function to rotate the aquatic robot.

Additional Inherited Members

3.2.1 Detailed Description

Class to represent the aquatic robot.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 AquaticRobot()

```
RWA2::AquaticRobot::AquaticRobot (
            double x,
            double y,
            double orientation,
            double speed,
            std::string model,
            std::string battery_model,
            int battery_charge,
            double depth )  [inline]
```

Construct a new Legged Robot object.

Parameters

x	// x coordinate of the robot
y	// y coordinate of the robot
orientation	// orientation of the robot
speed	// speed of the robot
model	// model of the robot
battery_model	// battery model of the robot
battery_charge	// battery charge of the robot
depth	// depth of the robot in meter

3.2.3 Member Function Documentation

3.2.3.1 move()

```
void RWA2::AquaticRobot::move (
            double distance,
            double angle )  [override], [virtual]
```

Overriding function to move the aquatic robot.

Parameters

distance	// distance to move
angle	// angle to move

Implements RWA2::MobileRobot.

3.2.3.2 print_Status()

```
void RWA2::AquaticRobot::print_Status ( )  [override], [virtual]
```

Overriding function to print the status of the aquatic robot.

Reimplemented from RWA2::MobileRobot.

3.2.3.3 rotate()

```
void RWA2::AquaticRobot::rotate (
            double angle )  [override], [protected], [virtual]
```

Overriding function to rotate the aquatic robot.

Parameters

angle	// angle to rotate

Reimplemented from RWA2::MobileRobot.

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

- include/aquatic_robot.h

3.3 RWA2::Battery Class Reference

Class to represent the battery of the robot.

```
#include <battery.h>
```

Public Member Functions

- Battery (const std::string &model, int initial_charge=100)
  Construct a new Battery object.
- void start_charging ()
  Method to start charging the battery.
- void discharge (double amount)
  Method to discharge the battery.
- int get_current_charge () const
  Get the current charge object.

3.3.1 Detailed Description

Class to represent the battery of the robot.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 Battery()

```
RWA2::Battery::Battery (
            const std::string & model,
            int initial_charge = 100 )  [explicit]
```

Construct a new Battery object.

Parameters

model	// model of the battery
initial_charge	// initial charge of the battery

3.3.3 Member Function Documentation

3.3.3.1 discharge()

```
void RWA2::Battery::discharge (
            double amount )
```

Method to discharge the battery.

Parameters

amount	// amount of battery to discharge

3.3.3.2 get_current_charge()

```
int RWA2::Battery::get_current_charge ( ) const
```

Get the current charge object.

Returns

int // current charge of the battery

3.3.3.3 start_charging()

```
void RWA2::Battery::start_charging ( )
```

Method to start charging the battery.

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

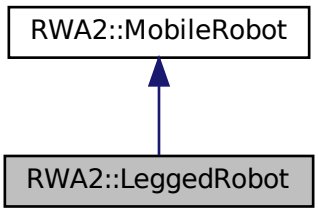
- include/battery.h

3.4 RWA2::LeggedRobot Class Reference

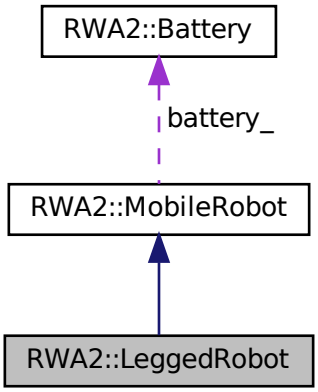
Class to represent the legged robot.

`#include <legged_robot.h>`

Inheritance diagram for RWA2::LeggedRobot:



Collaboration diagram for RWA2::LeggedRobot:



Public Member Functions

- void move (double distance, double angle) override

  Overriding function to move the legged robot.
- void print_Status () override

  Overriding function to print the status of the legged robot.
- LeggedRobot (double x, double y, double orientation, double speed, std::string model, std::string battery_↩ model, int battery_charge, double height)

  Construct a new Legged Robot object.

Protected Member Functions

- void rotate (double angle) override

  Overriding function to rotate the legged robot.

Additional Inherited Members

3.4.1 Detailed Description

Class to represent the legged robot.

3.4.2 Constructor & Destructor Documentation

3.4.2.1 LeggedRobot()

```
RWA2::LeggedRobot::LeggedRobot (
            double x,
            double y,
            double orientation,
            double speed,
            std::string model,
            std::string battery_model,
            int battery_charge,
            double height )  [inline]
```

Construct a new Legged Robot object.

Parameters

x	// x coordinate of the robot
y	// y coordinate of the robot
orientation	// orientation of the robot
speed	// speed of the robot
model	// model of the robot
battery_model	// battery model of the robot
battery_charge	// battery charge of the robot
height	// height of the robot

3.4.3 Member Function Documentation

3.4.3.1 move()

```
void RWA2::LeggedRobot::move (
            double distance,
            double angle )  [override], [virtual]
```

Overriding function to move the legged robot.

Parameters

distance	// distance to move
angle	// angle to move

Implements RWA2::MobileRobot.

3.4.3.2 print_Status()

```
void RWA2::LeggedRobot::print_Status ( )  [override], [virtual]
```

Overriding function to print the status of the legged robot.

Reimplemented from RWA2::MobileRobot.

3.4.3.3 rotate()

```
void RWA2::LeggedRobot::rotate (
            double angle )  [override], [protected], [virtual]
```

Overriding function to rotate the legged robot.

Parameters

angle	// angle to rotate

Reimplemented from RWA2::MobileRobot.

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

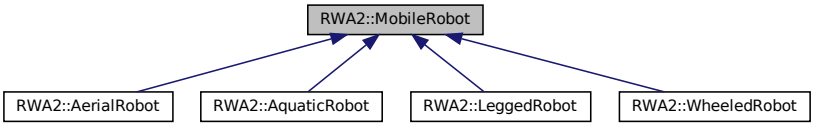
- include/legged_robot.h

3.5 RWA2::MobileRobot Class Reference

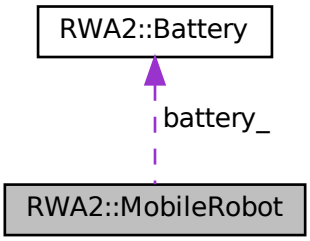
Class to represent the mobile robot.

`#include <mobile_robot.h>`

Inheritance diagram for RWA2::MobileRobot:



Collaboration diagram for RWA2::MobileRobot:



Public Member Functions

- **MobileRobot** (double x, double y, double orientation, double speed, std::string model, std::string battery_↩ model, int battery_charge)
- virtual void **move** (double distance, double angle)=0
- virtual void **print_Status** ()
- void **add_Sensor** (std::unique_ptr< RWA2::Sensor > sensor)
- void **get_sensor_Values** (uint duration)

Protected Member Functions

- virtual void **rotate** (double angle)

Protected Attributes

- std::pair< double, double > **position_**
- double **orientation_**
- double **speed_** {0.0}
- std::string **model_**
- RWA2::Battery **battery_**
- std::vector< std::unique_ptr< RWA2::Sensor > > **sensors_**

3.5.1 Detailed Description

Class to represent the mobile robot.

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

- include/mobile_robot.h

3.6 RWA2::Sensor Class Reference

Class to represent the sensor.

`#include <sensor.h>`

Public Member Functions

- Sensor (const std::string &model)

  Construct a new Sensor object.
- void read_data (unsigned int duration)

  Overriding function to print the status of the sensor.

3.6.1 Detailed Description

Class to represent the sensor.

3.6.2 Constructor & Destructor Documentation

3.6.2.1 Sensor()

```
RWA2::Sensor::Sensor (
            const std::string & model )  [explicit]
```

Construct a new Sensor object.

Parameters

model	// model of the sensor

3.6.3 Member Function Documentation

3.6.3.1 read_data()

```
void RWA2::Sensor::read_data (
            unsigned int duration )
```

Overriding function to print the status of the sensor.

Parameters

duration	// duration of the sensor reading

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

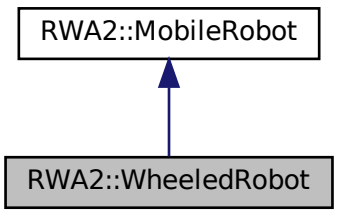
- include/sensor.h

3.7 RWA2::WheeledRobot Class Reference

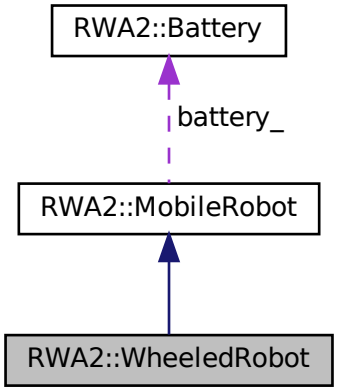
Class to represent the wheeled robot.

```
#include <wheeled_robot.h>
```

Inheritance diagram for RWA2::WheeledRobot:



Collaboration diagram for RWA2::WheeledRobot:



Public Member Functions

- WheeledRobot (double x, double y, double orientation, double speed, std::string model, std::string battery_↩ model, int battery_charge, double desired_speed)

  Construct a new Wheeled Robot object.
- void move (double distance, double angle) override

  Overriding function to move the wheeled robot.
- void print_Status () override

  Overriding function to print the status of the wheeled robot.

Protected Member Functions

- void rotate (double angle) override

  Overriding function to rotate the wheeled robot.

Additional Inherited Members

3.7.1 Detailed Description

Class to represent the wheeled robot.

3.7.2 Constructor & Destructor Documentation

3.7.2.1 WheeledRobot()

```
RWA2::WheeledRobot::WheeledRobot (
            double x,
            double y,
            double orientation,
            double speed,
            std::string model,
            std::string battery_model,
            int battery_charge,
            double desired_speed )  [inline]
```

Construct a new Wheeled Robot object.

Parameters

x	// x coordinate of the robot
y	// y coordinate of the robot
orientation	// orientation of the robot
speed	// speed of the robot
model	// model of the robot
battery_model	// battery model of the robot
battery_charge	// maximum battery charge of the robot
desired_speed	// desired speed of the robot

3.7.3 Member Function Documentation

3.7.3.1 move()

```
void RWA2::WheeledRobot::move (
            double distance,
            double angle )  [override], [virtual]
```

Overriding function to move the wheeled robot.

Parameters

distance	// distance to move
angle	// angle to rotate

Implements RWA2::MobileRobot.

3.7.3.2 print_Status()

```
void RWA2::WheeledRobot::print_Status ( )  [override], [virtual]
```

Overriding function to print the status of the wheeled robot.

Reimplemented from RWA2::MobileRobot.

3.7.3.3 rotate()

```
void RWA2::WheeledRobot::rotate (
            double angle )  [override], [protected], [virtual]
```

Overriding function to rotate the wheeled robot.

Parameters

angle	// angle to rotate

Reimplemented from RWA2::MobileRobot.

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

- include/wheeled_robot.h