PSE_2018_Gruppe1

1.0

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1.1 Class Hierarchy

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

Chapter 2

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2.1 Class List

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

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

Chapter 4

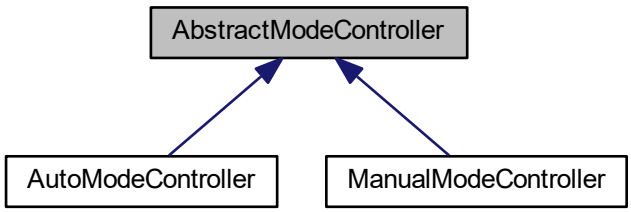
Class Documentation

4.1 AbstractModeController Class Reference

Abstract base class for AutoModeController and ManualModeController.

`#include <AbstractModeController.hpp>`

Inheritance diagram for AbstractModeController:



Public Member Functions

- virtual ~AbstractModeController ()
- AbstractModeController (std::shared_ptr< DriveCommandHandler > driveCommandHandler)

  Constructor for AbstractModeController.
- virtual void abort ()

  Aborts the execution of the AbstractModeController.
- virtual void step ()=0

  has to be called in a loop for continuous execution of the controller.

Protected Attributes

- const std::shared_ptr< DriveCommandHandler > m_driveCommandHandler

4.1.1 Detailed Description

Abstract base class for AutoModeController and ManualModeController.

Definition at line 19 of file AbstractModeController.hpp.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 ~AbstractModeController()

```
AbstractModeController::~AbstractModeController ( )  [virtual], [default]
```

4.1.2.2 AbstractModeController()

```
AbstractModeController::AbstractModeController (
            std::shared_ptr< DriveCommandHandler > driveCommandHandler )  [explicit]
```

Constructor for AbstractModeController.

All ModeControllers need a DriveCommandHandler in order to wire up their submodules (publish-subscribe)

Parameters

driveCommandHandler	a pointer to the DriveCommandHandler that was instantiated in main.c

Definition at line 12 of file AbstractModeController.cpp.

4.1.3 Member Function Documentation

4.1.3.1 abort()

```
void AbstractModeController::abort ( )  [virtual]
```

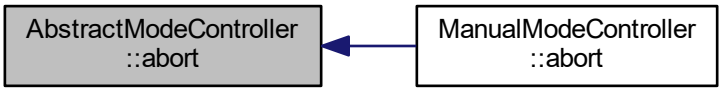
Aborts the execution of the AbstractModeController.

All ModeControllers have to be abortable in case that the user presses ctrl + c

Reimplemented in ManualModeController.

Definition at line 17 of file AbstractModeController.cpp.

Here is the caller graph for this function:



4.1.3.2 step()

```
virtual void AbstractModeController::step ( )  [pure virtual]
```

has to be called in a loop for continuous execution of the controller.

Implemented in ManualModeController, and AutoModeController.

4.1.4 Member Data Documentation

4.1.4.1 m_driveCommandHandler

```
const std::shared_ptr<DriveCommandHandler> AbstractModeController::m_driveCommandHandler
[protected]
```

Definition at line 43 of file AbstractModeController.hpp.

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

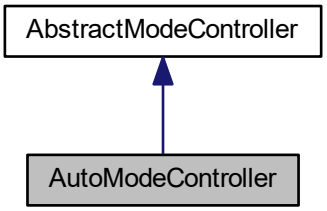
- PSE_2018_Gruppe1/src/AbstractModeController.hpp
- PSE_2018_Gruppe1/src/AbstractModeController.cpp

4.2 AutoModeController Class Reference

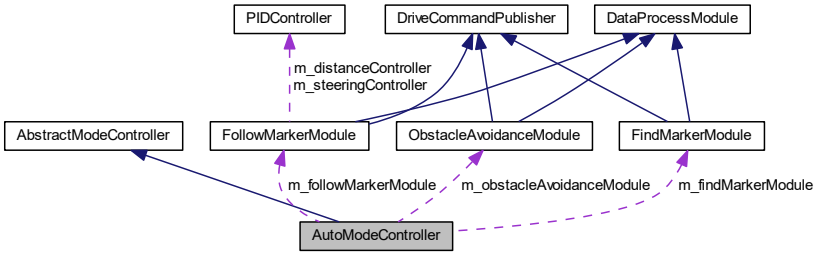
Controls the execution of all three submodules in automatic driving mode.

`#include <AutoModeController.hpp>`

Inheritance diagram for AutoModeController:



Collaboration diagram for AutoModeController:



Public Member Functions

- ~AutoModeController () override
- AutoModeController (std::shared_ptr< DriveCommandHandler > driveCommandHandler)

  Constructs a new AutoModeController.
- void setDistance (double distance)

  Sets the desired distance for the MarkerFollowModule.
- void step () override

  has to be called in a loop for continuous execution of the controller.

Protected Attributes

- FindMarkerModule m_findMarkerModule
- FollowMarkerModule m_followMarkerModule
- ObstacleAvoidanceModule m_obstacleAvoidanceModule

Static Protected Attributes

- static constexpr double DEFAULT_DISTANCE = 0.3

4.2.1 Detailed Description

Controls the execution of all three submodules in automatic driving mode.

Definition at line 19 of file AutoModeController.hpp.

4.2.2 Constructor & Destructor Documentation

4.2.2.1 ~AutoModeController()

```
AutoModeController::~AutoModeController ( )  [override], [default]
```

4.2.2.2 AutoModeController()

```
AutoModeController::AutoModeController (
            std::shared_ptr< DriveCommandHandler > driveCommandHandler )  [explicit]
```

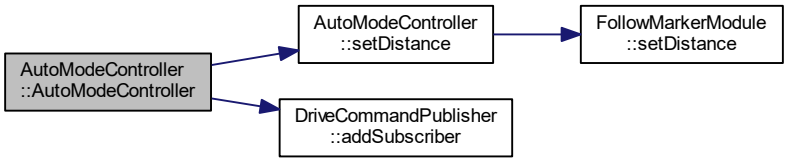
Constructs a new AutoModeController.

Parameters

driveCommandHandler	is needed to wire up the three submodules to publish DriveCommands

Definition at line 12 of file AutoModeController.cpp.

Here is the call graph for this function:



4.2.3 Member Function Documentation

4.2.3.1 setDistance()

```
void AutoModeController::setDistance (
            double distance )
```

Sets the desired distance for the MarkerFollowModule.

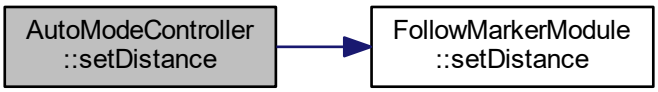
Sets the desired distance to the followed marker.

Parameters

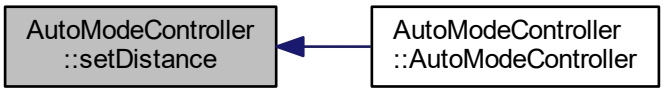
distance	desired distance in [m]
distance	

Definition at line 29 of file AutoModeController.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.2.3.2 step()

```
void AutoModeController::step ( )  [override], [virtual]
```

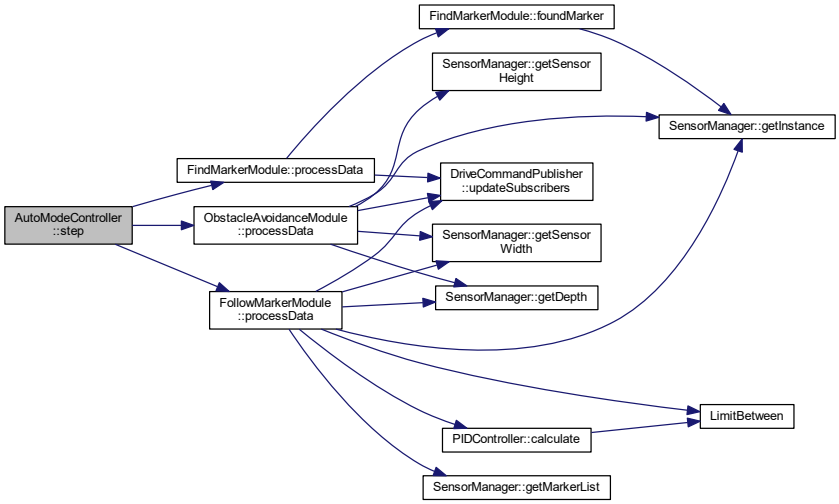
has to be called in a loop for continuous execution of the controller.

Triggers all DriveCommandModules to process the Sensor-Data.

Implements AbstractModeController.

Definition at line 34 of file AutoModeController.cpp.

Here is the call graph for this function:



4.2.4 Member Data Documentation

4.2.4.1 DEFAULT_DISTANCE

```
constexpr double AutoModeController::DEFAULT_DISTANCE = 0.3  [static], [protected]
```

Definition at line 46 of file AutoModeController.hpp.

4.2.4.2 m_findMarkerModule

```
FindMarkerModule AutoModeController::m_findMarkerModule  [protected]
```

Definition at line 42 of file AutoModeController.hpp.

4.2.4.3 m_followMarkerModule

```
FollowMarkerModule AutoModeController::m_followMarkerModule  [protected]
```

Definition at line 43 of file AutoModeController.hpp.

4.2.4.4 m_obstacleAvoidanceModule

```
ObstacleAvoidanceModule AutoModeController::m_obstacleAvoidanceModule  [protected]
```

Definition at line 44 of file AutoModeController.hpp.

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

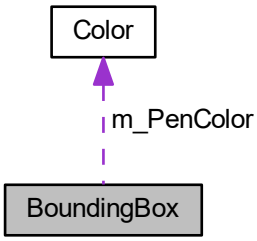
- PSE_2018_Gruppe1/src/AutoModeController.hpp
- PSE_2018_Gruppe1/src/AutoModeController.cpp

4.3 BoundingBox Class Reference

Helper class to track and draw bounding boxes on screen.

```
#include <BoundingBox.hpp>
```

Collaboration diagram for BoundingBox:



Public Member Functions

- BoundingBox ()

  Default constructor (empty box).
- BoundingBox (int x, int y, int width, int height, int regionID)

  Parametrized constructor.
- void join (const BoundingBox &other)

  Expand this box to also bound the other box.
- bool isOverlapping (const BoundingBox &other) const

  Check if this box overlaps the other box.
- int x () const

  Get x (left) coordinate.
- int y () const

  Get y (top) coordinate.
- int getWidth () const

  Get width.

- int getHeight () const

  Get height.
- int getArea () const

  Get area.
- int getRegionID () const

  Get region id.
- void setPen (Color color)

  Set outline color.

Static Public Member Functions

- static bool xLt (const BoundingBox &first, const BoundingBox &second)
- static bool yLt (const BoundingBox &first, const BoundingBox &second)
- static bool areaLt (const BoundingBox &first, const BoundingBox &second)

Protected Attributes

- int m_X
- int m_Y
- int m_Width
- int m_Height
- int m_RegionID
- Color m_PenColor
- bool m_IsEmpty

4.3.1 Detailed Description

Helper class to track and draw bounding boxes on screen.

Definition at line 37 of file BoundingBox.hpp.

4.3.2 Constructor & Destructor Documentation

4.3.2.1 BoundingBox() [1/2]

```
BoundingBox::BoundingBox ( )  [inline]
```

Default constructor (empty box).

Definition at line 40 of file BoundingBox.hpp.

4.3.2.2 BoundingBox() [2/2]

```
BoundingBox::BoundingBox (
            int x,
            int y,
            int width,
            int height,
            int regionID )  [inline]
```

Parametrized constructor.

Definition at line 45 of file BoundingBox.hpp.

4.3.3 Member Function Documentation

4.3.3.1 areaLt()

```
static bool BoundingBox::areaLt (
            const BoundingBox & first,
            const BoundingBox & second )  [inline], [static]
```

Definition at line 87 of file BoundingBox.hpp.

Here is the call graph for this function:

4.3.3.2 getArea()

```
int BoundingBox::getArea ( ) const  [inline]
```

Get area.

Definition at line 73 of file BoundingBox.hpp.

Here is the caller graph for this function:

4.3.3.3 getHeight()

```
int BoundingBox::getHeight ( ) const  [inline]
```

Get height.

Definition at line 70 of file BoundingBox.hpp.

4.3.3.4 getRegionID()

```
int BoundingBox::getRegionID ( ) const  [inline]
```

Get region id.

Definition at line 78 of file BoundingBox.hpp.

4.3.3.5 getWidth()

```
int BoundingBox::getWidth ( ) const  [inline]
```

Get width.

Definition at line 67 of file BoundingBox.hpp.

4.3.3.6 isOverlapping()

```
bool BoundingBox::isOverlapping (
            const BoundingBox & other ) const  [inline]
```

Check if this box overlaps the other box.

Definition at line 56 of file BoundingBox.hpp.

4.3.3.7 join()

```
void BoundingBox::join (
            const BoundingBox & other )  [inline]
```

Expand this box to also bound the other box.

Definition at line 51 of file BoundingBox.hpp.

4.3.3.8 setPen()

```
void BoundingBox::setPen (
            Color color )  [inline]
```

Set outline color.

Definition at line 81 of file BoundingBox.hpp.

4.3.3.9 x()

```
int BoundingBox::x ( ) const  [inline]
```

Get x (left) coordinate.

Definition at line 61 of file BoundingBox.hpp.

Here is the caller graph for this function:

4.3.3.10 xLt()

```
static bool BoundingBox::xLt (
            const BoundingBox & first,
            const BoundingBox & second )  [inline], [static]
```

Definition at line 83 of file BoundingBox.hpp.

Here is the call graph for this function:

4.3.3.11 y()

```
int BoundingBox::y ( ) const  [inline]
```

Get y (top) coordinate.

Definition at line 64 of file BoundingBox.hpp.

Here is the caller graph for this function:

4.3.3.12 yLt()

```
static bool BoundingBox::yLt (
            const BoundingBox & first,
            const BoundingBox & second )  [inline], [static]
```

Definition at line 85 of file BoundingBox.hpp.

Here is the call graph for this function:

4.3.4 Member Data Documentation

4.3.4.1 m_Height

```
int BoundingBox::m_Height  [protected]
```

Definition at line 93 of file BoundingBox.hpp.

4.3.4.2 m_IsEmpty

```
bool BoundingBox::m_IsEmpty  [protected]
```

Definition at line 98 of file BoundingBox.hpp.

4.3.4.3 m_PenColor

```
Color BoundingBox::m_PenColor  [protected]
```

Definition at line 96 of file BoundingBox.hpp.

4.3.4.4 m_RegionID

```
int BoundingBox::m_RegionID  [protected]
```

Definition at line 94 of file BoundingBox.hpp.

4.3.4.5 m_Width

```
int BoundingBox::m_Width  [protected]
```

Definition at line 93 of file BoundingBox.hpp.

4.3.4.6 m_X

```
int BoundingBox::m_X  [protected]
```

Definition at line 92 of file BoundingBox.hpp.

4.3.4.7 m_Y

```
int BoundingBox::m_Y  [protected]
```

Definition at line 92 of file BoundingBox.hpp.

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

- PSE_2018_Gruppe1/src/test/mocks/BoundingBox.hpp

4.4 Color Class Reference

RGB Color.

```
#include <BoundingBox.hpp>
```

Public Member Functions

- Color ()
  Default constructor (black).
- Color (unsigned char r, unsigned char g, unsigned char b)
  Parametrized constructor.
- unsigned char r () const
  Get red component.
- unsigned char g () const
  Get green component.
- unsigned char b () const
  Get blue component.

Private Attributes

- unsigned char m_R
- unsigned char m_G
- unsigned char m_B

4.4.1 Detailed Description

RGB Color.

Definition at line 6 of file BoundingBox.hpp.

4.4.2 Constructor & Destructor Documentation

4.4.2.1 Color() [1/2]

```
Color::Color ( )  [inline]
```

Default constructor (black).

Definition at line 9 of file BoundingBox.hpp.

4.4.2.2 Color() [2/2]

```
Color::Color (
            unsigned char r,
            unsigned char g,
            unsigned char b )  [inline]
```

Parametrized constructor.

Definition at line 13 of file BoundingBox.hpp.

4.4.3 Member Function Documentation

4.4.3.1 b()

```
unsigned char Color::b ( ) const  [inline]
```

Get blue component.

Definition at line 28 of file BoundingBox.hpp.

4.4.3.2 g()

```
unsigned char Color::g ( ) const  [inline]
```

Get green component.

Definition at line 23 of file BoundingBox.hpp.

4.4.3.3 r()

```
unsigned char Color::r ( ) const  [inline]
```

Get red component.

Definition at line 18 of file BoundingBox.hpp.

4.4.4 Member Data Documentation

4.4.4.1 m_B

```
unsigned char Color::m_B  [private]
```

Definition at line 33 of file BoundingBox.hpp.

4.4.4.2 m_G

```
unsigned char Color::m_G  [private]
```

Definition at line 33 of file BoundingBox.hpp.

4.4.4.3 m_R

```
unsigned char Color::m_R  [private]
```

Definition at line 33 of file BoundingBox.hpp.

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

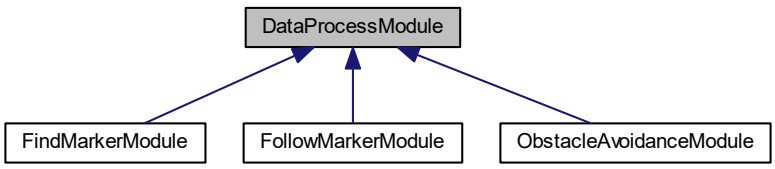
- PSE_2018_Gruppe1/src/test/mocks/BoundingBox.hpp

4.5 DataProcessModule Class Reference

All automatic mode modules that have to work with data from the SensorManager use this base class as their interface.

```
#include <DataProcessModule.hpp>
```

Inheritance diagram for DataProcessModule:



Public Member Functions

- virtual void processData ()=0

  Pure virtual interface method that has to be implemented by every module that uses the SensorManager.

4.5.1 Detailed Description

All automatic mode modules that have to work with data from the SensorManager use this base class as their interface.

Definition at line 16 of file DataProcessModule.hpp.

4.5.2 Member Function Documentation

4.5.2.1 processData()

```
virtual void DataProcessModule::processData ( )  [pure virtual]
```

Pure virtual interface method that has to be implemented by every module that uses the SensorManager.

Caller must ensure that SensorManager::runOnce() has been called before.

Implemented in FindMarkerModule, FollowMarkerModule, and ObstacleAvoidanceModule.

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

- PSE_2018_Gruppe1/src/DataProcessModule.hpp

4.6 DriveCommand Struct Reference

This struct is used during communication between DriveCommandPublishers and DriveCommandSubscribers.

```
#include <DriveCommand.hpp>
```

Public Member Functions

- DriveCommand (DriveCommandPublisherType source, int speed, int steering)

  Constructs a new DriveCommand for publishing to a DriveCommandSubscriber.

Public Attributes

- DriveCommandPublisherType source
- int speed

  the DriveCommandSubscriber can use this to assign priorities to the modules
- int steering

4.6.1 Detailed Description

This struct is used during communication between DriveCommandPublishers and DriveCommandSubscribers.

Definition at line 15 of file DriveCommand.hpp.

4.6.2 Constructor & Destructor Documentation

4.6.2.1 DriveCommand()

```
DriveCommand::DriveCommand (
            DriveCommandPublisherType source,
            int speed,
            int steering )  [inline]
```

Constructs a new DriveCommand for publishing to a DriveCommandSubscriber.

Parameters

source	The DriveCommandPublisherType of the publishing object
speed	The desired speed (range: -100...100)
steering	The desired ratio between left motor speed and right motor speed (range: -100...100)

Definition at line 24 of file DriveCommand.hpp.

4.6.3 Member Data Documentation

4.6.3.1 source

```
DriveCommandPublisherType DriveCommand::source
```

Definition at line 31 of file DriveCommand.hpp.

4.6.3.2 speed

```
int DriveCommand::speed
```

the DriveCommandSubscriber can use this to assign priorities to the modules

Definition at line 32 of file DriveCommand.hpp.

4.6.3.3 steering

```
int DriveCommand::steering
```

Definition at line 33 of file DriveCommand.hpp.

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

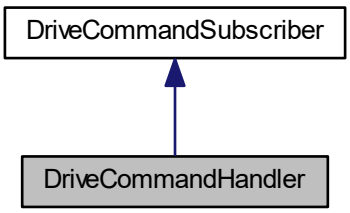
- PSE_2018_Gruppe1/src/DriveCommand.hpp

4.7 DriveCommandHandler Class Reference

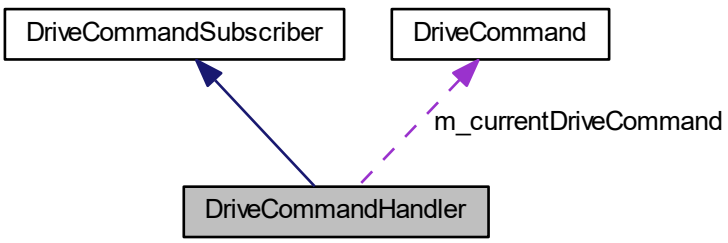
This class can receive DriveCommand structs, prioritizes them by their source and forwards the values to the DriveController once updateMotor() gets called.

```
#include <DriveCommandHandler.hpp>
```

Inheritance diagram for DriveCommandHandler:



Collaboration diagram for DriveCommandHandler:



Public Member Functions

- DriveCommandHandler ()

  Initialises the currentDriveCommand with MANUAL_COMMAND, (speed)=0, (steering)=0.
- ~DriveCommandHandler () override
- void trySetDriveCommand (DriveCommand command) override

  Accepts a DriveCommand from a DriveCommandPublisher.
- void updateMotor ()

  Flushes the currently held DriveCommand to the DriveController.
- void forceDriveCommand (DriveCommand command) override

  forces a specific drive command to be executed instead of suggesting it like in trySetDriveCommand()

Private Attributes

- DriveCommand m_currentDriveCommand

4.7.1 Detailed Description

This class can receive DriveCommand structs, prioritizes them by their source and forwards the values to the DriveController once updateMotor() gets called.

Definition at line 18 of file DriveCommandHandler.hpp.

4.7.2 Constructor & Destructor Documentation

4.7.2.1 DriveCommandHandler()

```
DriveCommandHandler::DriveCommandHandler ( )
```

Initialises the currentDriveCommand with MANUAL_COMMAND, (speed)=0, (steering)=0.

Definition at line 11 of file DriveCommandHandler.cpp.

4.7.2.2 ~DriveCommandHandler()

```
DriveCommandHandler::~DriveCommandHandler ( )  [override], [default]
```

4.7.3 Member Function Documentation

4.7.3.1 forceDriveCommand()

```
void DriveCommandHandler::forceDriveCommand (
            DriveCommand command )  [override], [virtual]
```

forces a specific drive command to be executed instead of suggesting it like in trySetDriveCommand()

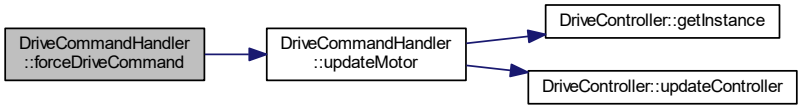
Parameters

command	The DriveCommand to be executed

Implements DriveCommandSubscriber.

Definition at line 23 of file DriveCommandHandler.cpp.

Here is the call graph for this function:



4.7.3.2 trySetDriveCommand()

```
void DriveCommandHandler::trySetDriveCommand (
            DriveCommand command )  [override], [virtual]
```

Accepts a DriveCommand from a DriveCommandPublisher.

If its priority is higher than the last DriveCommand received after the last call to updateMotor(), the old DriveCommand is discarded and the new one is saved instead.

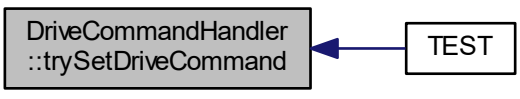
Parameters

command	The DriveCommand as suggested by one of the DriveCommandPublisher s

Implements DriveCommandSubscriber.

Definition at line 15 of file DriveCommandHandler.cpp.

Here is the caller graph for this function:



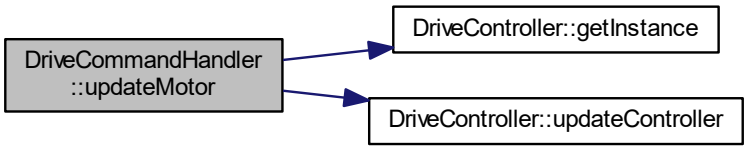
4.7.3.3 updateMotor()

```
void DriveCommandHandler::updateMotor ( )
```

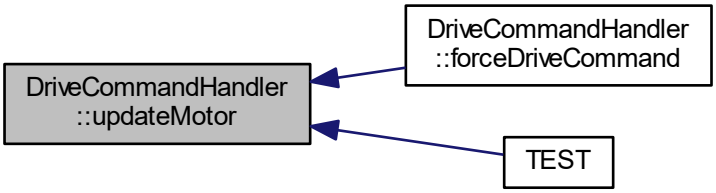
Flushes the currently held DriveCommand to the DriveController.

Definition at line 29 of file DriveCommandHandler.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.7.4 Member Data Documentation

4.7.4.1 m_currentDriveCommand

```
DriveCommand DriveCommandHandler::m_currentDriveCommand  [private]
```

Definition at line 48 of file DriveCommandHandler.hpp.

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

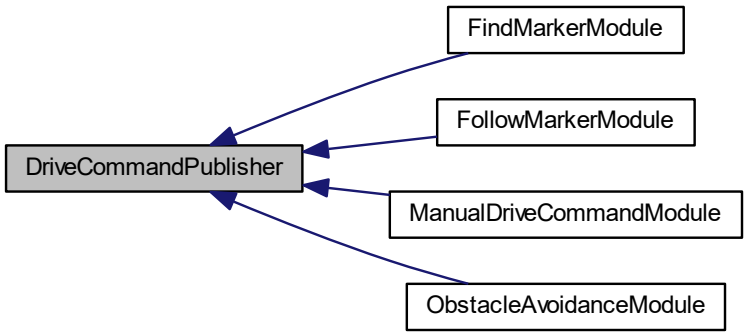
- PSE_2018_Gruppe1/src/DriveCommandHandler.hpp
- PSE_2018_Gruppe1/src/DriveCommandHandler.cpp

4.8 DriveCommandPublisher Class Reference

Base class for all classes that are able to publish DriveCommands to a DriveCommandSubscriber.

`#include <DriveCommandPublisher.hpp>`

Inheritance diagram for DriveCommandPublisher:



Public Member Functions

- virtual ~DriveCommandPublisher ()
- DriveCommandPublisher (DriveCommandPublisherType type)

  Constructs a new DriveCommandPublisher with a given Type.
- void addSubscriber (std::shared_ptr< DriveCommandSubscriber > subscriber)

  adds a new subscriber to the list of DriveCommandSubscribers

Protected Member Functions

- void updateSubscribers (int speed, int steering)

  Pushes a new DriveCommand with this classes' DriveCommandPublisherType, speed and steering to all registered subscribers.
- void forceSubscribers (int speed, int steering)

  Forces a new DriveCommand with this classes' DriveCommandPublisherType, speed and steering to all registered subscribers.

Private Attributes

- const DriveCommandPublisherType m_driveCommandPublisherType
- std::vector< std::shared_ptr< DriveCommandSubscriber > > m_subscribers

  used for the source field in DriveCommand messages.

4.8.1 Detailed Description

Base class for all classes that are able to publish DriveCommands to a DriveCommandSubscriber.

Definition at line 17 of file DriveCommandPublisher.hpp.

4.8.2 Constructor & Destructor Documentation

4.8.2.1 ~DriveCommandPublisher()

```
DriveCommandPublisher::~DriveCommandPublisher ( )  [virtual], [default]
```

4.8.2.2 DriveCommandPublisher()

```
DriveCommandPublisher::DriveCommandPublisher (
            DriveCommandPublisherType type )  [explicit]
```

Constructs a new DriveCommandPublisher with a given Type.

Parameters

type	will be used for the "source" field in the DriveCommand struct. Subscribers may prioritize by source type.

Definition at line 12 of file DriveCommandPublisher.cpp.

4.8.3 Member Function Documentation

4.8.3.1 addSubscriber()

```
void DriveCommandPublisher::addSubscriber (
            std::shared_ptr< DriveCommandSubscriber > subscriber )
```

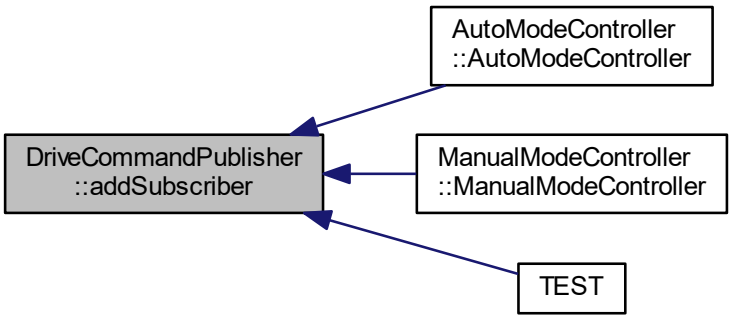
adds a new subscriber to the list of DriveCommandSubscribers

Parameters

subscriber	which class to add to the list

Definition at line 18 of file DriveCommandPublisher.cpp.

Here is the caller graph for this function:



4.8.3.2 forceSubscribers()

```
void DriveCommandPublisher::forceSubscribers (
            int speed,
            int steering )  [protected]
```

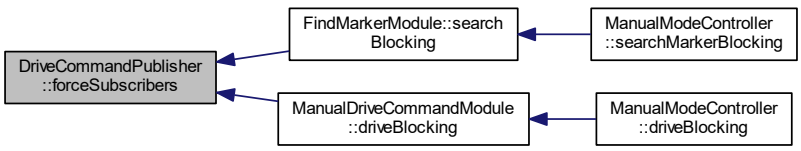
Forces a new DriveCommand with this classes' DriveCommandPublisherType, speed and steering to all registered subscribers.

Parameters

speed	The desired speed that this object wants to set.
steering	The desired steering that this object wants to set.

Definition at line 33 of file DriveCommandPublisher.cpp.

Here is the caller graph for this function:



4.8.3.3 updateSubscribers()

```
void DriveCommandPublisher::updateSubscribers (
            int speed,
            int steering )  [protected]
```

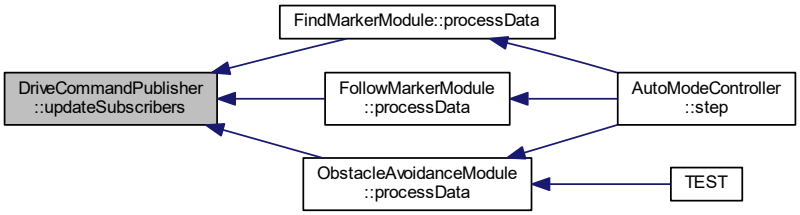
Pushes a new DriveCommand with this classes' DriveCommandPublisherType, speed and steering to all registered subscribers.

Parameters

speed	The desired speed that this object wants to set.
steering	The desired steering that this object wants to set.

Definition at line 23 of file DriveCommandPublisher.cpp.

Here is the caller graph for this function:



4.8.4 Member Data Documentation

4.8.4.1 m_driveCommandPublisherType

```
const DriveCommandPublisherType DriveCommandPublisher::m_driveCommandPublisherType  [private]
```

Definition at line 55 of file DriveCommandPublisher.hpp.

4.8.4.2 m_subscribers

```
std::vector<std::shared_ptr<DriveCommandSubscriber> > DriveCommandPublisher::m_subscribers
[private]
```

used for the source field in DriveCommand messages.

Definition at line 56 of file DriveCommandPublisher.hpp.

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

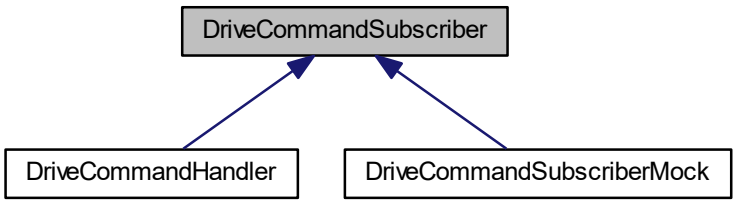
- PSE_2018_Gruppe1/src/DriveCommandPublisher.hpp
- PSE_2018_Gruppe1/src/DriveCommandPublisher.cpp

4.9 DriveCommandSubscriber Class Reference

DriveCommandSubscribers can receive DriveCommand structs from objects that are derived from DriveCommandPublisher.

`#include <DriveCommandSubscriber.hpp>`

Inheritance diagram for DriveCommandSubscriber:



Public Member Functions

- DriveCommandSubscriber ()=default

  Creates a new DriveCommandSubscriber.
- virtual ~DriveCommandSubscriber ()=default
- virtual void trySetDriveCommand (DriveCommand command)=0

  "Receive handler" that gets called from all DriveCommandPublishers that this DriveCommandSubscriber is subscribed to.
- virtual void forceDriveCommand (DriveCommand command)=0

  "Receive handler" that gets called from a DriveCommandPublisher.

4.9.1 Detailed Description

DriveCommandSubscribers can receive DriveCommand structs from objects that are derived from DriveCommandPublisher.

Definition at line 16 of file DriveCommandSubscriber.hpp.

4.9.2 Constructor & Destructor Documentation

4.9.2.1 DriveCommandSubscriber()

`DriveCommandSubscriber::DriveCommandSubscriber ( )  [default]`

Creates a new DriveCommandSubscriber.

4.9.2.2 ~DriveCommandSubscriber()

```
virtual DriveCommandSubscriber::~DriveCommandSubscriber ( )  [virtual], [default]
```

4.9.3 Member Function Documentation

4.9.3.1 forceDriveCommand()

```
virtual void DriveCommandSubscriber::forceDriveCommand (
            DriveCommand command )  [pure virtual]
```

"Receive handler" that gets called from a DriveCommandPublisher.

Forces the MotorController to execute the

Parameters

command.	

Implemented in DriveCommandHandler, and DriveCommandSubscriberMock.

4.9.3.2 trySetDriveCommand()

```
virtual void DriveCommandSubscriber::trySetDriveCommand (
            DriveCommand command )  [pure virtual]
```

"Receive handler" that gets called from all DriveCommandPublishers that this DriveCommandSubscriber is subscribed to.

Parameters

command	The DriveCommand that has to be handled

Implemented in DriveCommandHandler, and DriveCommandSubscriberMock.

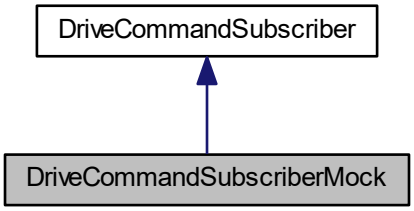
The documentation for this class was generated from the following file:

- PSE_2018_Gruppe1/src/DriveCommandSubscriber.hpp

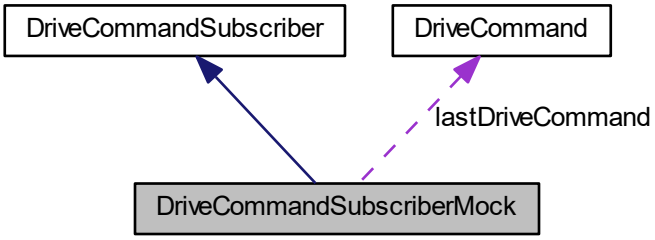
4.10 DriveCommandSubscriberMock Class Reference

```
#include <DriveCommandSubscriberMock.hpp>
```

Inheritance diagram for DriveCommandSubscriberMock:



Collaboration diagram for DriveCommandSubscriberMock:



Public Member Functions

- void trySetDriveCommand (DriveCommand command) override

  "Receive handler" that gets called from all DriveCommandPublishers that this DriveCommandSubscriber is subscribed to.
- void forceDriveCommand (DriveCommand command) override

  "Receive handler" that gets called from a DriveCommandPublisher.
- DriveCommand getLastDriveCommand ()
- DriveCommandSubscriberMock ()

Private Attributes

- DriveCommand lastDriveCommand

4.10.1 Detailed Description

Definition at line 6 of file DriveCommandSubscriberMock.hpp.

4.10.2 Constructor & Destructor Documentation

4.10.2.1 DriveCommandSubscriberMock()

```
DriveCommandSubscriberMock::DriveCommandSubscriberMock ( )  [inline]
```

Definition at line 20 of file DriveCommandSubscriberMock.hpp.

4.10.3 Member Function Documentation

4.10.3.1 forceDriveCommand()

```
void DriveCommandSubscriberMock::forceDriveCommand (
            DriveCommand command )  [inline], [override], [virtual]
```

"Receive handler" that gets called from a DriveCommandPublisher.

Forces the MotorController to execute the

Parameters

command.	

Implements DriveCommandSubscriber.

Definition at line 12 of file DriveCommandSubscriberMock.hpp.

4.10.3.2 getLastDriveCommand()

```
DriveCommand DriveCommandSubscriberMock::getLastDriveCommand ( )  [inline]
```

Definition at line 16 of file DriveCommandSubscriberMock.hpp.

4.10.3.3 trySetDriveCommand()

```
void DriveCommandSubscriberMock::trySetDriveCommand (
            DriveCommand command )  [inline], [override], [virtual]
```

"Receive handler" that gets called from all DriveCommandPublishers that this DriveCommandSubscriber is subscribed to.

Parameters

command	The DriveCommand that has to be handled

Implements DriveCommandSubscriber.

Definition at line 8 of file DriveCommandSubscriberMock.hpp.

4.10.4 Member Data Documentation

4.10.4.1 lastDriveCommand

```
DriveCommand DriveCommandSubscriberMock::lastDriveCommand  [private]
```

Definition at line 20 of file DriveCommandSubscriberMock.hpp.

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

- PSE_2018_Gruppe1/src/test/mocks/DriveCommandSubscriberMock.hpp

4.11 DriveController Class Reference

```
#include <DriveController.hpp>
```

Public Member Functions

- virtual ~DriveController ()=default
- bool updateDirect (int speed, int steering)
- bool updateDirectMotor (int speedLeft, int speedRight)
- bool updateController (int speed, int steering)
- int getSpeed () const
- int getSteering () const
- void setTestMode (bool) const

Static Public Member Functions

- static DriveController * getInstance ()

  Get the singleton instance of the drive controller.

Private Attributes

- int motor_speed
- int motor_steering

4.11.1 Detailed Description

Definition at line 10 of file DriveController.hpp.

4.11.2 Constructor & Destructor Documentation

4.11.2.1 ~DriveController()

```
virtual DriveController::~DriveController ( )  [virtual], [default]
```

4.11.3 Member Function Documentation

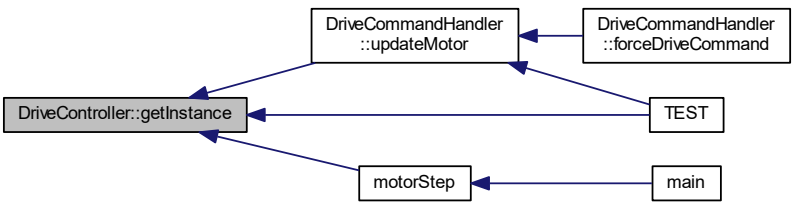
4.11.3.1 getInstance()

```
static DriveController* DriveController::getInstance ( )  [inline], [static]
```

Get the singleton instance of the drive controller.

Definition at line 14 of file DriveController.hpp.

Here is the caller graph for this function:



4.11.3.2 getSpeed()

```
int DriveController::getSpeed ( ) const  [inline]
```

Definition at line 34 of file DriveController.hpp.

Here is the caller graph for this function:

4.11.3.3 getSteering()

```
int DriveController::getSteering ( ) const  [inline]
```

Definition at line 38 of file DriveController.hpp.

Here is the caller graph for this function:

4.11.3.4 setTestMode()

```
void DriveController::setTestMode (
             bool  ) const  [inline]
```

Definition at line 42 of file DriveController.hpp.

4.11.3.5 updateController()

```
bool DriveController::updateController (
            int speed,
            int steering )  [inline]
```

Definition at line 28 of file DriveController.hpp.

Here is the caller graph for this function:

4.11.3.6 updateDirect()

```
bool DriveController::updateDirect (
            int speed,
            int steering )  [inline]
```

Definition at line 22 of file DriveController.hpp.

4.11.3.7 updateDirectMotor()

```
bool DriveController::updateDirectMotor (
            int speedLeft,
            int speedRight )  [inline]
```

Definition at line 25 of file DriveController.hpp.

4.11.4 Member Data Documentation

4.11.4.1 motor_speed

```
int DriveController::motor_speed  [private]
```

Definition at line 47 of file DriveController.hpp.

4.11.4.2 motor_steering

```
int DriveController::motor_steering  [private]
```

Definition at line 48 of file DriveController.hpp.

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

- PSE_2018_Gruppe1/src/test/mocks/DriveController.hpp

4.12 FileLogger Class Reference

Class to to write log messages to a file called "events.log".

```
#include <FileLogger.hpp>
```

Public Member Functions

- void flushLogs ()
  Takes the content of m_messageQueue and writes them to the log file.
- ~FileLogger ()
- void log (std::string message)
  pushes the message to the message queue

Static Public Member Functions

- static FileLogger & getInstance ()
  Singleton getInstance()

Private Member Functions

- FileLogger ()
- FileLogger (const FileLogger &)=default
- FileLogger & operator= (const FileLogger &)

Private Attributes

- FILE * m_logFile
- std::queue< std::string > m_messageQueue

4.12.1 Detailed Description

Class to to write log messages to a file called "events.log".

Messages are buffered in a queue and are written to the file when flushLogs() is called or when the singleton instance gets destroyed

Definition at line 11 of file FileLogger.hpp.

4.12.2 Constructor & Destructor Documentation

4.12.2.1 ~FileLogger()

```
FileLogger::~FileLogger ( )  [inline]
```

Definition at line 42 of file FileLogger.hpp.

Here is the call graph for this function:

4.12.2.2 FileLogger() [1/2]

```
FileLogger::FileLogger ( )  [inline], [private]
```

Definition at line 62 of file FileLogger.hpp.

4.12.2.3 FileLogger() [2/2]

```
FileLogger::FileLogger (
            const FileLogger &  )  [private], [default]
```

4.12.3 Member Function Documentation

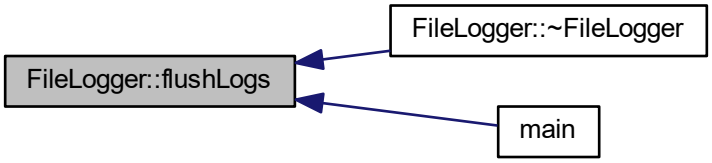
4.12.3.1 flushLogs()

```
void FileLogger::flushLogs ( )  [inline]
```

Takes the content of m_messageQueue and writes them to the log file.

Definition at line 17 of file FileLogger.hpp.

Here is the caller graph for this function:



4.12.3.2 getInstance()

```
static FileLogger& FileLogger::getInstance ( )  [inline], [static]
```

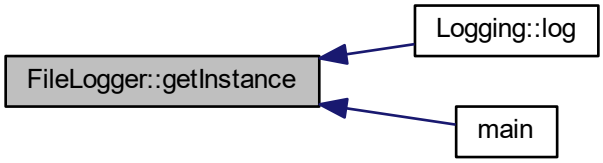
Singleton getInstance()

Returns

an instance of this FileLogger

Definition at line 36 of file FileLogger.hpp.

Here is the caller graph for this function:



4.12.3.3 log()

```
void FileLogger::log (
            std::string message )  [inline]
```

pushes the message to the message queue

Parameters

message	the string that is to be pushed to the queue

Definition at line 58 of file FileLogger.hpp.

Here is the caller graph for this function:

4.12.3.4 operator=()

```
FileLogger& FileLogger::operator= (
            const FileLogger &  )  [private]
```

4.12.4 Member Data Documentation

4.12.4.1 m_logFile

```
FILE* FileLogger::m_logFile  [private]
```

Definition at line 75 of file FileLogger.hpp.

4.12.4.2 m_messageQueue

```
std::queue<std::string> FileLogger::m_messageQueue  [private]
```

Definition at line 76 of file FileLogger.hpp.

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

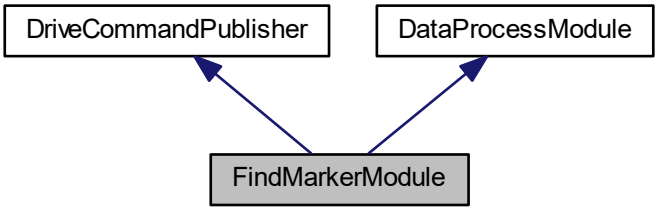
- PSE_2018_Gruppe1/src/FileLogger.hpp

4.13 FindMarkerModule Class Reference

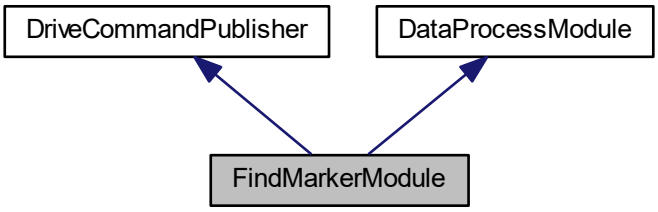
This module can be active in manual and in auto mode.

`#include <FindMarkerModule.hpp>`

Inheritance diagram for FindMarkerModule:



Collaboration diagram for FindMarkerModule:



Public Member Functions

- FindMarkerModule ()

  Constructs a new FindMarkerModule.
- ~FindMarkerModule () override
- void abort ()

  aborts execution of the currently running blocking marker search
- void processData () override

  Main update function that gets called from mainloop.
- void searchBlocking ()

  Triggers a blocking marker search.
- void setMaxDriveDuration (std::chrono::milliseconds duration)

  sets the maximum duration.

Static Private Member Functions

- static bool foundMarker ()

  Retrieves the sensorList from SensorManager and checks whether it is not empty.

Private Attributes

- std::chrono::milliseconds m_maxDuration
- std::atomic< bool > m_stop

  maximum time this module can work in blocking mode until it aborts

Static Private Attributes

- static const int SEARCH_SPEED = 10

  used in blocking mode to abort operation
- static const int MINIMUM_CONFIDENT = 50

Additional Inherited Members

4.13.1 Detailed Description

This module can be active in manual and in auto mode.

It rotates the TivSeg until it detects at least one marker.

Definition at line 20 of file FindMarkerModule.hpp.

4.13.2 Constructor & Destructor Documentation

4.13.2.1 FindMarkerModule()

```
FindMarkerModule::FindMarkerModule ( )
```

Constructs a new FindMarkerModule.

Definition at line 12 of file FindMarkerModule.cpp.

4.13.2.2 ~FindMarkerModule()

```
FindMarkerModule::~FindMarkerModule ( )  [override], [default]
```

4.13.3 Member Function Documentation

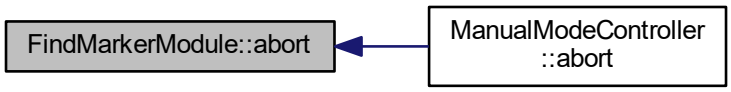
4.13.3.1 abort()

```
void FindMarkerModule::abort ( )
```

aborts execution of the currently running blocking marker search

Definition at line 16 of file FindMarkerModule.cpp.

Here is the caller graph for this function:



4.13.3.2 foundMarker()

```
bool FindMarkerModule::foundMarker ( )  [static], [private]
```

Retrieves the sensorList from SensorManager and checks whether it is not empty.

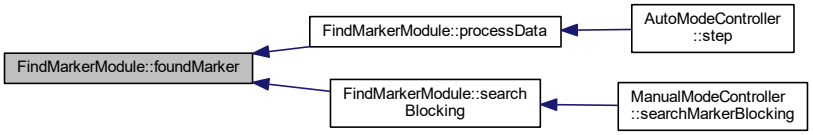
Returns

Marker list not empty? -> At least one marker was found -> true. Marker list empty? -> No marker -> false

Definition at line 58 of file FindMarkerModule.cpp.

Here is the call graph for this function:

Here is the caller graph for this function:



4.13.3.3 processData()

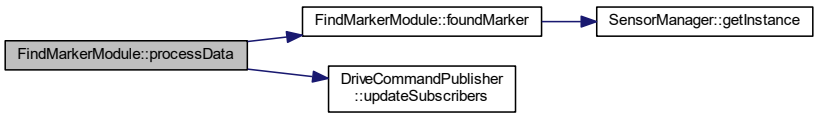
```
void FindMarkerModule::processData ( )  [override], [virtual]
```

Main update function that gets called from mainloop.

Implements DataProcessModule.

Definition at line 18 of file FindMarkerModule.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:

4.13.3.4 searchBlocking()

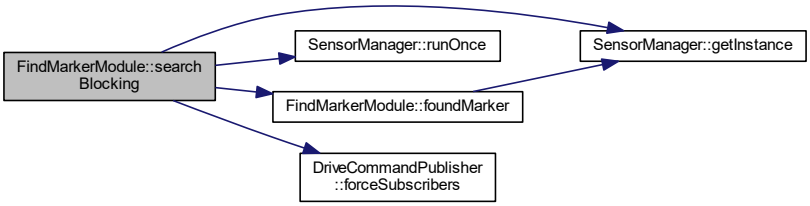
```
void FindMarkerModule::searchBlocking ( )
```

Triggers a blocking marker search.

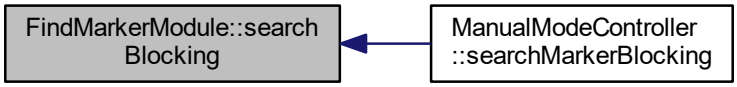
Returns if a Marker has been found or maximum drive duration has exceeded.

Definition at line 26 of file FindMarkerModule.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.13.3.5 setMaxDriveDuration()

```
void FindMarkerModule::setMaxDriveDuration (
            std::chrono::milliseconds duration )
```

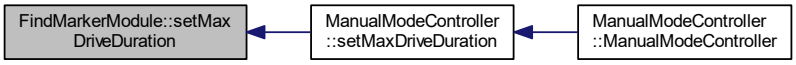
sets the maximum duration.

Parameters

duration	the allowed duration in milliseconds

Definition at line 56 of file FindMarkerModule.cpp.

Here is the caller graph for this function:



4.13.4 Member Data Documentation

4.13.4.1 m_maxDuration

```
std::chrono::milliseconds FindMarkerModule::m_maxDuration  [private]
```

Definition at line 59 of file FindMarkerModule.hpp.

4.13.4.2 m_stop

```
std::atomic<bool> FindMarkerModule::m_stop  [private]
```

maximum time this module can work in blocking mode until it aborts

Definition at line 60 of file FindMarkerModule.hpp.

4.13.4.3 MINIMUM_CONFIDENT

```
const int FindMarkerModule::MINIMUM_CONFIDENT = 50  [static], [private]
```

Definition at line 63 of file FindMarkerModule.hpp.

4.13.4.4 SEARCH_SPEED

```
const int FindMarkerModule::SEARCH_SPEED = 10  [static], [private]
```

used in blocking mode to abort operation

Definition at line 62 of file FindMarkerModule.hpp.

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

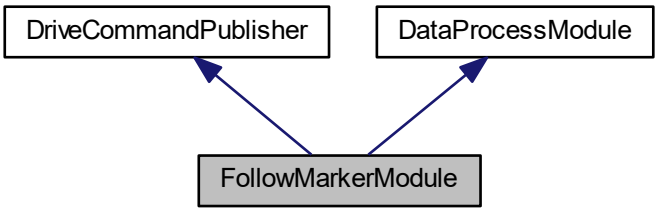
- PSE_2018_Gruppe1/src/FindMarkerModule.hpp
- PSE_2018_Gruppe1/src/FindMarkerModule.cpp

4.14 FollowMarkerModule Class Reference

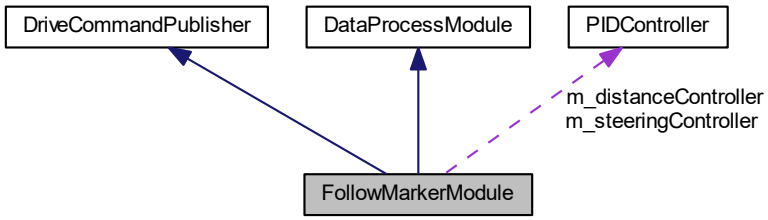
This module retrieves the markerList from the SensorManager, checks for markers and tries to follow the one with the best confidence until it loses track of it.

`#include <FollowMarkerModule.hpp>`

Inheritance diagram for FollowMarkerModule:



Collaboration diagram for FollowMarkerModule:



Public Member Functions

- FollowMarkerModule ()

  Constructs a new FollowMarkerModule.
- ~FollowMarkerModule () override
- void processData () override

  Main update function that gets called periodically.
- void setDistance (double distance)

  Sets the desired distance that will be used as for the distance PIDController.
- void setMarkerId (int markerId)

  NOT USED RIGHT NOW! Sets an ID for a marker that will be followed.

Private Attributes

- double m_setDistance
- bool m_followsMarker
- int m_currentMarkerId
- PIDController m_distanceController
- PIDController m_steeringController

Additional Inherited Members

4.14.1 Detailed Description

This module retrieves the markerList from the SensorManager, checks for markers and tries to follow the one with the best confidence until it loses track of it.

After that, it follows the next marker with the highest confidence.

Definition at line 19 of file FollowMarkerModule.hpp.

4.14.2 Constructor & Destructor Documentation

4.14.2.1 FollowMarkerModule()

```
FollowMarkerModule::FollowMarkerModule ( )
```

Constructs a new FollowMarkerModule.

Definition at line 15 of file FollowMarkerModule.cpp.

4.14.2.2 ~FollowMarkerModule()

```
FollowMarkerModule::~FollowMarkerModule ( )  [override], [default]
```

4.14.3 Member Function Documentation

4.14.3.1 processData()

```
void FollowMarkerModule::processData ( )  [override], [virtual]
```

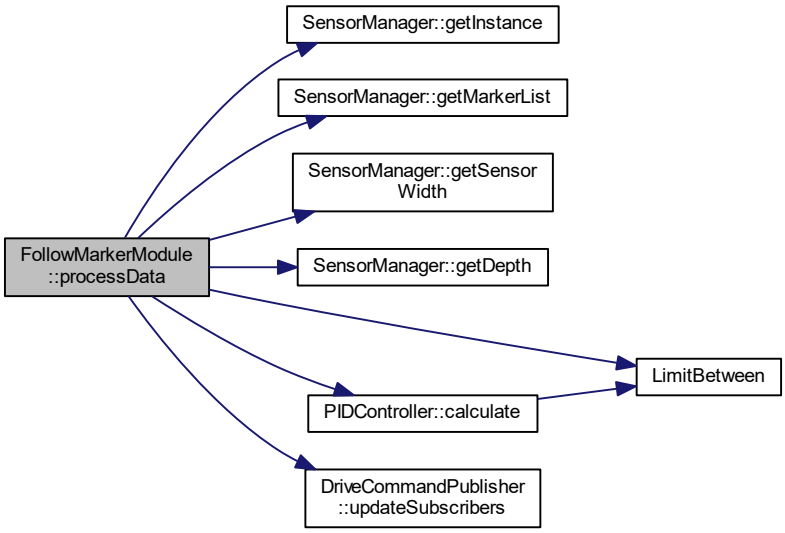
Main update function that gets called periodically.

gets a list of markers and steers towards the marker with the highest confidence value

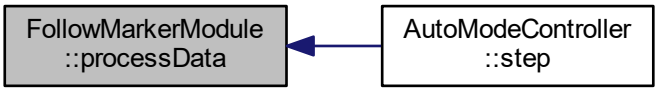
Implements DataProcessModule.

Definition at line 30 of file FollowMarkerModule.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.14.3.2 setDistance()

```
void FollowMarkerModule::setDistance (
            double distance )
```

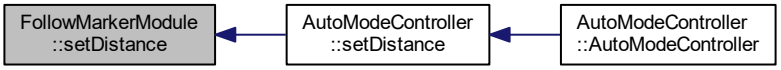
Sets the desired distance that will be used as for the distance PIDController.

Parameters

distance	desired distance in m

Definition at line 93 of file FollowMarkerModule.cpp.

Here is the caller graph for this function:



4.14.3.3 setMarkerId()

```
void FollowMarkerModule::setMarkerId (
            int markerId )
```

NOT USED RIGHT NOW! Sets an ID for a marker that will be followed.

Definition at line 95 of file FollowMarkerModule.cpp.

4.14.4 Member Data Documentation

4.14.4.1 m_currentMarkerId

```
int FollowMarkerModule::m_currentMarkerId  [private]
```

Definition at line 48 of file FollowMarkerModule.hpp.

4.14.4.2 m_distanceController

```
PIDController FollowMarkerModule::m_distanceController  [private]
```

Definition at line 50 of file FollowMarkerModule.hpp.

4.14.4.3 m_followsMarker

```
bool FollowMarkerModule::m_followsMarker  [private]
```

Definition at line 47 of file FollowMarkerModule.hpp.

4.14.4.4 m_setDistance

```
double FollowMarkerModule::m_setDistance  [private]
```

Definition at line 46 of file FollowMarkerModule.hpp.

4.14.4.5 m_steeringController

```
PIDController FollowMarkerModule::m_steeringController  [private]
```

Definition at line 51 of file FollowMarkerModule.hpp.

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

- PSE_2018_Gruppe1/src/FollowMarkerModule.hpp
- PSE_2018_Gruppe1/src/FollowMarkerModule.cpp

4.15 Logging Class Reference

This is a wrapper class for Diagnostics.

```
#include <Logging.hpp>
```

Static Public Member Functions

- static void setMaxLevel (DiagnosticLevel level)

  Wrapper for Diagnostics::setMaxLevel() that also sets the max level for the current FileLogger instance.
- static void log (DiagnosticLevel level, const char *file, int line, const char *message,...)

  Wrapper for Diagnostics::log() that also logs the message to the current FileLogger instance.

4.15.1 Detailed Description

This is a wrapper class for Diagnostics.

Apart from forwarding everything to Diagnostics, it also logs every received message to an instance of FileLogger

Definition at line 31 of file Logging.hpp.

4.15.2 Member Function Documentation

4.15.2.1 log()

```
void Logging::log (
            DiagnosticLevel level,
            const char * file,
            int line,
            const char * message,
             ... ) [static]
```

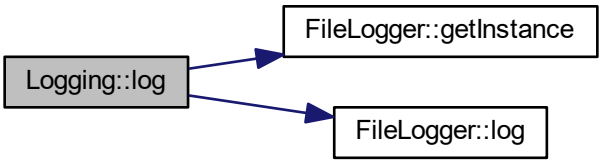
Wrapper for Diagnostics::log() that also logs the message to the current FileLogger instance.

Parameters

level	Log level of the message
file	File where the message was generated - filled by macro
line	Line where the message was generated - filled by macro
message	The actual message - can use printf style placeholders
...	printf style variadic replacements for placeholders in the message

Definition at line 10 of file Logging.cpp.

Here is the call graph for this function:



4.15.2.2 setMaxLevel()

```
void Logging::setMaxLevel (
            DiagnosticLevel level ) [static]
```

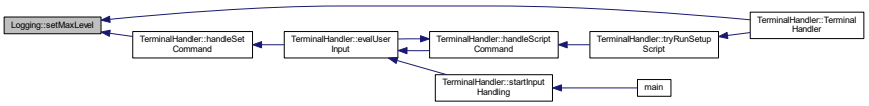
Wrapper for Diagnostics::setMaxLevel() that also sets the max level for the current FileLogger instance.

Parameters

level	max level of log messages

Definition at line 49 of file Logging.cpp.

Here is the caller graph for this function:



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

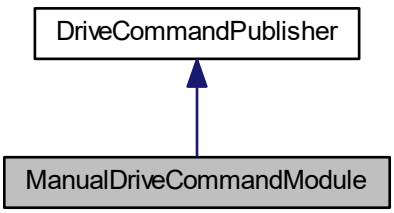
- PSE_2018_Gruppe1/src/Logging.hpp
- PSE_2018_Gruppe1/src/Logging.cpp

4.16 ManualDriveCommandModule Class Reference

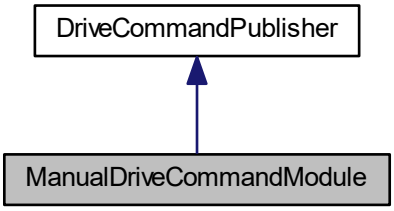
This module is used for blocking drive operations via terminal command or script and can only be invoked via terminal.

```
#include <ManualDriveCommandModule.hpp>
```

Inheritance diagram for ManualDriveCommandModule:



Collaboration diagram for ManualDriveCommandModule:



Public Member Functions

- ManualDriveCommandModule ()

  Constructs a new ManualDriveCommandModule.
- ~ManualDriveCommandModule () override
- void abort ()

  Aborts all blocking operations that might still be running.
- void driveBlocking (std::chrono::milliseconds time, int velocity, int steering)

  Sends DriveCommand structs for the given time and blocks the calling thread.
- void setMaxDriveDuration (std::chrono::milliseconds duration)

  Sets the maximum duration this module is allowed to drive without user interaction.

Private Attributes

- std::chrono::milliseconds m_maxDuration
- std::atomic< bool > m_Stop

Additional Inherited Members

4.16.1 Detailed Description

This module is used for blocking drive operations via terminal command or script and can only be invoked via terminal.

Definition at line 21 of file ManualDriveCommandModule.hpp.

4.16.2 Constructor & Destructor Documentation

4.16.2.1 ManualDriveCommandModule()

```
ManualDriveCommandModule::ManualDriveCommandModule ( )
```

Constructs a new ManualDriveCommandModule.

Definition at line 13 of file ManualDriveCommandModule.cpp.

4.16.2.2 ~ManualDriveCommandModule()

```
ManualDriveCommandModule::~ManualDriveCommandModule ( )  [override], [default]
```

4.16.3 Member Function Documentation

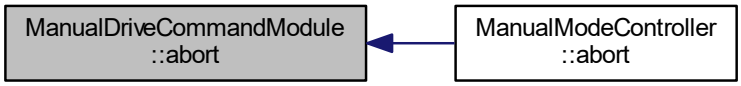
4.16.3.1 abort()

```
void ManualDriveCommandModule::abort ( )
```

Aborts all blocking operations that might still be running.

Definition at line 22 of file ManualDriveCommandModule.cpp.

Here is the caller graph for this function:



4.16.3.2 driveBlocking()

```
void ManualDriveCommandModule::driveBlocking (
            std::chrono::milliseconds time,
            int velocity,
            int steering )
```

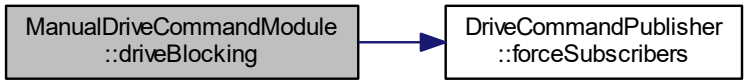
Sends DriveCommand structs for the given time and blocks the calling thread.

Parameters

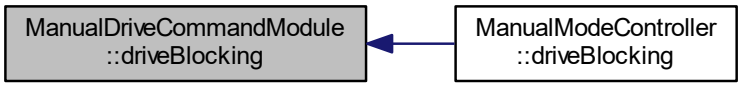
time	time to drive in milliseconds
velocity	desired speed
steering	desired direction (as ratio between left/right motor speed)

Definition at line 24 of file ManualDriveCommandModule.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.16.3.3 setMaxDriveDuration()

```
void ManualDriveCommandModule::setMaxDriveDuration (
            std::chrono::milliseconds duration )
```

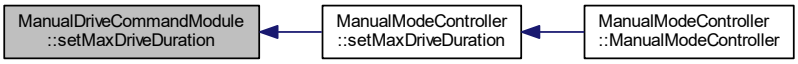
Sets the maximum duration this module is allowed to drive without user interaction.

Parameters

duration	maxiumum allowed time for command execution in milliseconds

Definition at line 47 of file ManualDriveCommandModule.cpp.

Here is the caller graph for this function:



4.16.4 Member Data Documentation

4.16.4.1 m_maxDuration

```
std::chrono::milliseconds ManualDriveCommandModule::m_maxDuration  [private]
```

Definition at line 51 of file ManualDriveCommandModule.hpp.

4.16.4.2 m_Stop

```
std::atomic<bool> ManualDriveCommandModule::m_Stop  [private]
```

Definition at line 52 of file ManualDriveCommandModule.hpp.

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

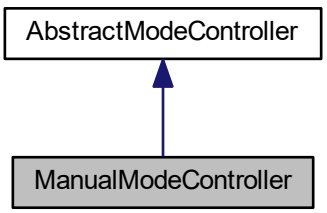
- PSE_2018_Gruppe1/src/ManualDriveCommandModule.hpp
- PSE_2018_Gruppe1/src/ManualDriveCommandModule.cpp

4.17 ManualModeController Class Reference

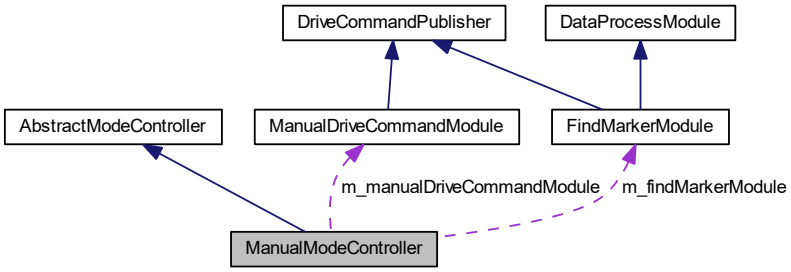
Child of AbstractModeController that is used for manual operation.

```
#include <ManualModeController.hpp>
```

Inheritance diagram for ManualModeController:



Collaboration diagram for ManualModeController:



Public Member Functions

- ~ManualModeController () override
- ManualModeController (std::shared_ptr< DriveCommandHandler > driveCommandHandler)

  Constructs a new ManualModeController.
- void driveBlocking (std::chrono::milliseconds duration, double velocity, double steering)

  Drives for the given time with the given parameters.
- void searchMarkerBlocking ()

  Trigger a searches for a Marker.
- void setMaxDriveDuration (std::chrono::milliseconds maxDriveDuration)

  Sets the maximum duration this module is allowed to execute operations without user interaction.
- void abort () override

  Aborts all currently running operations.
- void step () override

  has to be called in a loop for continuous execution of the controller.

Private Attributes

- ManualDriveCommandModule m_manualDriveCommandModule
- FindMarkerModule m_findMarkerModule
- std::atomic< bool > m_isInBlockingCall

Static Private Attributes

- static constexpr int DEFAULT_MAX_DRIVE_DURATION = 10

Additional Inherited Members

4.17.1 Detailed Description

Child of AbstractModeController that is used for manual operation.

Definition at line 18 of file ManualModeController.hpp.

4.17.2 Constructor & Destructor Documentation

4.17.2.1 ~ManualModeController()

```
ManualModeController::~ManualModeController ( )  [override], [default]
```

4.17.2.2 ManualModeController()

```
ManualModeController::ManualModeController (
            std::shared_ptr< DriveCommandHandler > driveCommandHandler )  [explicit]
```

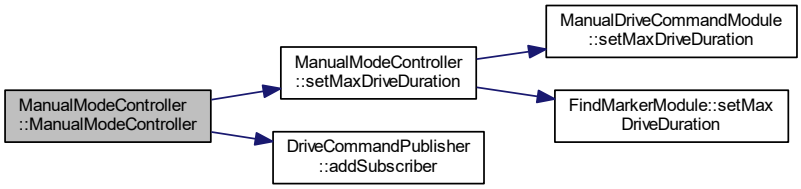
Constructs a new ManualModeController.

Parameters

driveCommandHandler	used to wire up publishers in manual mode (publish-subscribe)

Definition at line 12 of file ManualModeController.cpp.

Here is the call graph for this function:



4.17.3 Member Function Documentation

4.17.3.1 abort()

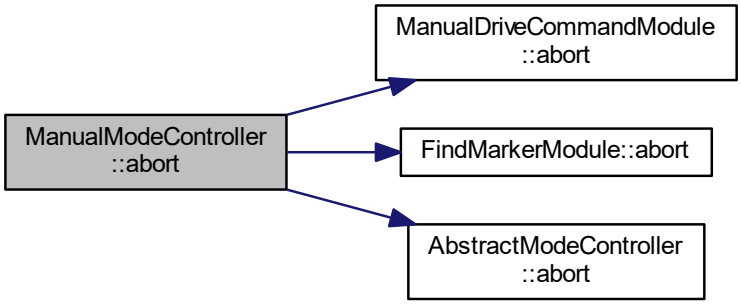
```
void ManualModeController::abort ( )  [override], [virtual]
```

Aborts all currently running operations.

Reimplemented from AbstractModeController.

Definition at line 44 of file ManualModeController.cpp.

Here is the call graph for this function:



4.17.3.2 driveBlocking()

```
void ManualModeController::driveBlocking (
            std::chrono::milliseconds duration,
            double velocity,
            double steering )
```

Drives for the given time with the given parameters.

Parameters

duration	duration in milliseconds for the drive operation
velocity	desired velocity for the drive operation (range: -100...100)
steering	desired direction for the drive operation as a ratio between left and right motor speeds (range: -100...100)

Definition at line 24 of file ManualModeController.cpp.

Here is the call graph for this function:

4.17.3.3 searchMarkerBlocking()

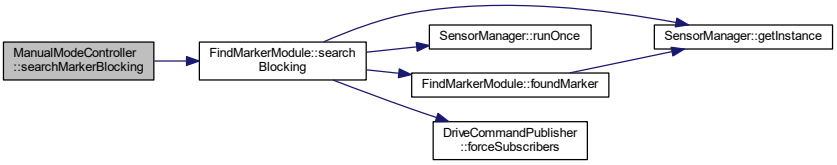
```
void ManualModeController::searchMarkerBlocking ( )
```

Trigger a searches for a Marker.

Returns, when marker has found or maximim time has exceeded

Definition at line 31 of file ManualModeController.cpp.

Here is the call graph for this function:



4.17.3.4 setMaxDriveDuration()

```
void ManualModeController::setMaxDriveDuration (
            std::chrono::milliseconds maxDriveDuration )
```

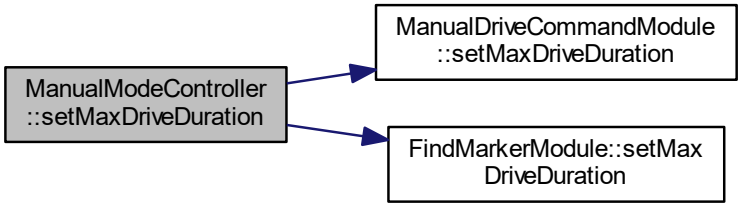
Sets the maximum duration this module is allowed to execute operations without user interaction.

Parameters

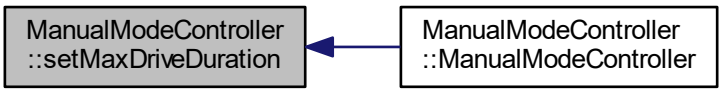
maxDriveDuration	duration in milliseconds

Definition at line 38 of file ManualModeController.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.17.3.5 step()

```
void ManualModeController::step ( )  [override], [virtual]
```

has to be called in a loop for continuous execution of the controller.

Triggers all DriveCommandModules to process the Sensor-Data.

Implements AbstractModeController.

Definition at line 54 of file ManualModeController.cpp.

4.17.4 Member Data Documentation

4.17.4.1 DEFAULT_MAX_DRIVE_DURATION

```
constexpr int ManualModeController::DEFAULT_MAX_DRIVE_DURATION = 10  [static], [private]
```

Definition at line 64 of file ManualModeController.hpp.

4.17.4.2 m_findMarkerModule

```
FindMarkerModule ManualModeController::m_findMarkerModule  [private]
```

Definition at line 61 of file ManualModeController.hpp.

4.17.4.3 m_isInBlockingCall

```
std::atomic<bool> ManualModeController::m_isInBlockingCall  [private]
```

Definition at line 62 of file ManualModeController.hpp.

4.17.4.4 m_manualDriveCommandModule

```
ManualDriveCommandModule ManualModeController::m_manualDriveCommandModule  [private]
```

Definition at line 60 of file ManualModeController.hpp.

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

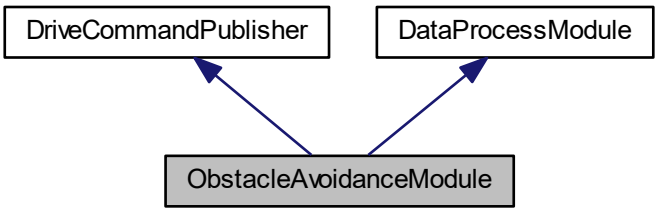
- PSE_2018_Gruppe1/src/ManualModeController.hpp
- PSE_2018_Gruppe1/src/ManualModeController.cpp

4.18 ObstacleAvoidanceModule Class Reference

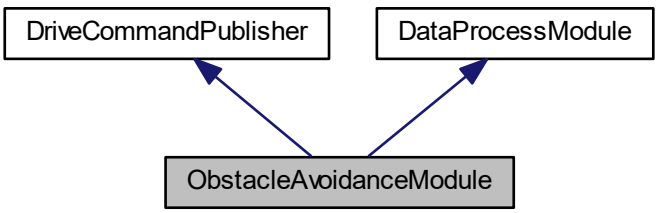
Used in automatic mode to detect and avoid obstacles during automatic driving operations.

```
#include <ObstacleAvoidanceModule.hpp>
```

Inheritance diagram for ObstacleAvoidanceModule:



Collaboration diagram for ObstacleAvoidanceModule:



Public Member Functions

- ObstacleAvoidanceModule ()

  Constructs a new ObstacleAvoidanceModule.
- ~ObstacleAvoidanceModule () override
- void processData () override

  Triggers input data processing.

Static Private Attributes

- static constexpr double MIN_DISTANCE = 0.6

Additional Inherited Members

4.18.1 Detailed Description

Used in automatic mode to detect and avoid obstacles during automatic driving operations.

Publishes DriveCommands if an obstacle is detected and actively tries to turn away from the obstacle.

Definition at line 17 of file ObstacleAvoidanceModule.hpp.

4.18.2 Constructor & Destructor Documentation

4.18.2.1 ObstacleAvoidanceModule()

```
ObstacleAvoidanceModule::ObstacleAvoidanceModule ( )
```

Constructs a new ObstacleAvoidanceModule.

Definition at line 12 of file ObstacleAvoidanceModule.cpp.

4.18.2.2 ~ObstacleAvoidanceModule()

```
ObstacleAvoidanceModule::~ObstacleAvoidanceModule ( )  [override], [default]
```

4.18.3 Member Function Documentation

4.18.3.1 processData()

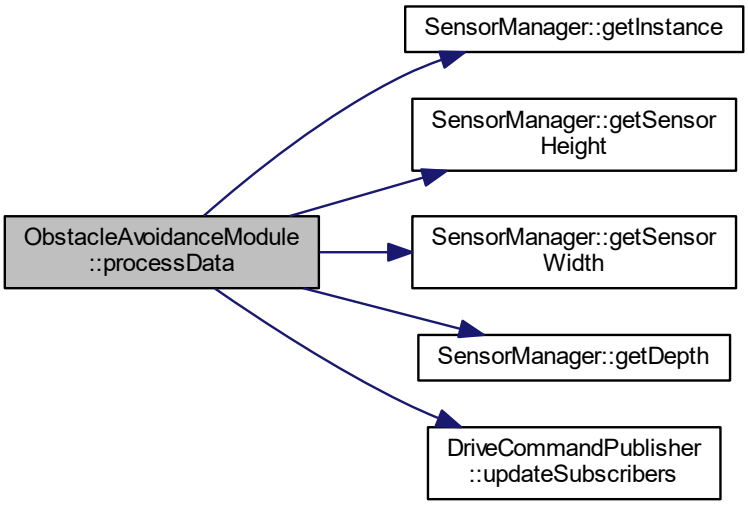
```
void ObstacleAvoidanceModule::processData ( )  [override], [virtual]
```

Triggers input data processing.

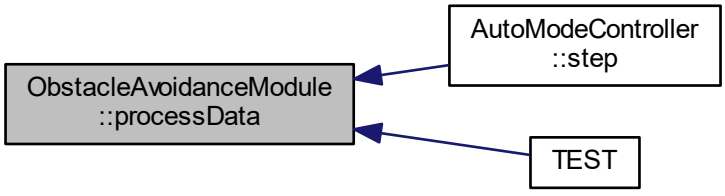
Implements DataProcessModule.

Definition at line 16 of file ObstacleAvoidanceModule.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.18.4 Member Data Documentation

4.18.4.1 MIN_DISTANCE

```
constexpr double ObstacleAvoidanceModule::MIN_DISTANCE = 0.6  [static], [private]
```

Definition at line 33 of file ObstacleAvoidanceModule.hpp.

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

- PSE_2018_Gruppe1/src/ObstacleAvoidanceModule.hpp
- PSE_2018_Gruppe1/src/ObstacleAvoidanceModule.cpp

4.19 PIDController Class Reference

Basic universal PID controller implementation.

```
#include <PIDController.hpp>
```

Public Member Functions

- PIDController (double P, double I, double D, double dt=0.001, double min=-100.0, double max=100.0)

  Constructs a new PID controller object.
- double calculate (double error)

  main calc function of the PIDController
- virtual ~PIDController ()

Private Attributes

- double m_d
- double m_error
- double m_errorDot
- double m_i
- double m_integralError
- double m_p
- double m_dt
- double m_minVal
- double m_maxVal

4.19.1 Detailed Description

Basic universal PID controller implementation.

Definition at line 13 of file PIDController.hpp.

4.19.2 Constructor & Destructor Documentation

4.19.2.1 PIDController()

```
PIDController::PIDController (
            double P,
            double I,
            double D,
            double dt = 0.001,
            double min = -100.0,
            double max = 100.0 )
```

Constructs a new PID controller object.

Parameters

P	Proportional factor
I	Integral factor
D	Differential factor
dt	Time delta between calls to calculate()
min	Minimal output of controller
max	Maximal output of controller

Returns

A new PIDController object

Definition at line 13 of file PIDController.cpp.

4.19.2.2 ~PIDController()

```
PIDController::~PIDController ( )  [virtual], [default]
```

4.19.3 Member Function Documentation

4.19.3.1 calculate()

```
double PIDController::calculate (
            double error )
```

main calc function of the PIDController

Parameters

error	difference between target and actual values

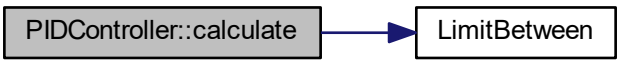
Returns

controller output

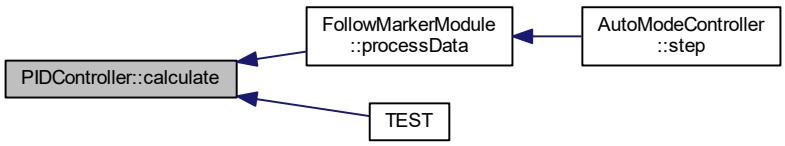
< Integrate errors as long as the result does not overflow

Definition at line 28 of file PIDController.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.19.4 Member Data Documentation

4.19.4.1 m_d

```
double PIDController::m_d  [private]
```

Definition at line 38 of file PIDController.hpp.

4.19.4.2 m_dt

```
double PIDController::m_dt  [private]
```

Definition at line 44 of file PIDController.hpp.

4.19.4.3 m_error

```
double PIDController::m_error  [private]
```

Definition at line 39 of file PIDController.hpp.

4.19.4.4 m_errorDot

```
double PIDController::m_errorDot  [private]
```

Definition at line 40 of file PIDController.hpp.

4.19.4.5 m_i

```
double PIDController::m_i  [private]
```

Definition at line 41 of file PIDController.hpp.

4.19.4.6 m_integralError

```
double PIDController::m_integralError  [private]
```

Definition at line 42 of file PIDController.hpp.

4.19.4.7 m_maxVal

```
double PIDController::m_maxVal  [private]
```

Definition at line 46 of file PIDController.hpp.

4.19.4.8 m_minVal

```
double PIDController::m_minVal  [private]
```

Definition at line 45 of file PIDController.hpp.

4.19.4.9 m_p

```
double PIDController::m_p  [private]
```

Definition at line 43 of file PIDController.hpp.

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

- PSE_2018_Gruppe1/src/PIDController.hpp
- PSE_2018_Gruppe1/src/PIDController.cpp

4.20 SensorManager Class Reference

Sensor and image processing manager.

`#include <SensorManager.hpp>`

Public Member Functions

- SensorManager (const SensorManager &)=delete
- SensorManager & operator= (const SensorManager &)=delete
- bool runOnce ()

  Update color and depth data, and perform marker detection.
- std::vector< MarkerInfo > getMarkerList ()

  Get the list of currently detected markers.
- int getSensorWidth ()

  Get the width of the sensor data.
- int getSensorHeight ()

  Get the height of the sensor data.
- double getDepth (int x, int y)

  Get the depth [m] at the given pixel in the sensor data.
- float getFps ()

  Get an average of the current processing FPS.
- void setDebugMarkerInfoList (const std::vector< MarkerInfo > &debugMarkerInfoList)
- void setDepth (double depth)

Static Public Member Functions

- static SensorManager * getInstance ()

  Get the singleton instance of the sensor manager.

Protected Member Functions

- SensorManager ()=default
- ~SensorManager ()=default

Protected Attributes

- std::vector< MarkerInfo > debugMarkerInfoList
- double depth {}

4.20.1 Detailed Description

Sensor and image processing manager.

Definition at line 10 of file SensorManager.hpp.

4.20.2 Constructor & Destructor Documentation

4.20.2.1 SensorManager() [1/2]

```
SensorManager::SensorManager (
            const SensorManager &  )  [delete]
```

4.20.2.2 SensorManager() [2/2]

```
SensorManager::SensorManager ( )  [protected], [default]
```

4.20.2.3 ~SensorManager()

```
SensorManager::~SensorManager ( )  [protected], [default]
```

4.20.3 Member Function Documentation

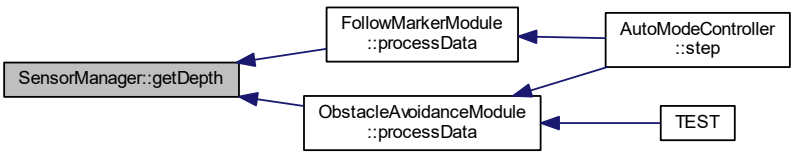
4.20.3.1 getDepth()

```
double SensorManager::getDepth (
            int x,
            int y )  [inline]
```

Get the depth [m] at the given pixel in the sensor data.

Definition at line 44 of file SensorManager.hpp.

Here is the caller graph for this function:



4.20.3.2 getFps()

```
float SensorManager::getFps ( )  [inline]
```

Get an average of the current processing FPS.

Definition at line 49 of file SensorManager.hpp.

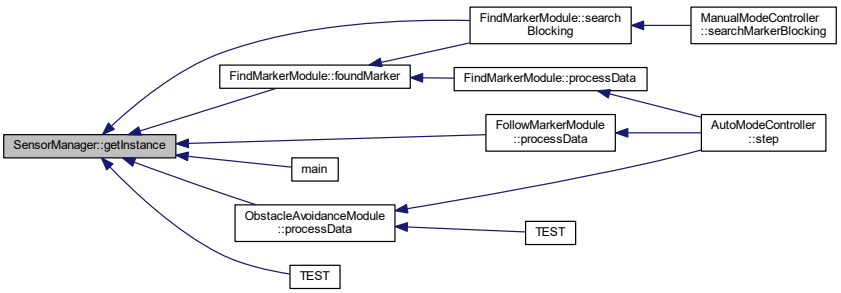
4.20.3.3 getInstance()

```
static SensorManager* SensorManager::getInstance ( )  [inline], [static]
```

Get the singleton instance of the sensor manager.

Definition at line 17 of file SensorManager.hpp.

Here is the caller graph for this function:



4.20.3.4 getMarkerList()

```
std::vector<MarkerInfo> SensorManager::getMarkerList ( )  [inline]
```

Get the list of currently detected markers.

Definition at line 29 of file SensorManager.hpp.

Here is the caller graph for this function:

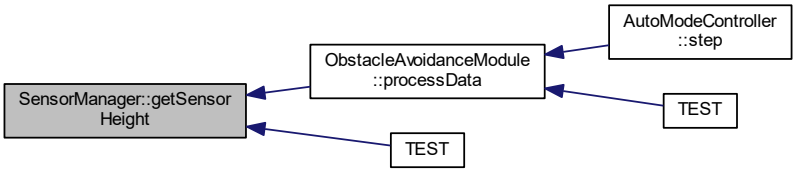
4.20.3.5 getSensorHeight()

```
int SensorManager::getSensorHeight ( )  [inline]
```

Get the height of the sensor data.

Definition at line 39 of file SensorManager.hpp.

Here is the caller graph for this function:



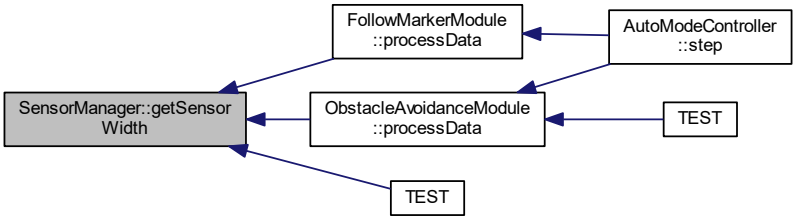
4.20.3.6 getSensorWidth()

```
int SensorManager::getSensorWidth ( )  [inline]
```

Get the width of the sensor data.

Definition at line 34 of file SensorManager.hpp.

Here is the caller graph for this function:



4.20.3.7 operator=()

```
SensorManager& SensorManager::operator= (
            const SensorManager &  )  [delete]
```

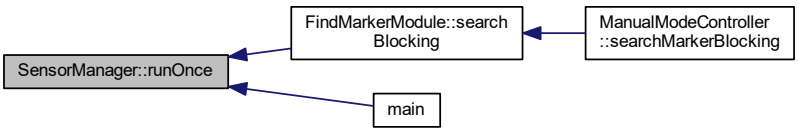
4.20.3.8 runOnce()

```
bool SensorManager::runOnce ( )  [inline]
```

Update color and depth data, and perform marker detection.

Definition at line 24 of file SensorManager.hpp.

Here is the caller graph for this function:

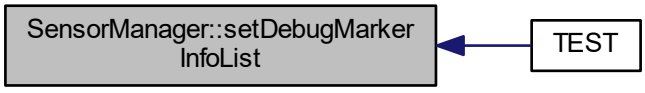


4.20.3.9 setDebugMarkerInfoList()

```
void SensorManager::setDebugMarkerInfoList (
            const std::vector< MarkerInfo > & debugMarkerInfoList )  [inline]
```

Definition at line 53 of file SensorManager.hpp.

Here is the caller graph for this function:



4.20.3.10 setDepth()

```
void SensorManager::setDepth (
            double depth )  [inline]
```

Definition at line 57 of file SensorManager.hpp.

Here is the caller graph for this function:

4.20.4 Member Data Documentation

4.20.4.1 debugMarkerInfoList

```
std::vector<MarkerInfo> SensorManager::debugMarkerInfoList  [protected]
```

Definition at line 65 of file SensorManager.hpp.

4.20.4.2 depth

```
double SensorManager::depth {}  [protected]
```

Definition at line 66 of file SensorManager.hpp.

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

- PSE_2018_Gruppe1/src/test/mocks/SensorManager.hpp

4.21 TerminalHandler Class Reference

```
#include <TerminalHandler.hpp>
```

Public Member Functions

- TerminalHandler (std::shared_ptr< ManualModeController > manualModeController, std::shared_ptr< AutoModeController > autoModeController)

  Constructs a new TerminalHandler.
- virtual ~TerminalHandler ()
- void abort ()

  Aborts all running operations.
- void startInputHandling ()

  Main entry point to the TerminalHandler.
- bool isInAutoMode () const

  Checks whether the user chose to operate in automatic mode.
- TerminalHandler (std::shared_ptr< ManualModeController > manualModeController, std::shared_ptr< AutoModeController > autoModeController)

  Constructs a new TerminalHandler.
- virtual ~TerminalHandler ()
- void abort ()

  Aborts all running operations.
- void startInputHandling ()

  Main entry point to the TerminalHandler.
- bool isInAutoMode () const

  Checks whether the user chose to operate in automatic mode.
- bool handleSetCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `set`.
- bool handleDriveCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `drive`.
- bool handleScriptCommand (std::vector< std::string > &commandTokens, int recursionDepth)

  Handles a command if its first token is `script`.
- bool handleSearchCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `search`.
- bool handleModeCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `mode`.
- bool evalUserInput (const std::string &input, bool scriptMode=false, int recursionDepth=0)

  Gets called whenever the user entered a new line and tries to parse the entered command.
- bool tryRunSetupScript ()

  checks if a script called setup.pse is placed besides the application executable.

Static Public Member Functions

- static void splitString (const std::string &input, std::vector< std::string > &result, const char *delim)

  Splits a given input string at a 1-character delimiter.

Private Member Functions

- bool handleSetCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `set`.
- bool handleDriveCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `drive`.
- bool handleScriptCommand (std::vector< std::string > &commandTokens, int recursionDepth)

  Handles a command if its first token is `script`.
- bool handleSearchCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `search`.
- bool handleModeCommand (std::vector< std::string > &commandTokens)

  Handles a command if its first token is `mode`.
- bool evalUserInput (const std::string &input, bool scriptMode=false, int recursionDepth=0)

  Gets called whenever the user entered a new line and tries to parse the entered command.
- bool tryRunSetupScript ()

  checks if a script called setup.pse is placed besides the application executable.

Static Private Member Functions

- static void splitString (const std::string &input, std::vector< std::string > &result, const char *delim)

  Splits a given input string at a 1-character delimiter.

Private Attributes

- std::shared_ptr< ManualModeController > m_manualModeController
- std::shared_ptr< AutoModeController > m_autoModeController
- std::atomic< bool > m_isInAutoMode {false}
- std::atomic< bool > m_handleInput {true}
- std::atomic< bool > m_abortScript {true}

Static Private Attributes

- static constexpr int MAX_RECURSION_DEPTH = 5
- static constexpr DiagnosticLevel DEFAULT_DIAGNOSTICS_MAX_LEVEL = DiagnosticLevel::DIAG_ERROR

4.21.1 Detailed Description

Definition at line 14 of file TerminalHandler.hpp.

4.21.2 Constructor & Destructor Documentation

4.21.2.1 TerminalHandler() [1/2]

```
TerminalHandler::TerminalHandler (
            std::shared_ptr< ManualModeController > manualModeController,
            std::shared_ptr< AutoModeController > autoModeController )
```

Constructs a new TerminalHandler.

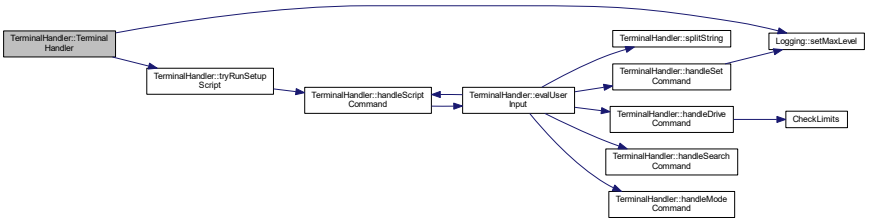
Constructor for TerminalHandler.

Parameters

manualModeController	Controller for manual operation.
autoModeController	Controller for automatic marker based operation.
manualModeController	Controller for manual mode commands
autoModeController	Controller for automatic mode commands

Definition at line 25 of file TerminalHandler.cpp.

Here is the call graph for this function:



4.21.2.2 ~TerminalHandler() [1/2]

```
TerminalHandler::~TerminalHandler ( )  [virtual], [default]
```

4.21.2.3 TerminalHandler() [2/2]

```
TerminalHandler::TerminalHandler (
            std::shared_ptr< ManualModeController > manualModeController,
            std::shared_ptr< AutoModeController > autoModeController )
```

Constructs a new TerminalHandler.

Parameters

manualModeController	Controller for manual operation.
autoModeController	Controller for automatic marker based operation.

4.21.2.4 ~TerminalHandler() [2/2]

```
virtual TerminalHandler::~TerminalHandler ( )  [virtual]
```

4.21.3 Member Function Documentation

4.21.3.1 abort() [1/2]

```
void TerminalHandler::abort ( )
```

Aborts all running operations.

Abort the current command execution, whatever is being run right now.

Definition at line 46 of file TerminalHandler.cpp.

4.21.3.2 abort() [2/2]

```
void TerminalHandler::abort ( )
```

Aborts all running operations.

4.21.3.3 evalUserInput() [1/2]

```
bool TerminalHandler::evalUserInput (
            const std::string & input,
            bool scriptMode = false,
            int recursionDepth = 0 )
```

Gets called whenever the user entered a new line and tries to parse the entered command.

Parameters

input	Command string as entered by the user.
scriptMode	Scripts also use this function. In order to block them from using certain commands, handleScriptCommand() sets this to true.
recursionDepth	A script using the script command to call itself might cause infinite recursion. This parameter counts the depth of the current call so we can abort if it gets too deep.

Returns

true if input contained a valid command and the command execution succeeded

4.21.3.4 evalUserInput() [2/2]

```
bool TerminalHandler::evalUserInput (
            const std::string & input,
            bool scriptMode = false,
            int recursionDepth = 0 )  [private]
```

Gets called whenever the user entered a new line and tries to parse the entered command.

Tries to execute a given command string.

Parameters

input	Command string as entered by the user.
scriptMode	Scripts also use this function. In order to block them from using certain commands, handleScriptCommand() sets this to true.
recursionDepth	A script using the script command to call itself might cause infinite recursion. This parameter counts the depth of the current call so we can abort if it gets too deep.

Returns

true if input contained a valid command and the command execution succeeded

Parameters

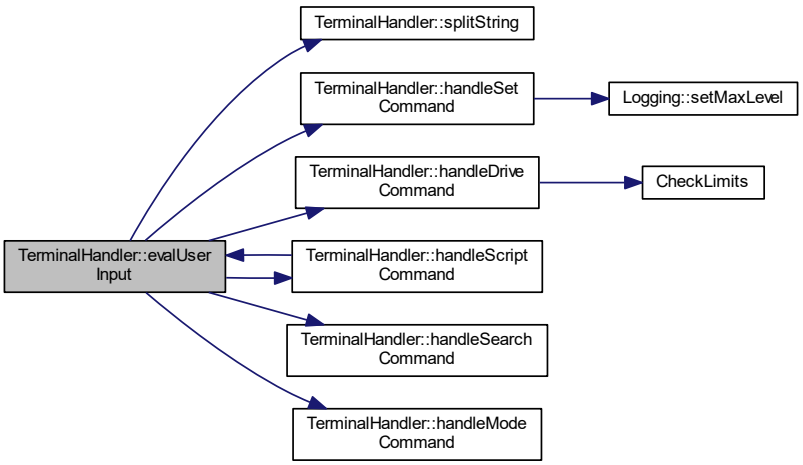
input	the command string

Returns

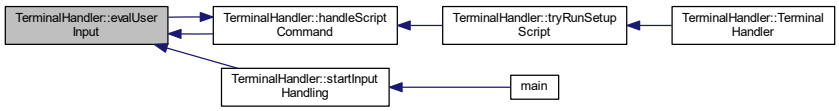
True on success, False on Fail

Definition at line 340 of file TerminalHandler.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.21.3.5 handleDriveCommand() [1/2]

```
bool TerminalHandler::handleDriveCommand (
            std::vector< std::string > & commandTokens )
```

Handles a command if its first token is `drive`.

Drives with the given speed in a given direction for a given time if all three parameters. are within the boundaries that are given in the specification.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

4.21.3.6 handleDriveCommand() [2/2]

```
bool TerminalHandler::handleDriveCommand (
            std::vector< std::string > & commandTokens )  [private]
```

Handles a command if its first token is `drive`.

Handles the "drive" command (see spec)

Drives with the given speed in a given direction for a given time if all three parameters. are within the boundaries that are given in the specification.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

Parameters

commandTokens	all tokens that were extracted from the input

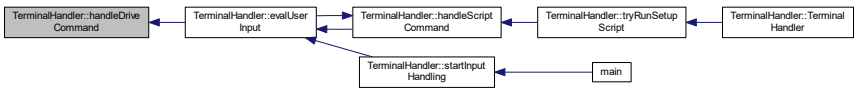
Returns

True on success, False on Fail

Definition at line 173 of file TerminalHandler.cpp.

Here is the call graph for this function:

Here is the caller graph for this function:



4.21.3.7 handleModeCommand() [1/2]

```
bool TerminalHandler::handleModeCommand (
            std::vector< std::string > & commandTokens )
```

Handles a command if its first token is `mode`.

If the second token is a valid mode of operation according to the specification (1 or 2), the mode is switched accordingly.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

4.21.3.8 handleModeCommand() [2/2]

```
bool TerminalHandler::handleModeCommand (
            std::vector< std::string > & commandTokens )  [private]
```

Handles a command if its first token is `mode`.

Handles the "mode" command (see spec)

If the second token is a valid mode of operation according to the specification (1 or 2), the mode is switched accordingly.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

Parameters

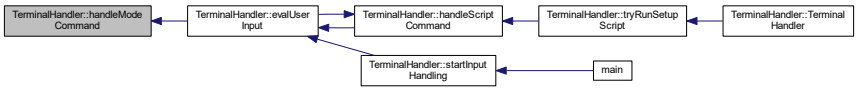
commandTokens	all tokens that were extracted from the input

Returns

True on success, False on Fail

Definition at line 301 of file TerminalHandler.cpp.

Here is the caller graph for this function:



4.21.3.9 handleScriptCommand() [1/2]

```
bool TerminalHandler::handleScriptCommand (
            std::vector< std::string > & commandTokens,
            int recursionDepth )
```

Handles a command if its first token is `script`.

If a script is found at the given path, this command handler executes the script line by line.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

4.21.3.10 handleScriptCommand() [2/2]

```
bool TerminalHandler::handleScriptCommand (
            std::vector< std::string > & commandTokens,
            int recursionDepth )  [private]
```

Handles a command if its first token is `script`.

Handles the "script" command (see spec)

If a script is found at the given path, this command handler executes the script line by line.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

Parameters

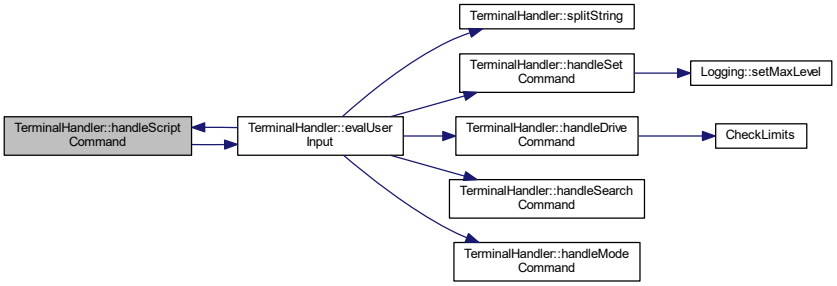
commandTokens	all tokens that were extracted from the input

Returns

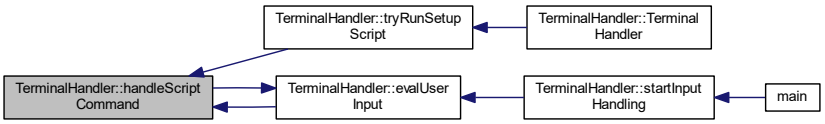
True on success, False on Fail

Definition at line 214 of file TerminalHandler.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.21.3.11 handleSearchCommand() [1/2]

```
bool TerminalHandler::handleSearchCommand (
            std::vector< std::string > & commandTokens )
```

Handles a command if its first token is `search`.

Starts a new blocking marker search.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

4.21.3.12 handleSearchCommand() [2/2]

```
bool TerminalHandler::handleSearchCommand (
            std::vector< std::string > & commandTokens )  [private]
```

Handles a command if its first token is `search`.

Handles the "search" command (see spec)

Starts a new blocking marker search.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

Parameters

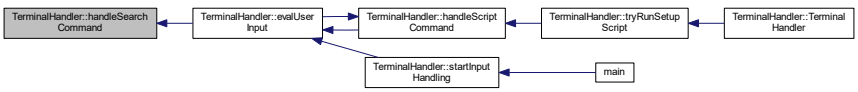
commandTokens	all tokens that were extracted from the input

Returns

True on success, False on Fail

Definition at line 288 of file TerminalHandler.cpp.

Here is the caller graph for this function:



4.21.3.13 handleSetCommand() [1/2]

```
bool TerminalHandler::handleSetCommand (
            std::vector< std::string > & commandTokens )
```

Handles a command if its first token is `set`.

Sets the specified values, as described in the specification.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

4.21.3.14 handleSetCommand() [2/2]

```
bool TerminalHandler::handleSetCommand (
            std::vector< std::string > & commandTokens )  [private]
```

Handles a command if its first token is `set`.

Executes the "set" command (see spec)

Sets the specified values, as described in the specification.

Parameters

commandTokens	a token representation of the entered user command, split at every space character.

Returns

true if the user input did not contain errors and the command succeeded. false otherwise.

Parameters

commandTokens	all tokens that were extracted from the input

Returns

True on success, False on Fail

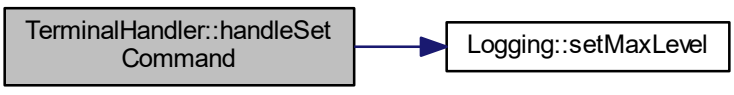
< set timeout switch

< set distance switch

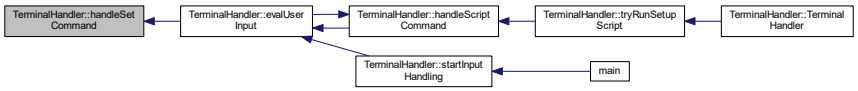
< set logging level switch

Definition at line 91 of file TerminalHandler.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.21.3.15 isInAutoMode() [1/2]

```
bool TerminalHandler::isInAutoMode ( ) const
```

Checks whether the user chose to operate in automatic mode.

Returns

value of m_IsInAutoMode.

Definition at line 423 of file TerminalHandler.cpp.

4.21.3.16 isInAutoMode() [2/2]

```
bool TerminalHandler::isInAutoMode ( ) const
```

Checks whether the user chose to operate in automatic mode.

Returns

value of m_IsInAutoMode.

4.21.3.17 splitString() [1/2]

```
static void TerminalHandler::splitString (
            const std::string & input,
            std::vector< std::string > & result,
            const char * delim )  [static]
```

Splits a given input string at a 1-character delimiter.

Parameters

input	String that has to be split
result	Reference to a existing vector that wil lbe used to store the resulting tokens.
delim	1-character delimiter that is used to split the input string.

4.21.3.18 splitString() [2/2]

```
void TerminalHandler::splitString (
            const std::string & input,
            std::vector< std::string > & result,
            const char * delim )  [static], [private]
```

Splits a given input string at a 1-character delimiter.

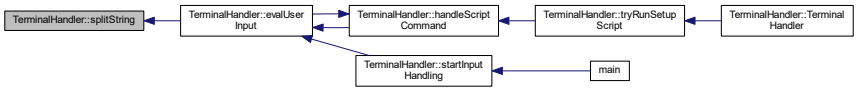
Splits a given string at a given delimiter and saves the resulting tokens in the vector result.

Parameters

input	String that has to be split
result	Reference to a existing vector that wil lbe used to store the resulting tokens.
delim	1-character delimiter that is used to split the input string.
input	The string
result	A ref to a vector that will be filled with the tokens
delim	The delimiter for the split operation

Definition at line 69 of file TerminalHandler.cpp.

Here is the caller graph for this function:



4.21.3.19 startInputHandling() [1/2]

```
void TerminalHandler::startInputHandling ( )
```

Main entry point to the TerminalHandler.

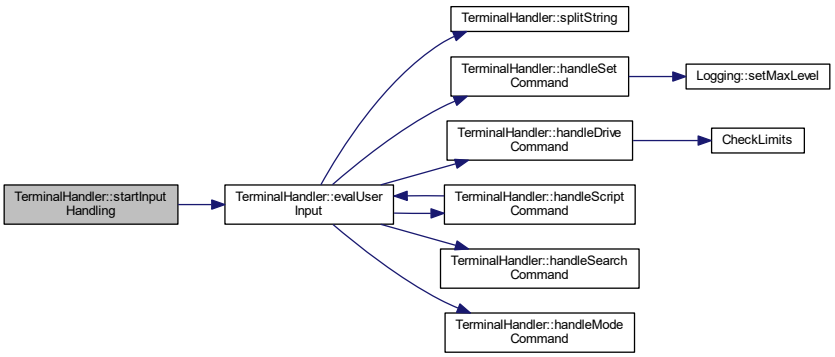
Main Terminal Handler function.

Displays a banner and opens a user prompt. ONLY CALL THIS FROM A SEPARATE THREAD!

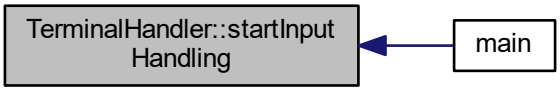
Will run in its own thread.

Definition at line 403 of file TerminalHandler.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.21.3.20 startInputHandling() [2/2]

```
void TerminalHandler::startInputHandling ( )
```

Main entry point to the TerminalHandler.

Displays a banner and opens a user prompt. ONLY CALL THIS FROM A SEPARATE THREAD!

4.21.3.21 tryRunSetupScript() [1/2]

```
bool TerminalHandler::tryRunSetupScript ( )
```

checks if a script called setup.pse is placed besides the application executable.

If such a script is found, it is executed.

Returns

true if the script was successfully executed

4.21.3.22 tryRunSetupScript() [2/2]

```
bool TerminalHandler::tryRunSetupScript ( )  [private]
```

checks if a script called setup.pse is placed besides the application executable.

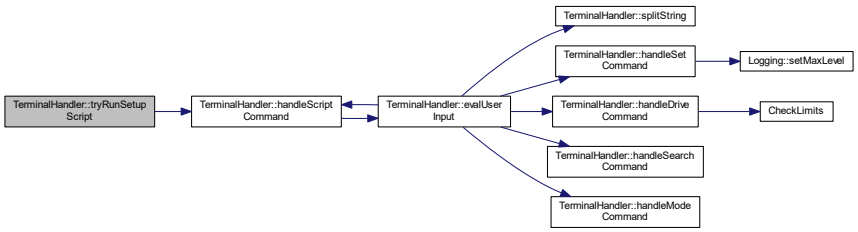
If such a script is found, it is executed.

Returns

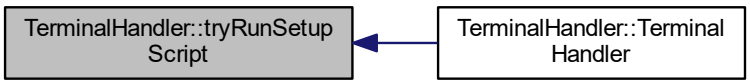
true if the script was successfully executed

Definition at line 34 of file TerminalHandler.cpp.

Here is the call graph for this function:



Here is the caller graph for this function:



4.21.4 Member Data Documentation

4.21.4.1 DEFAULT_DIAGNOSTICS_MAX_LEVEL

```
static constexpr DiagnosticLevel TerminalHandler::DEFAULT_DIAGNOSTICS_MAX_LEVEL = DiagnosticLevel::DIAG_ERROR
[static], [private]
```

Definition at line 123 of file TerminalHandler.hpp.

4.21.4.2 m_abortScript

```
std::atomic< bool > TerminalHandler::m_abortScript {true}  [private]
```

Definition at line 50 of file TerminalHandler.hpp.

4.21.4.3 m_autoModeController

```
std::shared_ptr< AutoModeController > TerminalHandler::m_autoModeController  [private]
```

Definition at line 47 of file TerminalHandler.hpp.

4.21.4.4 m_handleInput

```
std::atomic< bool > TerminalHandler::m_handleInput {true}  [private]
```

Definition at line 49 of file TerminalHandler.hpp.

4.21.4.5 m_isInAutoMode

```
std::atomic< bool > TerminalHandler::m_isInAutoMode {false}  [private]
```

Definition at line 48 of file TerminalHandler.hpp.

4.21.4.6 m_manualModeController

```
std::shared_ptr< ManualModeController > TerminalHandler::m_manualModeController  [private]
```

Definition at line 46 of file TerminalHandler.hpp.

4.21.4.7 MAX_RECURSION_DEPTH

```
static constexpr int TerminalHandler::MAX_RECURSION_DEPTH = 5  [static], [private]
```

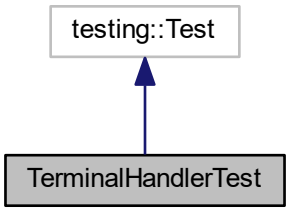
Definition at line 120 of file TerminalHandler.hpp.

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

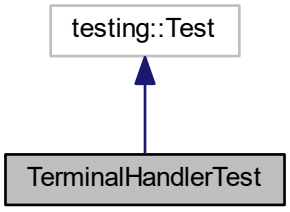
- PSE_2018_Gruppe1/src/TerminalHandler.hpp
- PSE_2018_Gruppe1/src/TerminalHandler.cpp

4.22 TerminalHandlerTest Class Reference

Inheritance diagram for TerminalHandlerTest:



Collaboration diagram for TerminalHandlerTest:



Protected Member Functions

- void SetUp () override
- void TearDown () override

Protected Attributes

- std::shared_ptr< DriveCommandHandler > driveCommandHandler
- std::shared_ptr< AutoModeController > autoModeController
- std::shared_ptr< ManualModeController > manualModeController
- std::shared_ptr< TerminalHandler > terminalHandler

4.22.1 Detailed Description

Definition at line 11 of file TerminalHandlerTest.cpp.

4.22.2 Member Function Documentation

4.22.2.1 SetUp()

```
void TerminalHandlerTest::SetUp ( )  [inline], [override], [protected]
```

Definition at line 19 of file TerminalHandlerTest.cpp.

4.22.2.2 TearDown()

```
void TerminalHandlerTest::TearDown ( )  [inline], [override], [protected]
```

Definition at line 27 of file TerminalHandlerTest.cpp.

4.22.3 Member Data Documentation

4.22.3.1 autoModeController

```
std::shared_ptr<AutoModeController> TerminalHandlerTest::autoModeController  [protected]
```

Definition at line 15 of file TerminalHandlerTest.cpp.

4.22.3.2 driveCommandHandler

```
std::shared_ptr<DriveCommandHandler> TerminalHandlerTest::driveCommandHandler  [protected]
```

Definition at line 14 of file TerminalHandlerTest.cpp.

4.22.3.3 manualModeController

```
std::shared_ptr<ManualModeController> TerminalHandlerTest::manualModeController  [protected]
```

Definition at line 16 of file TerminalHandlerTest.cpp.

4.22.3.4 terminalHandler

```
std::shared_ptr<TerminalHandler> TerminalHandlerTest::terminalHandler  [protected]
```

Definition at line 17 of file TerminalHandlerTest.cpp.

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

- PSE_2018_Gruppe1/src/test/TerminalHandlerTest.cpp

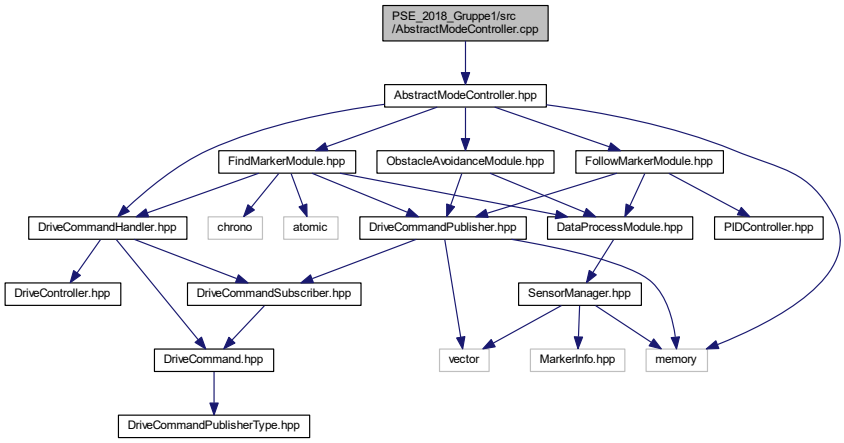
Chapter 5

File Documentation

5.1 PSE_2018_Gruppe1/src/AbstractModeController.cpp File Reference

```
#include "AbstractModeController.hpp"
```

Include dependency graph for AbstractModeController.cpp:

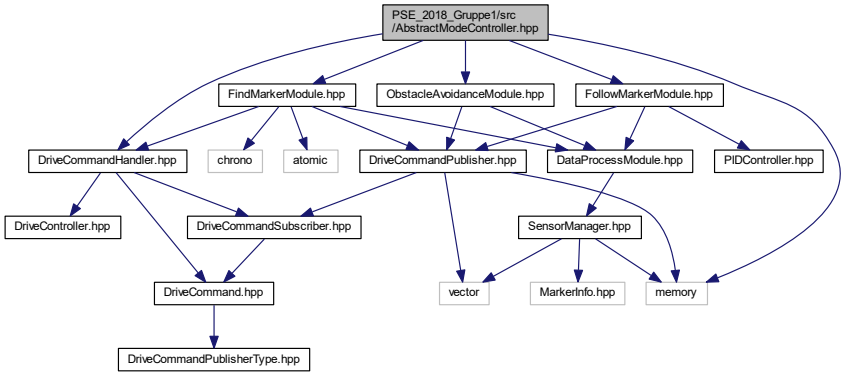


5.2 PSE_2018_Gruppe1/src/AbstractModeController.hpp File Reference

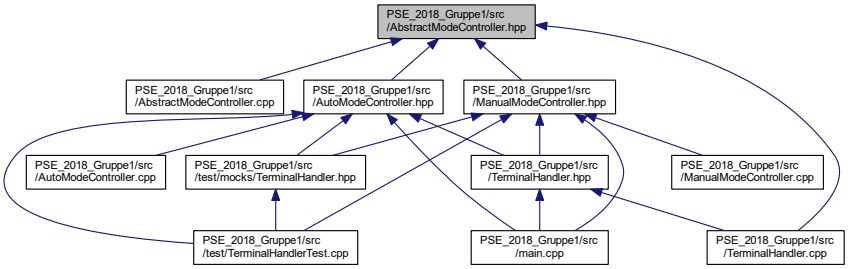
```
#include "DriveCommandHandler.hpp"
#include "FindMarkerModule.hpp"
#include "FollowMarkerModule.hpp"
#include "ObstacleAvoidanceModule.hpp"
```

```
#include <memory>
```

Include dependency graph for AbstractModeController.hpp:



This graph shows which files directly or indirectly include this file:



Classes

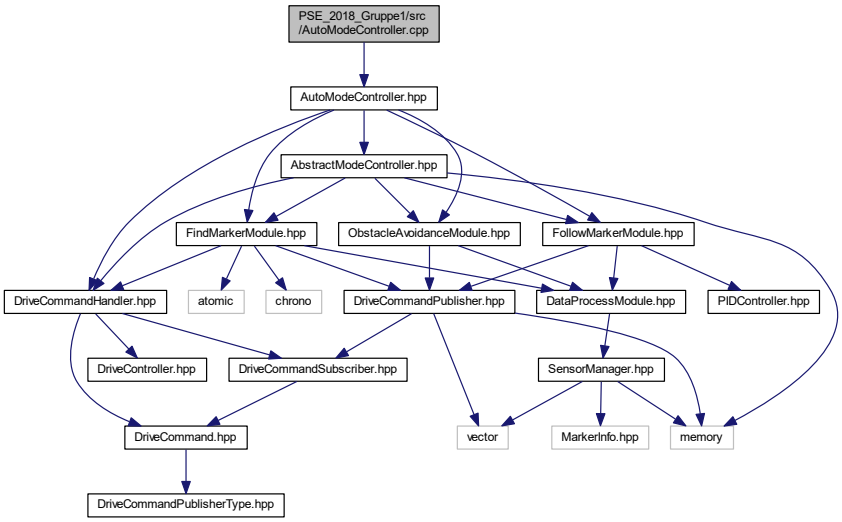
- class AbstractModeController

  Abstract base class for AutoModeController and ManualModeController.

5.3 PSE_2018_Gruppe1/src/AutoModeController.cpp File Reference

```
#include "AutoModeController.hpp"
```

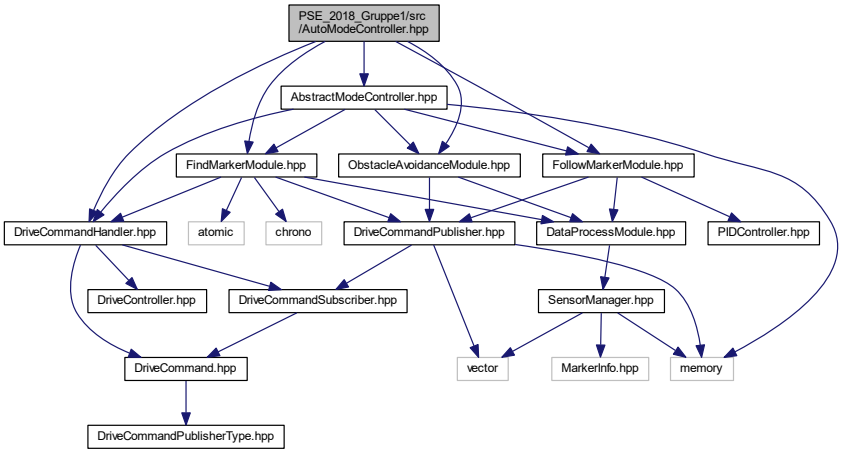
Include dependency graph for AutoModeController.cpp:



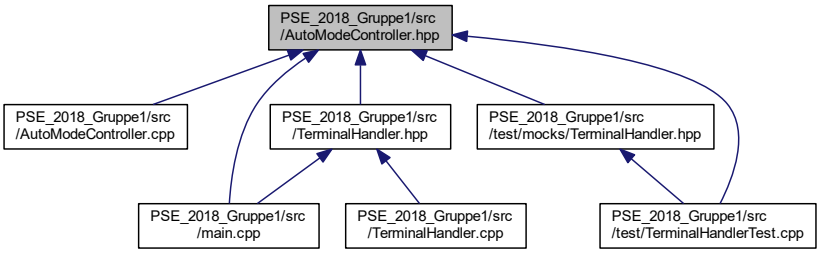
5.4 PSE_2018_Gruppe1/src/AutoModeController.hpp File Reference

```
#include "DriveCommandHandler.hpp"
#include "AbstractModeController.hpp"
#include "ObstacleAvoidanceModule.hpp"
#include "FollowMarkerModule.hpp"
#include "FindMarkerModule.hpp"
```

Include dependency graph for AutoModeController.hpp:



This graph shows which files directly or indirectly include this file:



Classes

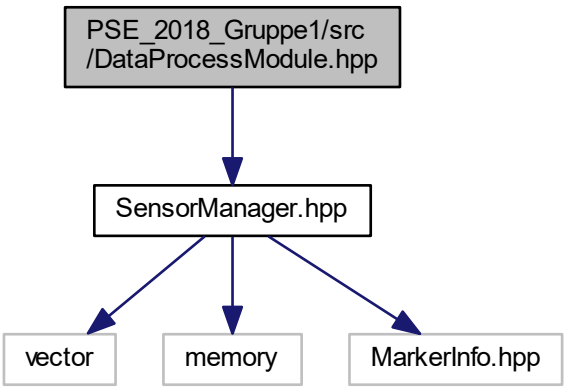
- class AutoModeController

  Controls the execution of all three submodules in automatic driving mode.

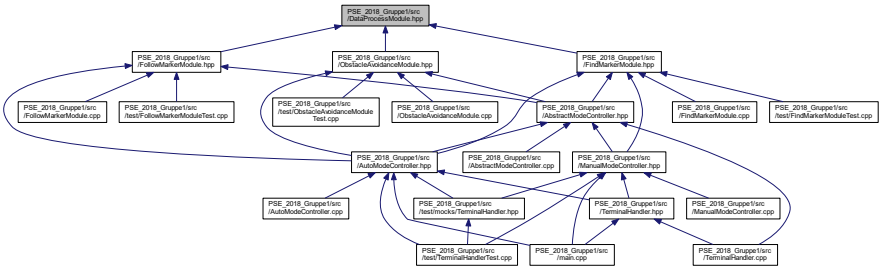
5.5 PSE_2018_Gruppe1/src/DataProcessModule.hpp File Reference

```
#include "SensorManager.hpp"
```

Include dependency graph for DataProcessModule.hpp:



This graph shows which files directly or indirectly include this file:



Classes

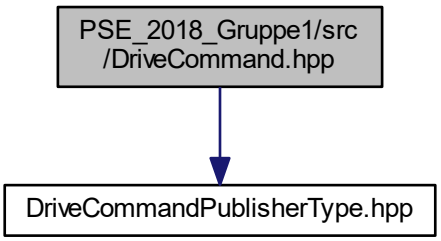
- class DataProcessModule

  All automatic mode modules that have to work with data from the SensorManager use this base class as their interface.

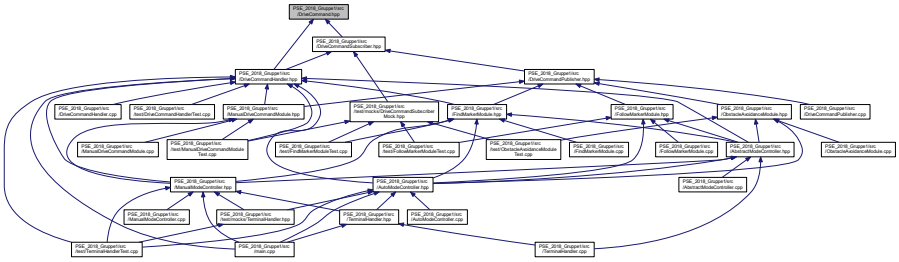
5.6 PSE_2018_Gruppe1/src/DriveCommand.hpp File Reference

```
#include "DriveCommandPublisherType.hpp"
```

Include dependency graph for DriveCommand.hpp:



This graph shows which files directly or indirectly include this file:



Classes

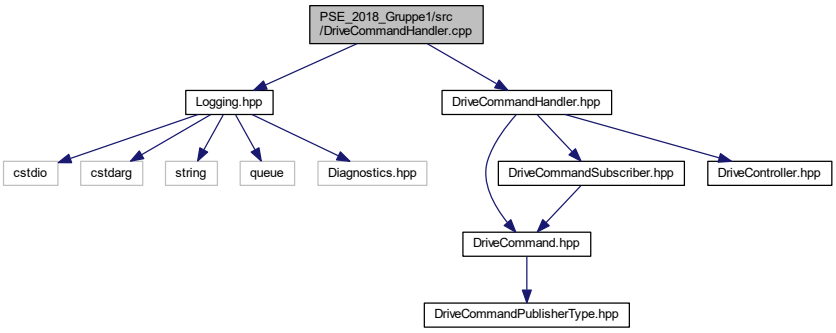
- struct DriveCommand

  This struct is used during communication between DriveCommandPublishers and DriveCommandSubscribers.

5.7 PSE_2018_Gruppe1/src/DriveCommandHandler.cpp File Reference

```
#include "Logging.hpp"
#include "DriveCommandHandler.hpp"
```

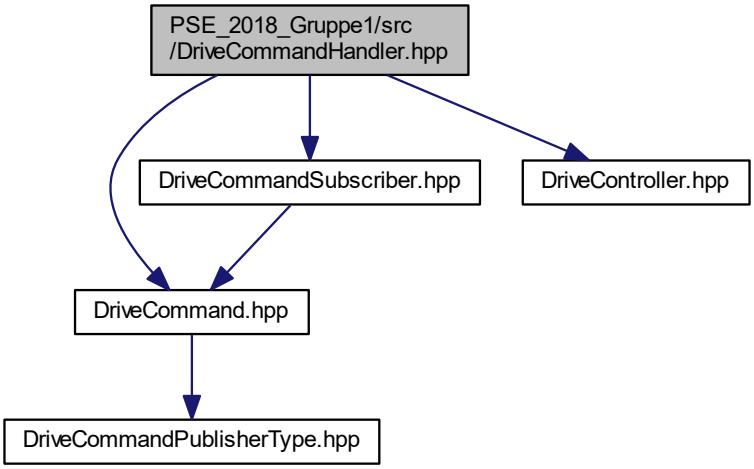
Include dependency graph for DriveCommandHandler.cpp:



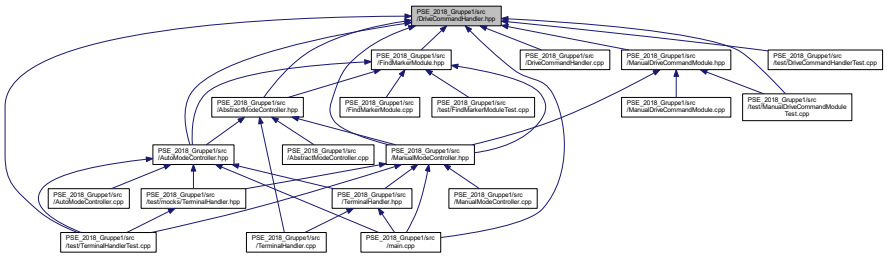
5.8 PSE_2018_Gruppe1/src/DriveCommandHandler.hpp File Reference

```
#include "DriveCommand.hpp"
#include "DriveCommandSubscriber.hpp"
#include "DriveController.hpp"
```

Include dependency graph for DriveCommandHandler.hpp:



This graph shows which files directly or indirectly include this file:



Classes

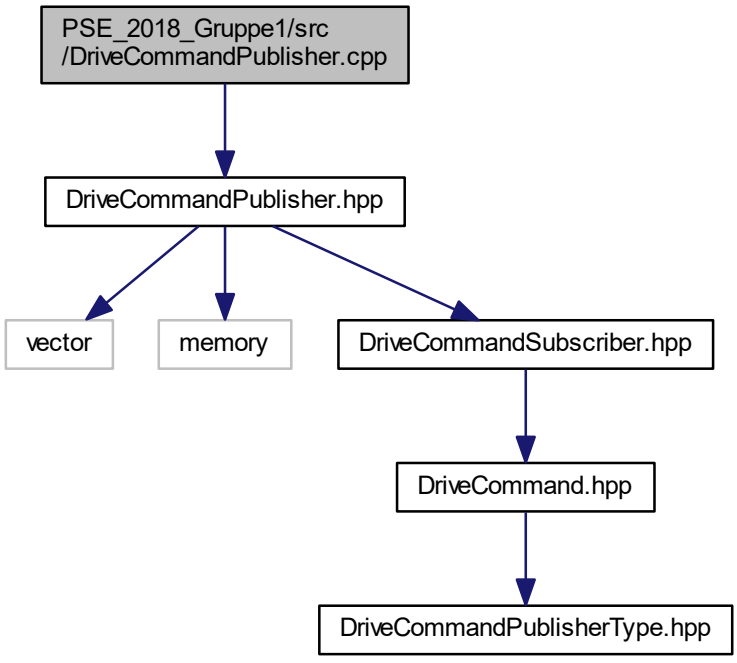
- class DriveCommandHandler

  This class can receive DriveCommand structs, prioritizes them by their source and forwards the values to the DriveController once updateMotor() gets called.

5.9 PSE_2018_Gruppe1/src/DriveCommandPublisher.cpp File Reference

```
#include "DriveCommandPublisher.hpp"
```

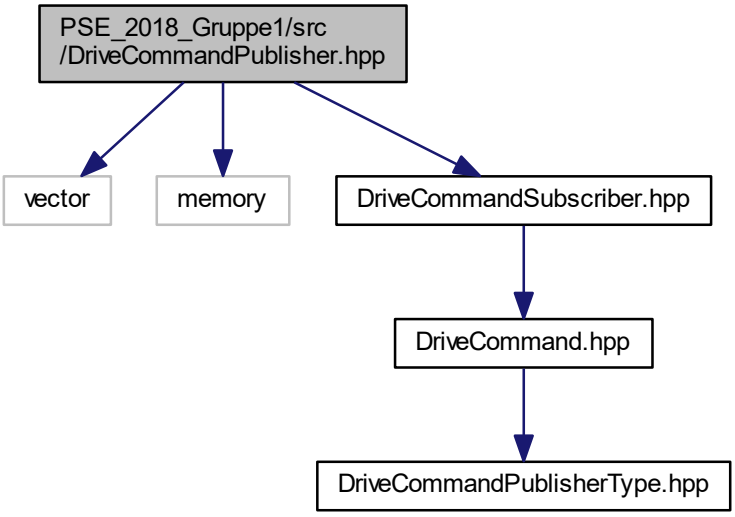
Include dependency graph for DriveCommandPublisher.cpp:



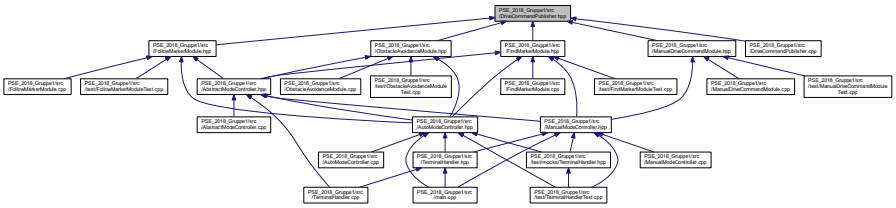
5.10 PSE_2018_Gruppe1/src/DriveCommandPublisher.hpp File Reference

```
#include <vector>
#include <memory>
#include "DriveCommandSubscriber.hpp"
```

Include dependency graph for DriveCommandPublisher.hpp:



This graph shows which files directly or indirectly include this file:



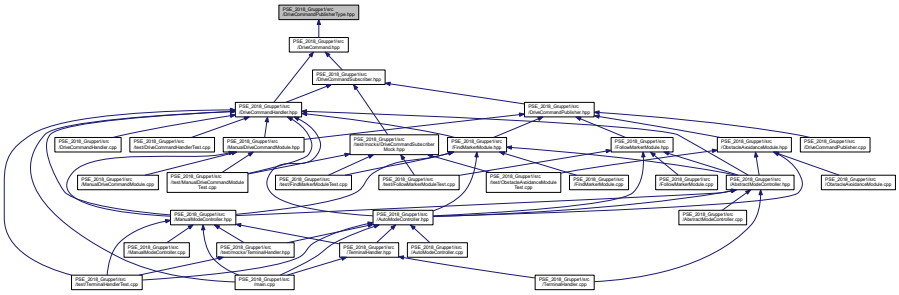
Classes

- class DriveCommandPublisher

  Base class for all classes that are able to publish DriveCommands to a DriveCommandSubscriber.

5.11 PSE_2018_Gruppe1/src/DriveCommandPublisherType.hpp File Reference

This graph shows which files directly or indirectly include this file:



Enumerations

- enum DriveCommandPublisherType {
  NO_COMMAND = 0x0, FIND_MARKER = 0x1, FOLLOW_MARKER = 0x2, OBSTACLE_AVOIDANCE = 0x3,
  MANUAL_COMMAND = 0x4 }

  The DriveCommand types, with following priorities low: FIND_MARKER FOLLOW_MARKER OBSTACLE_AVOID↩ ANCE high MANUAL_COMMAND.

5.11.1 Enumeration Type Documentation

5.11.1.1 DriveCommandPublisherType

```
enum DriveCommandPublisherType
```

The DriveCommand types, with following priorities low: FIND_MARKER FOLLOW_MARKER OBSTACLE_AVOI↩ DANCE high MANUAL_COMMAND.

Enumerator

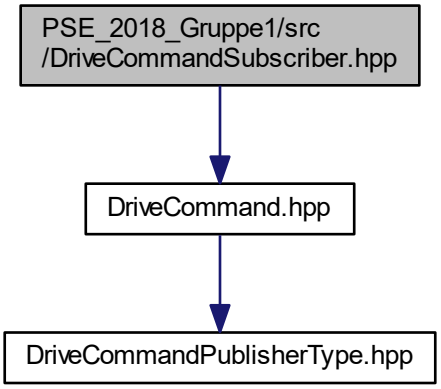
NO_COMMAND	
FIND_MARKER	
FOLLOW_MARKER	
OBSTACLE_AVOIDANCE	
MANUAL_COMMAND	

Definition at line 17 of file DriveCommandPublisherType.hpp.

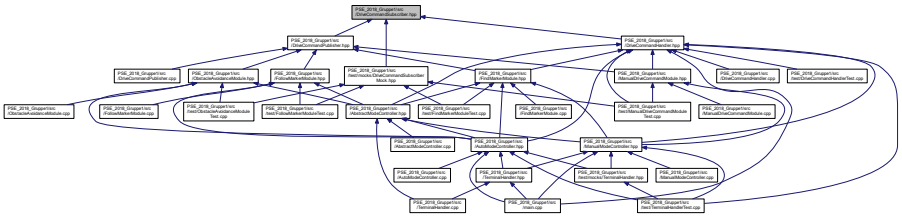
5.12 PSE_2018_Gruppe1/src/DriveCommandSubscriber.hpp File Reference

```
#include "DriveCommand.hpp"
```

Include dependency graph for DriveCommandSubscriber.hpp:



This graph shows which files directly or indirectly include this file:



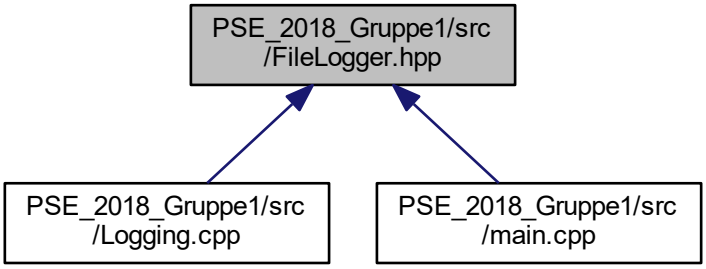
Classes

- class DriveCommandSubscriber

  DriveCommandSubscribers can receive DriveCommand structs from objects that are derived from DriveCommandPublisher.

5.13 PSE_2018_Gruppe1/src/FileLogger.hpp File Reference

This graph shows which files directly or indirectly include this file:



Classes

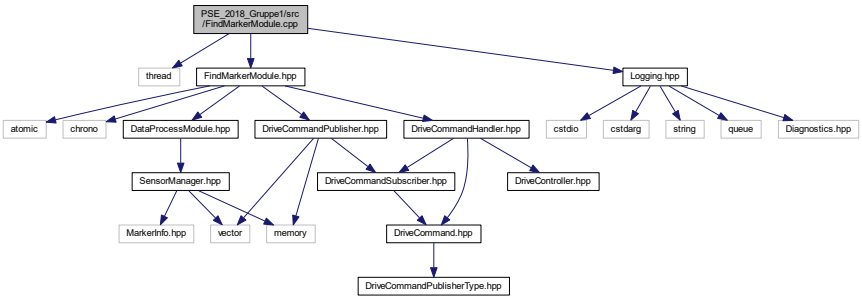
- class FileLogger

  Class to to write log messages to a file called "events.log".

5.14 PSE_2018_Gruppe1/src/FindMarkerModule.cpp File Reference

```
#include <thread>
#include "FindMarkerModule.hpp"
#include "Logging.hpp"
```

Include dependency graph for FindMarkerModule.cpp:

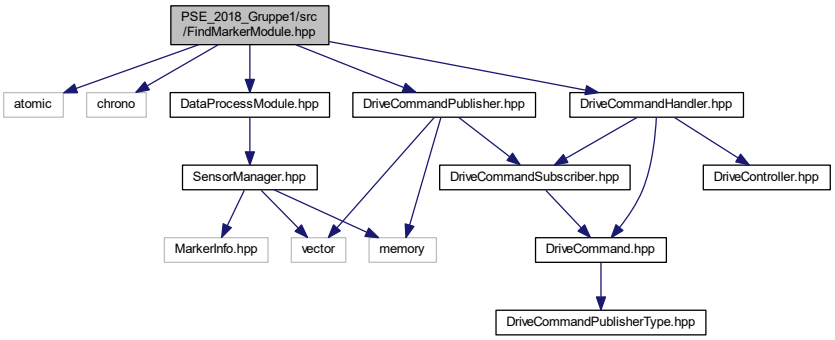


5.15 PSE_2018_Gruppe1/src/FindMarkerModule.hpp File Reference

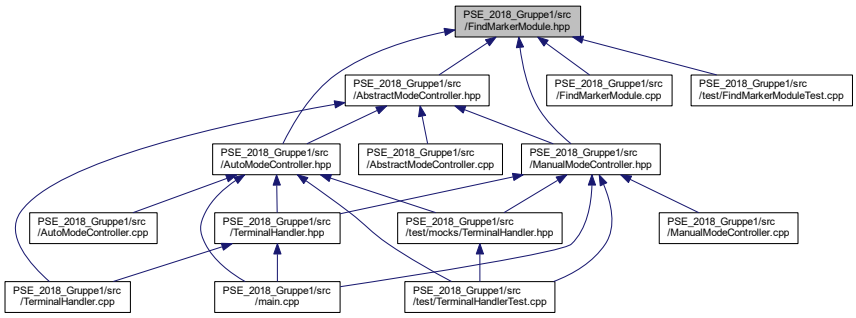
```
#include <atomic>
#include <chrono>
```

```
#include "DriveCommandPublisher.hpp"
#include "DataProcessModule.hpp"
#include "DriveCommandHandler.hpp"
```

Include dependency graph for FindMarkerModule.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class FindMarkerModule

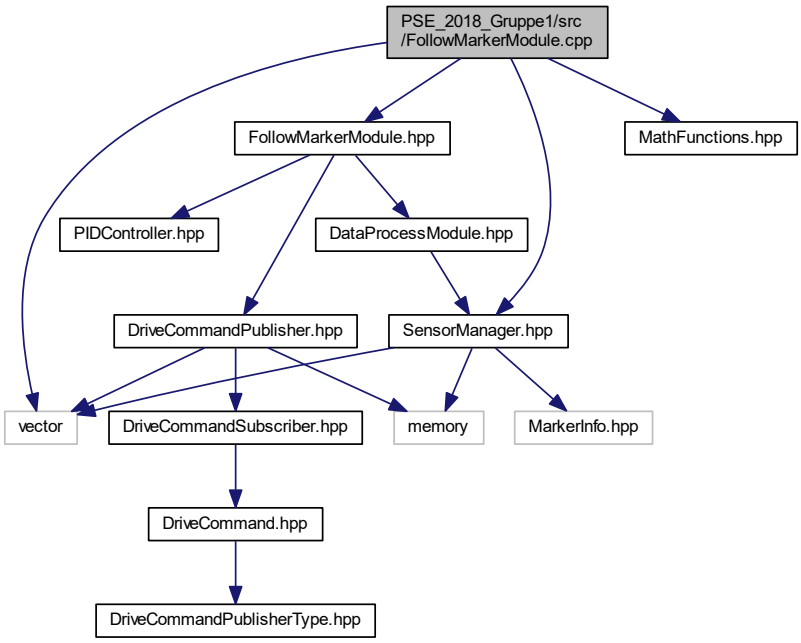
  This module can be active in manual and in auto mode.

5.16 PSE_2018_Gruppe1/src/FollowMarkerModule.cpp File Reference

```
#include <vector>
#include "SensorManager.hpp"
#include "FollowMarkerModule.hpp"
```

```
#include "MathFunctions.hpp"
```

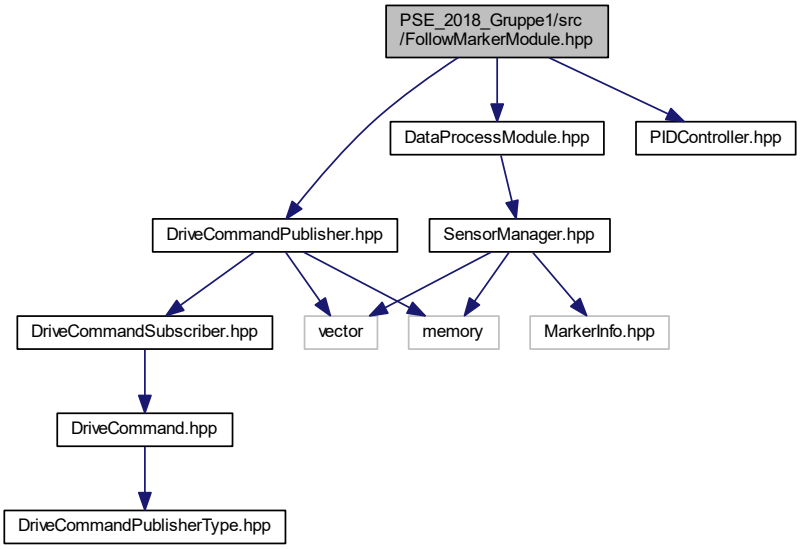
Include dependency graph for FollowMarkerModule.cpp:



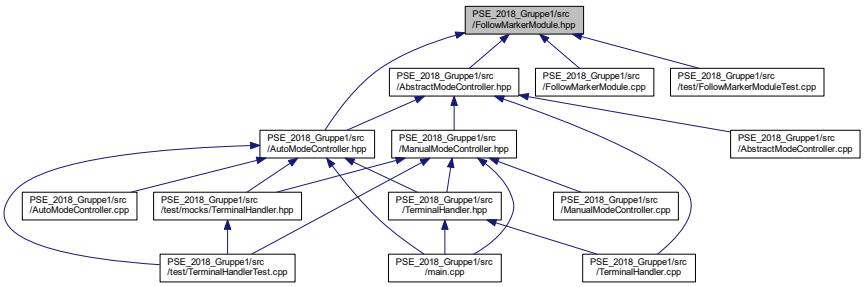
5.17 PSE_2018_Gruppe1/src/FollowMarkerModule.hpp File Reference

```
#include "DriveCommandPublisher.hpp"
#include "DataProcessModule.hpp"
#include "PIDController.hpp"
```

Include dependency graph for FollowMarkerModule.hpp:



This graph shows which files directly or indirectly include this file:



Classes

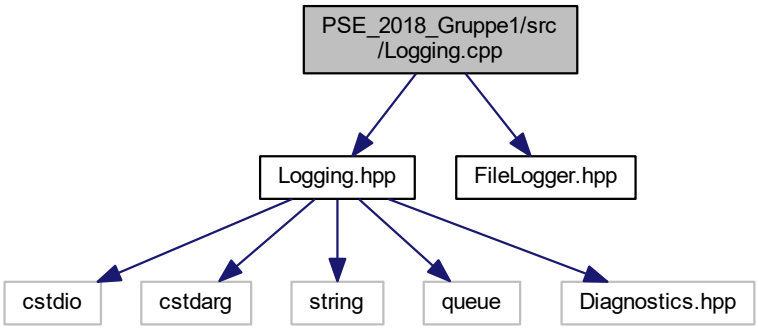
- class FollowMarkerModule

  This module retrieves the markerList from the SensorManager, checks for markers and tries to follow the one with the best confidence until it loses track of it.

5.18 PSE_2018_Gruppe1/src/Logging.cpp File Reference

```
#include "Logging.hpp"
#include "FileLogger.hpp"
```

Include dependency graph for Logging.cpp:



Variables

- static DiagnosticLevel s_logLevel = DiagnosticLevel::DIAG_VERBOSE

5.18.1 Variable Documentation

5.18.1.1 s_logLevel

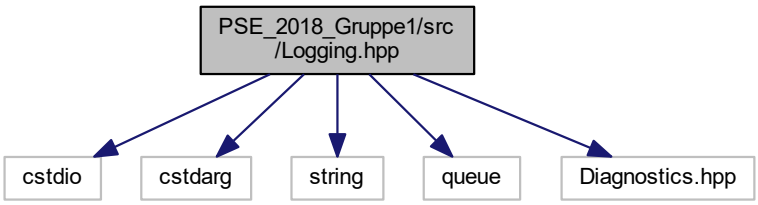
```
DiagnosticLevel s_logLevel = DiagnosticLevel::DIAG_VERBOSE  [static]
```

Definition at line 8 of file Logging.cpp.

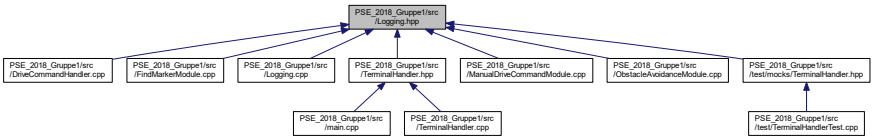
5.19 PSE_2018_Gruppe1/src/Logging.hpp File Reference

```
#include <cstdio>
#include <cstdarg>
#include <string>
#include <queue>
#include <Diagnostics.hpp>
```

Include dependency graph for Logging.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class Logging

  This is a wrapper class for Diagnostics.

Macros

- #define DIAG_VERBOSE(msg, ...) Logging::log(DiagnosticLevel::DIAG_VERBOSE, __FILE__, __LINE__↩ , msg, ##__VA_ARGS__)
- #define DIAG_DEBUG(msg, ...) Logging::log(DiagnosticLevel::DIAG_DEBUG, __FILE__, __LINE__, msg, ##__VA_ARGS__)
- #define DIAG_INFO(msg, ...) Logging::log(DiagnosticLevel::DIAG_INFO, __FILE__, __LINE__, msg, ##_↩ _VA_ARGS__)
- #define DIAG_WARNING(msg, ...) Logging::log(DiagnosticLevel::DIAG_WARNING, __FILE__, __LINE__↩ , msg, ##__VA_ARGS__)
- #define DIAG_ERROR(msg, ...) Logging::log(DiagnosticLevel::DIAG_ERROR, __FILE__, __LINE__, msg, ##__VA_ARGS__)

5.19.1 Macro Definition Documentation

5.19.1.1 DIAG_DEBUG

```
#define DIAG_DEBUG(
              msg,
              ...  ) Logging::log(DiagnosticLevel::DIAG_DEBUG, __FILE__, __LINE__, msg, ##__V↩
A_ARGS__)
```

Definition at line 22 of file Logging.hpp.

5.19.1.2 DIAG_ERROR

```
#define DIAG_ERROR(
              msg,
              ...  ) Logging::log(DiagnosticLevel::DIAG_ERROR, __FILE__, __LINE__, msg, ##__V↩
A_ARGS__)
```

Definition at line 25 of file Logging.hpp.

5.19.1.3 DIAG_INFO

```
#define DIAG_INFO(
              msg,
              ...  ) Logging::log(DiagnosticLevel::DIAG_INFO, __FILE__, __LINE__, msg, ##__VA↩
_ARGS__)
```

Definition at line 23 of file Logging.hpp.

5.19.1.4 DIAG_VERBOSE

```
#define DIAG_VERBOSE(
              msg,
              ...  ) Logging::log(DiagnosticLevel::DIAG_VERBOSE, __FILE__, __LINE__, msg, ##_↩
_VA_ARGS__)
```

Definition at line 21 of file Logging.hpp.

5.19.1.5 DIAG_WARNING

```
#define DIAG_WARNING(
              msg,
              ...  ) Logging::log(DiagnosticLevel::DIAG_WARNING, __FILE__, __LINE__, msg, ##_↩
_VA_ARGS__)
```

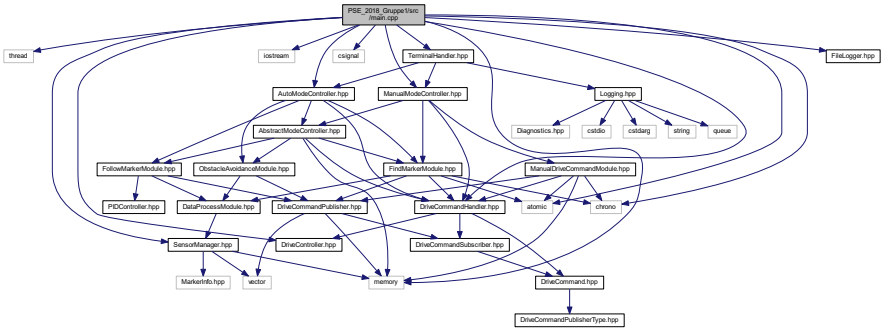
Definition at line 24 of file Logging.hpp.

5.20 PSE_2018_Gruppe1/src/main.cpp File Reference

```
#include <thread>
#include <atomic>
#include <chrono>
#include <iostream>
#include <memory>
#include <csignal>
#include <SensorManager.hpp>
#include <DriveController.hpp>
#include "AutoModeController.hpp"
#include "ManualModeController.hpp"
#include "DriveCommandHandler.hpp"
#include "TerminalHandler.hpp"
```

```
#include "FileLogger.hpp"
```

Include dependency graph for main.cpp:



Functions

- void motorStep ()

  this functions has to run the whole time the program is alive.

- int main (int argc, char ∗∗argv)

  Main function of the project.

Variables

- std::atomic< bool > g_doStep
- std::atomic< bool > g_appRunning
- static bool s_flushLogInstant

5.20.1 Function Documentation

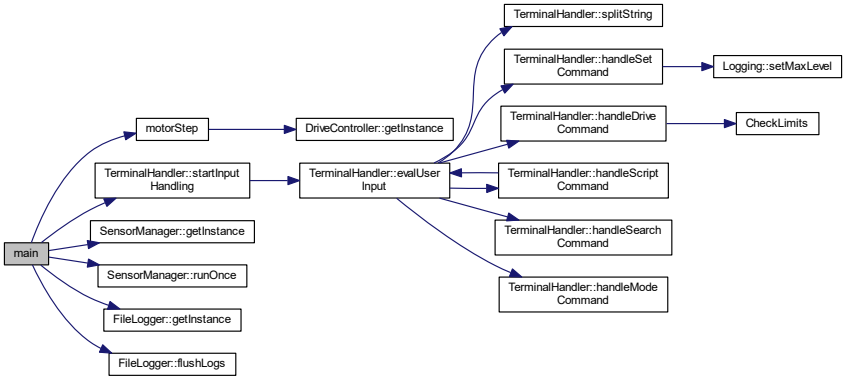
5.20.1.1 main()

```
int main (
            int argc,
            char ** argv )
```

Main function of the project.

Definition at line 45 of file main.cpp.

Here is the call graph for this function:



5.20.1.2 motorStep()

```
void motorStep ( )
```

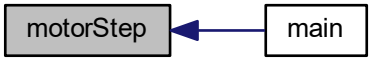
this functions has to run the whole time the program is alive.

It calls step() on the DriveController every 10 ms.

Definition at line 26 of file main.cpp.

Here is the call graph for this function:

Here is the caller graph for this function:



5.20.2 Variable Documentation

5.20.2.1 g_appRunning

```
std::atomic<bool> g_appRunning
```

Definition at line 18 of file main.cpp.

5.20.2.2 g_doStep

```
std::atomic<bool> g_doStep
```

Definition at line 17 of file main.cpp.

5.20.2.3 s_flushLogInstant

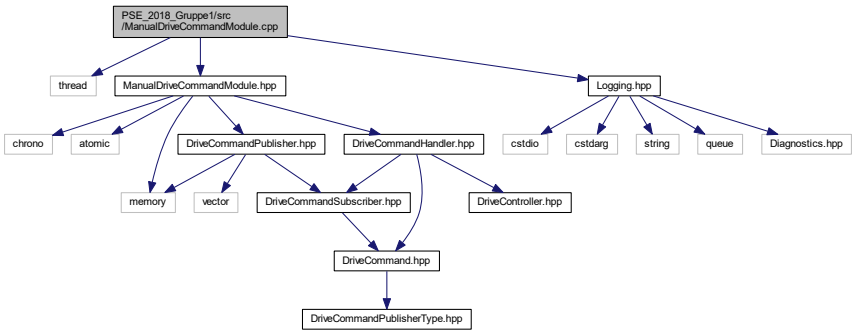
```
bool s_flushLogInstant  [static]
```

Definition at line 20 of file main.cpp.

5.21 PSE_2018_Gruppe1/src/ManualDriveCommandModule.cpp File Reference

```
#include <thread>
#include "ManualDriveCommandModule.hpp"
#include "Logging.hpp"
```

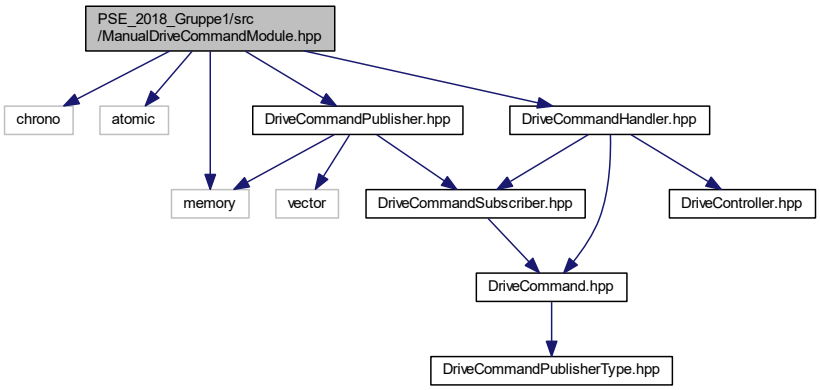
Include dependency graph for ManualDriveCommandModule.cpp:



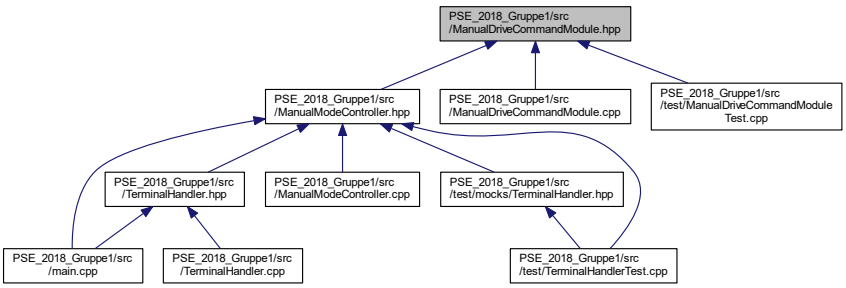
5.22 PSE_2018_Gruppe1/src/ManualDriveCommandModule.hpp File Reference

```
#include <chrono>
#include <atomic>
#include <memory>
#include "DriveCommandPublisher.hpp"
#include "DriveCommandHandler.hpp"
```

Include dependency graph for ManualDriveCommandModule.hpp:



This graph shows which files directly or indirectly include this file:



Classes

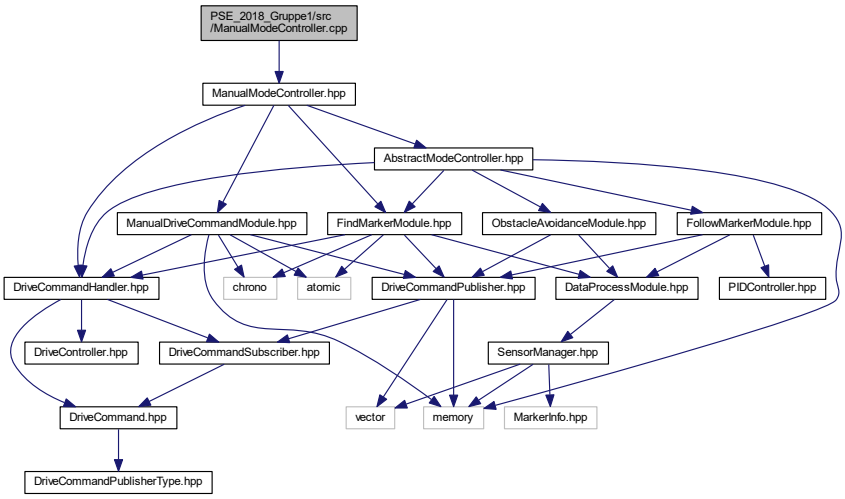
- class ManualDriveCommandModule

  This module is used for blocking drive operations via terminal command or script and can only be invoked via terminal.

5.23 PSE_2018_Gruppe1/src/ManualModeController.cpp File Reference

```
#include "ManualModeController.hpp"
```

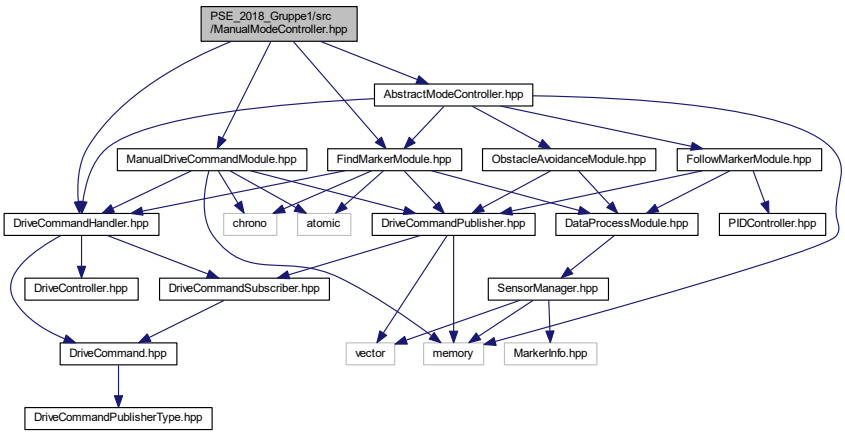
Include dependency graph for ManualModeController.cpp:



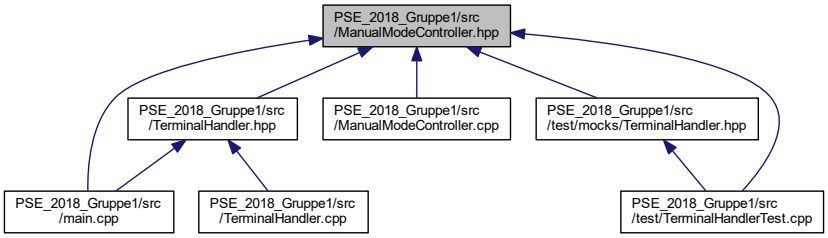
5.24 PSE_2018_Gruppe1/src/ManualModeController.hpp File Reference

```
#include "DriveCommandHandler.hpp"
#include "ManualDriveCommandModule.hpp"
#include "AbstractModeController.hpp"
#include "FindMarkerModule.hpp"
```

Include dependency graph for ManualModeController.hpp:



This graph shows which files directly or indirectly include this file:



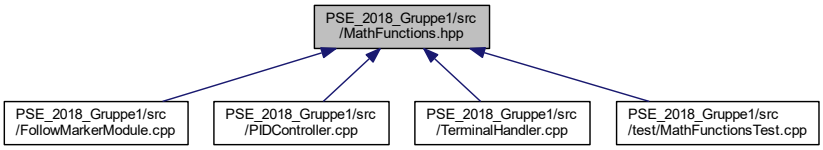
Classes

- class ManualModeController

  Child of AbstractModeController that is used for manual operation.

5.25 PSE_2018_Gruppe1/src/MathFunctions.hpp File Reference

This graph shows which files directly or indirectly include this file:



Functions

- template<class t >
  static t LimitBetween (t val, t lowerBound, t upperBound)

  Limits two arbitrary values between lowerBound and upperBound (inclusive the borders)
- template<class t >
  static bool CheckLimits (t val, t lowerBound, t upperBound)

  Checks whether a specified value lies between two specified bounds.

5.25.1 Function Documentation

5.25.1.1 CheckLimits()

```
template<class t >
static bool CheckLimits (
             t val,
             t lowerBound,
             t upperBound )  [static]
```

Checks whether a specified value lies between two specified bounds.

Template Parameters

t	Value types (most of the time implicitly inferred by the compiler)

Parameters

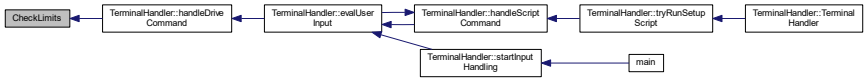
val	Value to check
lowerBound	Lower bound for the value
upperBound	Upper bound for the value

Returns

true if lowerBound <= val <= upperBound

Definition at line 40 of file MathFunctions.hpp.

Here is the caller graph for this function:



5.25.1.2 LimitBetween()

```
template<class t >
static t LimitBetween (
            t val,
            t lowerBound,
            t upperBound )  [static]
```

Limits two arbitrary values between lowerBound and upperBound (inclusive the borders)

Template Parameters

t	Value types (most of the time implicitly inferred by the compiler)

Parameters

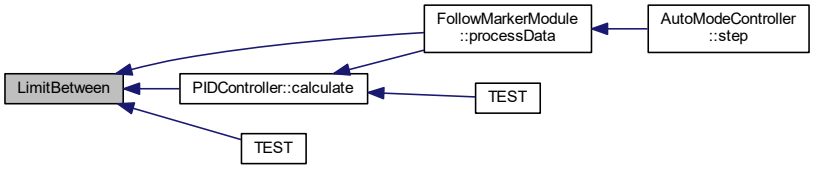
val	Value that has to be limited.
lowerBound	Lower boundary for the return value.
upperBound	Upper boundary for the return value.

Returns

returns val if it is within the bounds, lowerBound resp. upperBound otherwise.

Definition at line 19 of file MathFunctions.hpp.

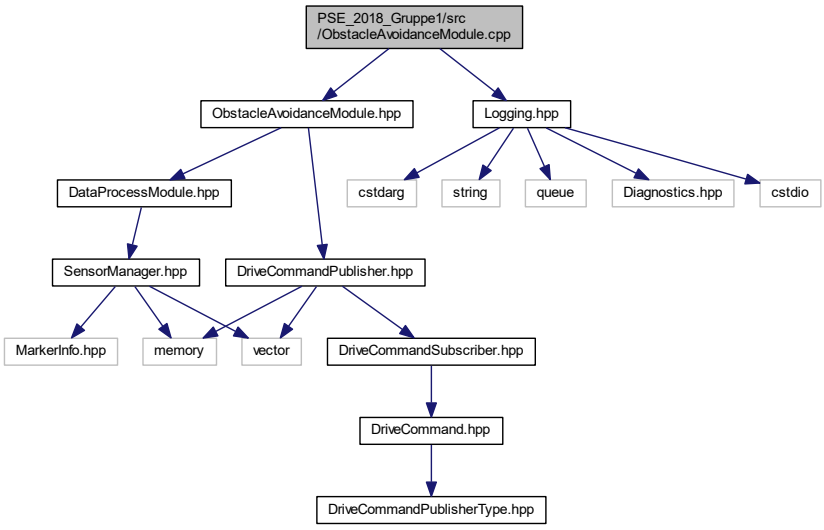
Here is the caller graph for this function:



5.26 PSE_2018_Gruppe1/src/ObstacleAvoidanceModule.cpp File Reference

```
#include "ObstacleAvoidanceModule.hpp"
#include "Logging.hpp"
```

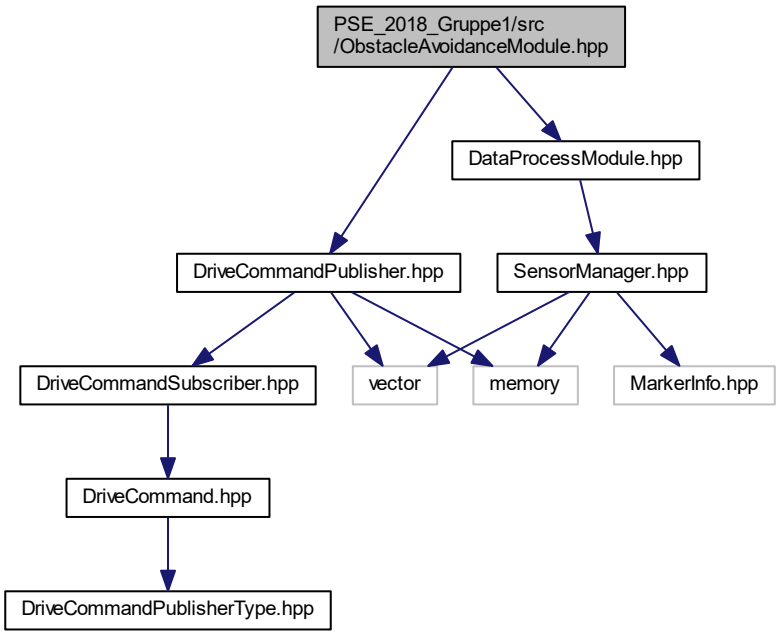
Include dependency graph for ObstacleAvoidanceModule.cpp:



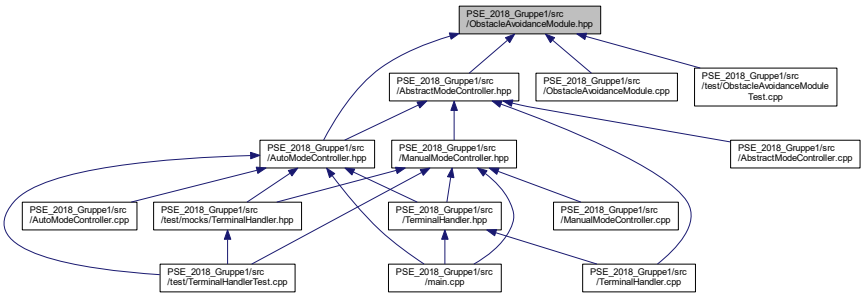
5.27 PSE_2018_Gruppe1/src/ObstacleAvoidanceModule.hpp File Reference

```
#include "DriveCommandPublisher.hpp"
#include "DataProcessModule.hpp"
```

Include dependency graph for ObstacleAvoidanceModule.hpp:



This graph shows which files directly or indirectly include this file:



Classes

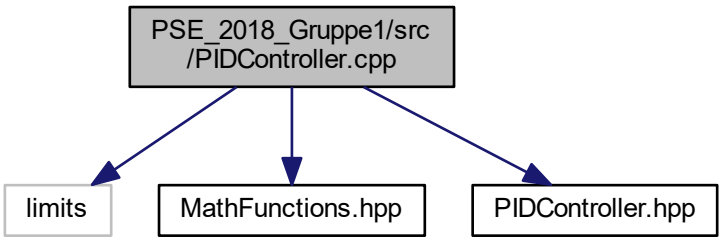
- class ObstacleAvoidanceModule

  Used in automatic mode to detect and avoid obstacles during automatic driving operations.

5.28 PSE_2018_Gruppe1/src/PIDController.cpp File Reference

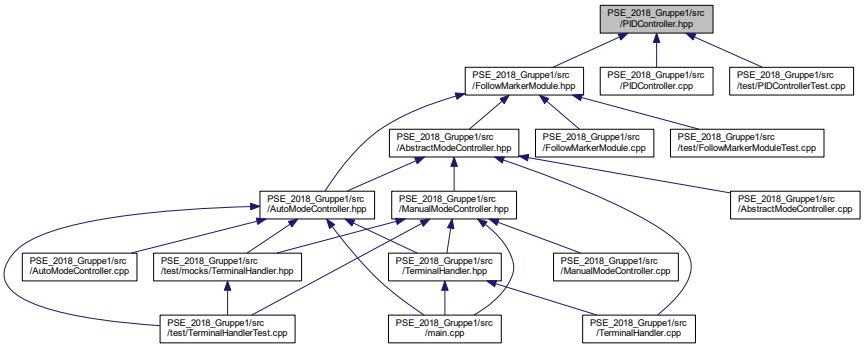
```
#include <limits>
#include "MathFunctions.hpp"
```

```
#include "PIDController.hpp"
```
Include dependency graph for PIDController.cpp:



5.29 PSE_2018_Gruppe1/src/PIDController.hpp File Reference

This graph shows which files directly or indirectly include this file:



Classes

- class PIDController

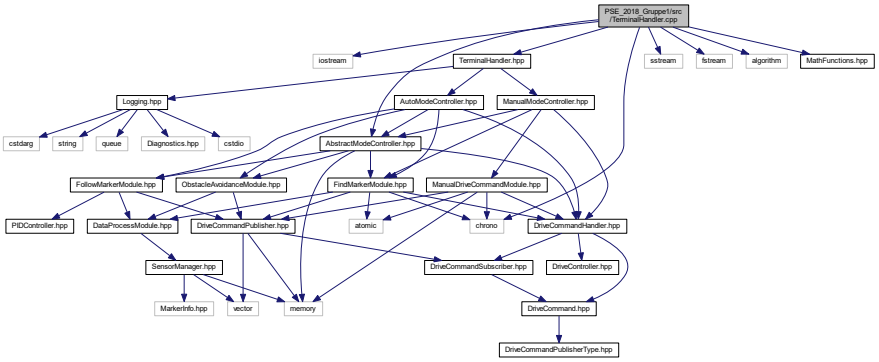
  Basic universal PID controller implementation.

5.30 PSE_2018_Gruppe1/src/TerminalHandler.cpp File Reference

```
#include <iostream>
#include <chrono>
#include <sstream>
#include <fstream>
#include <algorithm>
#include "AbstractModeController.hpp"
```

```
#include "TerminalHandler.hpp"
#include "MathFunctions.hpp"
```

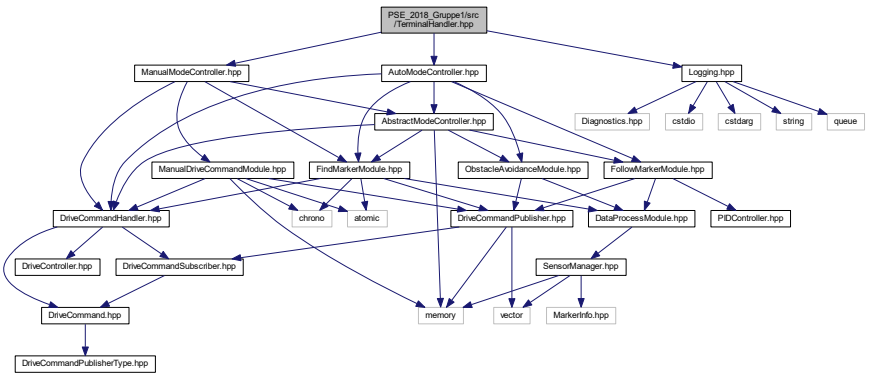
Include dependency graph for TerminalHandler.cpp:



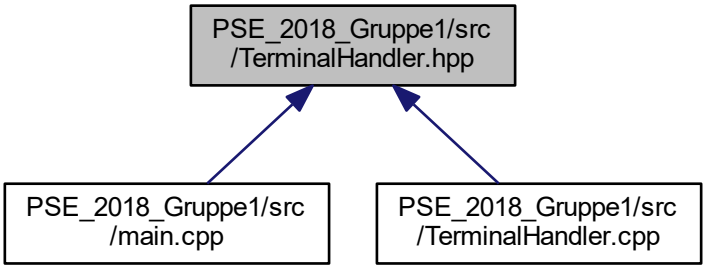
5.31 PSE_2018_Gruppe1/src/TerminalHandler.hpp File Reference

```
#include "AutoModeController.hpp"
#include "ManualModeController.hpp"
#include "Logging.hpp"
```

Include dependency graph for TerminalHandler.hpp:



This graph shows which files directly or indirectly include this file:



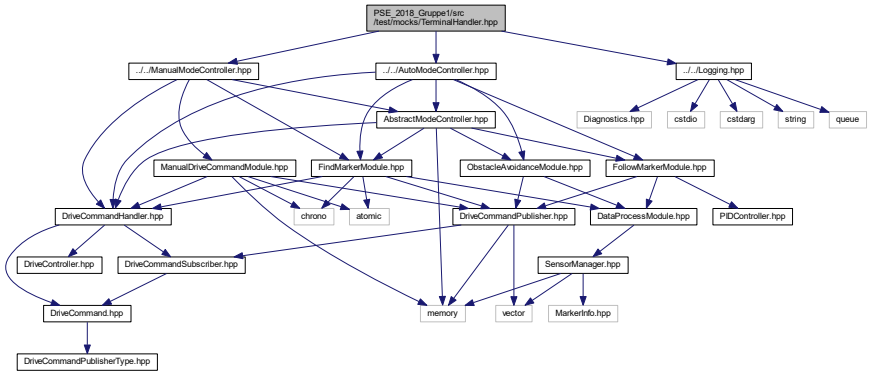
Classes

- class TerminalHandler

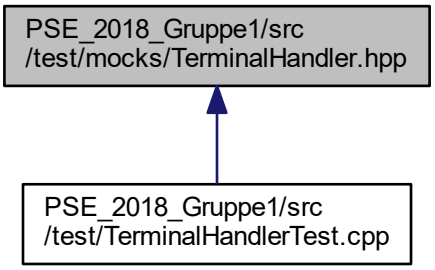
5.32 PSE_2018_Gruppe1/src/test/mocks/TerminalHandler.hpp File Reference

```
#include "../../AutoModeController.hpp"
#include "../../ManualModeController.hpp"
#include "../../Logging.hpp"
```

Include dependency graph for TerminalHandler.hpp:



This graph shows which files directly or indirectly include this file:



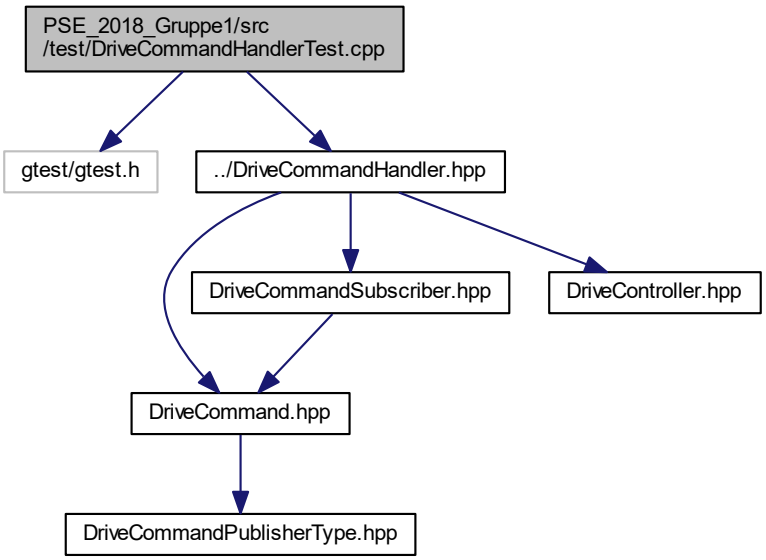
Classes

- class TerminalHandler

5.33 PSE_2018_Gruppe1/src/test/DriveCommandHandlerTest.cpp File Reference

```
#include <gtest/gtest.h>
#include "../DriveCommandHandler.hpp"
```

Include dependency graph for DriveCommandHandlerTest.cpp:



Functions

- TEST (DriveCommandHandler, commandPriorities)

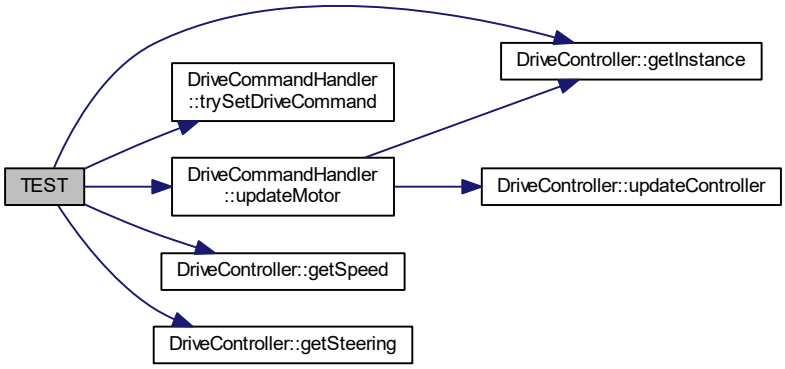
5.33.1 Function Documentation

5.33.1.1 TEST()

```
TEST (
            DriveCommandHandler ,
            commandPriorities  )
```

Definition at line 4 of file DriveCommandHandlerTest.cpp.

Here is the call graph for this function:

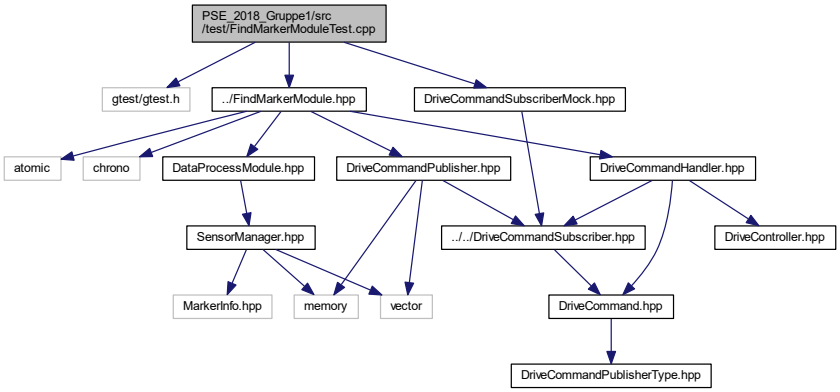


5.34 PSE_2018_Gruppe1/src/test/FindMarkerModuleTest.cpp File Reference

```
#include <gtest/gtest.h>
#include <DriveCommandSubscriberMock.hpp>
```

```
#include "../FindMarkerModule.hpp"
```

Include dependency graph for FindMarkerModuleTest.cpp:



Functions

- TEST (FindMarkerModuleTest, findMarkerTest)
- TEST (FindMarkerModuleTest, findMarkerBlockingTest)

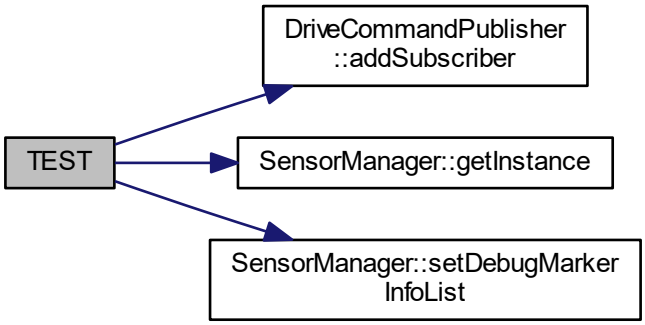
5.34.1 Function Documentation

5.34.1.1 TEST() [1/2]

```
TEST (
            FindMarkerModuleTest ,
            findMarkerTest  )
```

Definition at line 5 of file FindMarkerModuleTest.cpp.

Here is the call graph for this function:

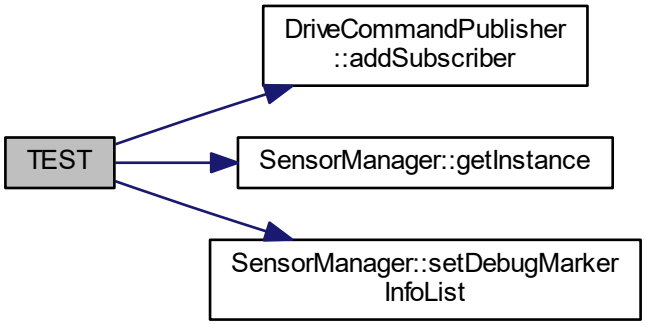


5.34.1.2 TEST() [2/2]

```
TEST (
            FindMarkerModuleTest ,
            findMarkerBlockingTest  )
```

Definition at line 46 of file FindMarkerModuleTest.cpp.

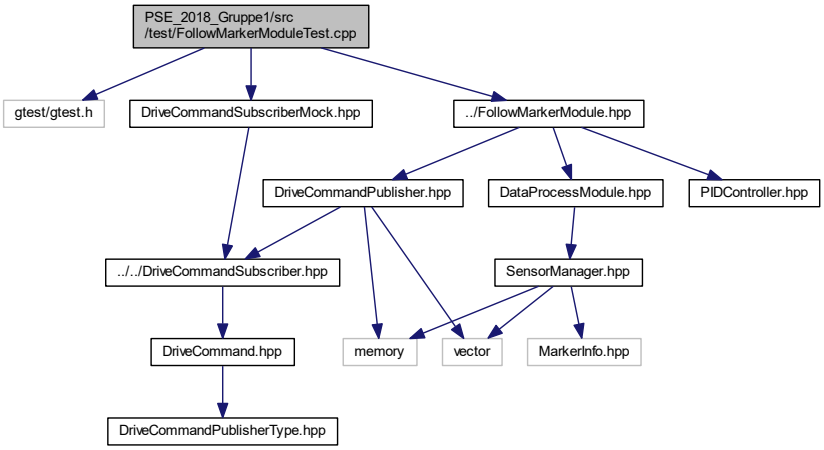
Here is the call graph for this function:



5.35 PSE_2018_Gruppe1/src/test/FollowMarkerModuleTest.cpp File Reference

```
#include <gtest/gtest.h>
#include <DriveCommandSubscriberMock.hpp>
#include "../FollowMarkerModule.hpp"
```

Include dependency graph for FollowMarkerModuleTest.cpp:



Functions

- TEST (FollowMarkerModuleTest, no_marker)

  If there is no marker for the FollowMarkerModule to find, it should not send any commands.
- TEST (FollowMarkerModuleTest, marker_right)

  If the marker is to the right of the sensor's center, FindMarkerModule should start commanding values that make the robot steer right.
- TEST (FollowMarkerModuleTest, marker_left)

  Check whether the FollowMarkerModule correctly commands negative steering values if we have a marker to the left.
- TEST (FollowMarkerModuleTest, marker_near)

  If we are closer to the marker than we should be, FollowMarkerModeul should emit commands that make the robot drive back.
- TEST (FollowMarkerModuleTest, marker_far)

  Check whether the FollowMarkerModule correctly drives towards a marker if the desired distance has not yet been reached.

5.35.1 Function Documentation

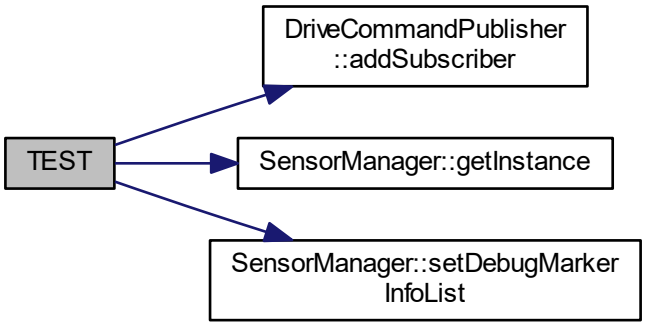
5.35.1.1 TEST() [1/5]

```
TEST (
            FollowMarkerModuleTest ,
            no_marker  )
```

If there is no marker for the FollowMarkerModule to find, it should not send any commands.

Definition at line 9 of file FollowMarkerModuleTest.cpp.

Here is the call graph for this function:



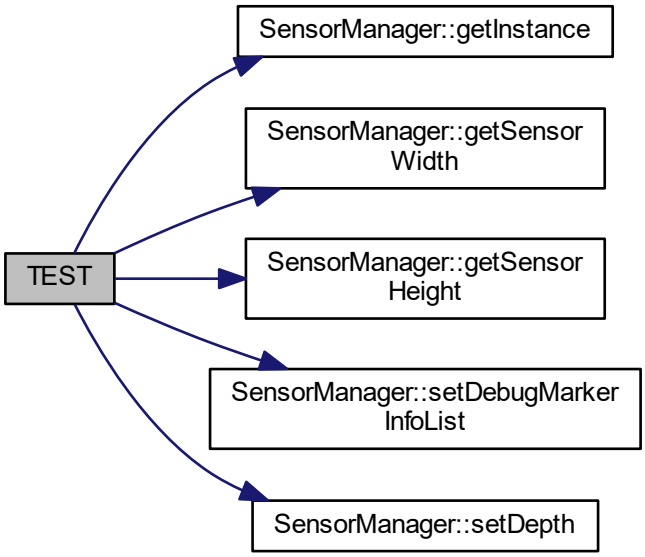
5.35.1.2 TEST() [2/5]

```
TEST (
            FollowMarkerModuleTest ,
            marker_right  )
```

If the marker is to the right of the sensor's center, FindMarkerModule should start commanding values that make the robot steer right.

Definition at line 32 of file FollowMarkerModuleTest.cpp.

Here is the call graph for this function:



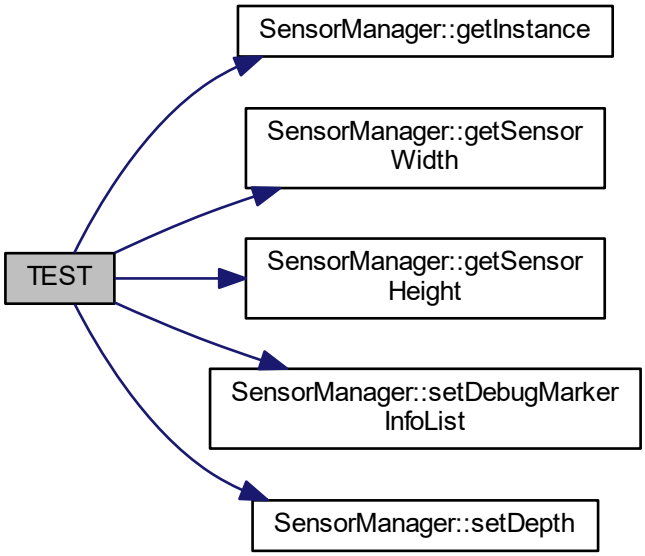
5.35.1.3 TEST() [3/5]

```
TEST (
            FollowMarkerModuleTest ,
            marker_left  )
```

Check whether the FollowMarkerModule correctly commands negative steering values if we have a marker to the left.

Definition at line 65 of file FollowMarkerModuleTest.cpp.

Here is the call graph for this function:



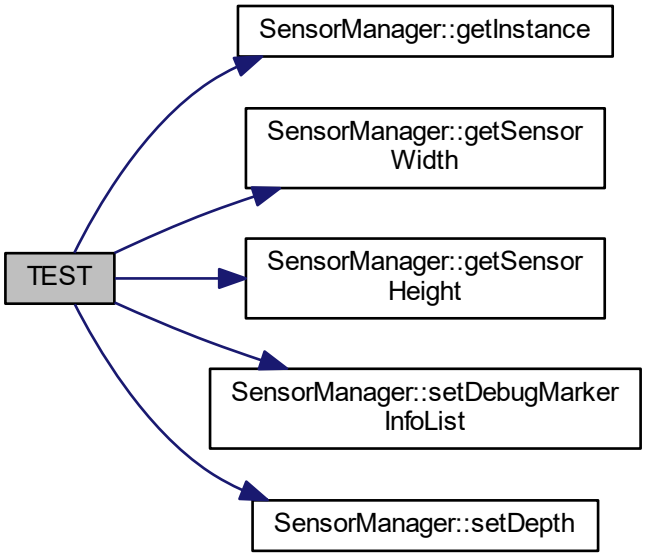
5.35.1.4 TEST() [4/5]

```
TEST (
            FollowMarkerModuleTest ,
            marker_near  )
```

If we are closer to the marker than we should be, FollowMarkerModeul should emit commands that make the robot drive back.

Definition at line 98 of file FollowMarkerModuleTest.cpp.

Here is the call graph for this function:



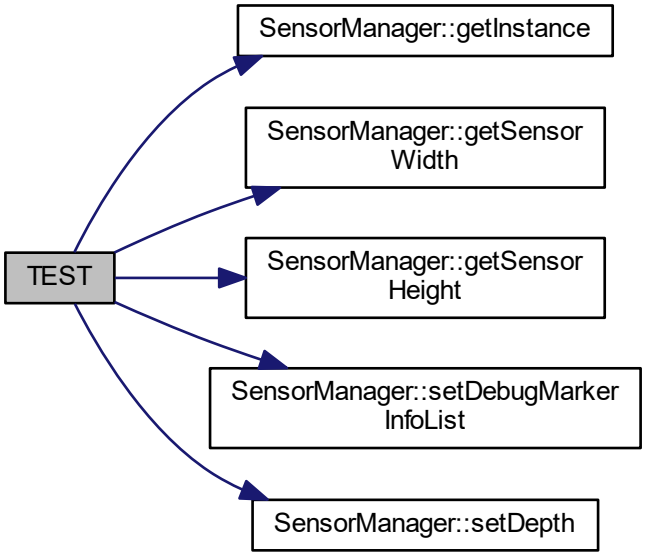
5.35.1.5 TEST() [5/5]

```
TEST (
            FollowMarkerModuleTest ,
            marker_far  )
```

Check whether the FollowMarkerModule correctly drives towards a marker if the desired distance has not yet been reached.

Definition at line 131 of file FollowMarkerModuleTest.cpp.

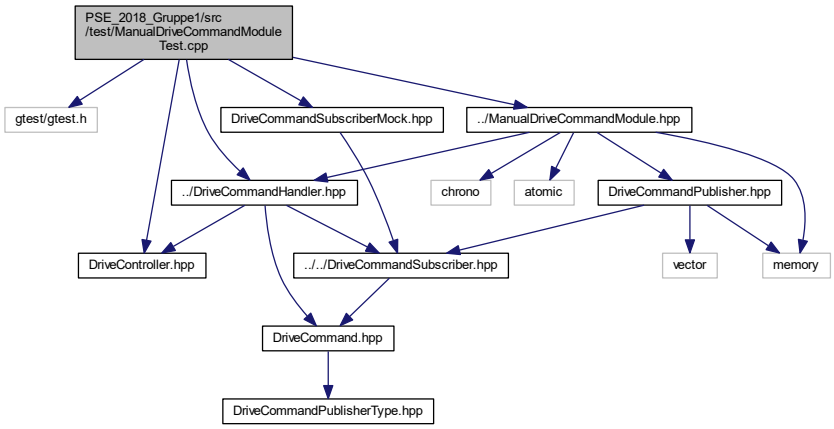
Here is the call graph for this function:



5.36 PSE_2018_Gruppe1/src/test/ManualDriveCommandModuleTest.cpp File Reference

```
#include <gtest/gtest.h>
#include <DriveCommandSubscriberMock.hpp>
#include <DriveController.hpp>
#include "../DriveCommandHandler.hpp"
#include "../ManualDriveCommandModule.hpp"
```

Include dependency graph for ManualDriveCommandModuleTest.cpp:



Functions

- TEST (ManualDriveCommandModuleTest, driveBlockingTest)

5.36.1 Function Documentation

5.36.1.1 TEST()

```
TEST (
            ManualDriveCommandModuleTest ,
            driveBlockingTest  )
```

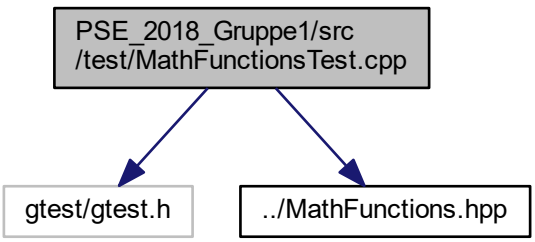
Definition at line 7 of file ManualDriveCommandModuleTest.cpp.

Here is the call graph for this function:

5.37 PSE_2018_Gruppe1/src/test/MathFunctionsTest.cpp File Reference

```
#include <gtest/gtest.h>
#include "../MathFunctions.hpp"
```

Include dependency graph for MathFunctionsTest.cpp:



Functions

- TEST (MathFunctionsTest, LIMITRANGE)

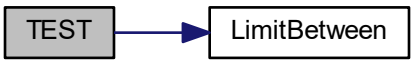
5.37.1 Function Documentation

5.37.1.1 TEST()

```
TEST (
            MathFunctionsTest ,
            LIMITRANGE  )
```

Definition at line 5 of file MathFunctionsTest.cpp.

Here is the call graph for this function:



5.38 PSE_2018_Gruppe1/src/test/mocks/BoundingBox.hpp File Reference

Classes

- class Color

  RGB Color.
- class BoundingBox

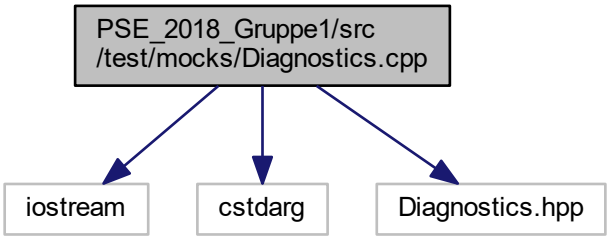
  Helper class to track and draw bounding boxes on screen.

5.39 PSE_2018_Gruppe1/src/test/mocks/Diagnostics.cpp File Reference

```
#include <iostream>
#include <cstdarg>
```

```
#include "Diagnostics.hpp"
```

Include dependency graph for Diagnostics.cpp:



Variables

- static DiagnosticLevel maxLevel = DiagnosticLevel::DIAG_VERBOSE

5.39.1 Variable Documentation

5.39.1.1 maxLevel

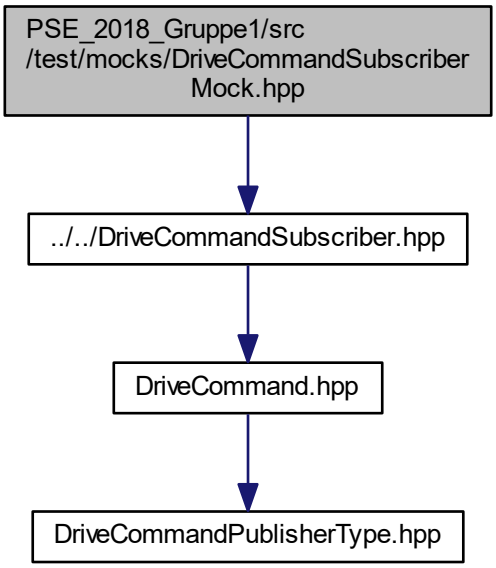
```
DiagnosticLevel maxLevel = DiagnosticLevel::DIAG_VERBOSE  [static]
```

Definition at line 9 of file Diagnostics.cpp.

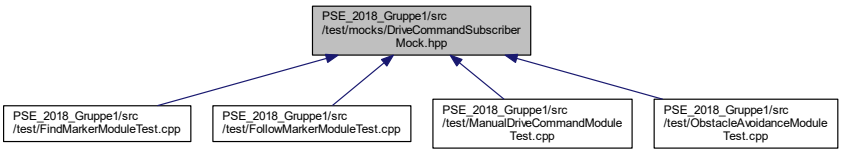
5.40 PSE_2018_Gruppe1/src/test/mocks/DriveCommandSubscriberMock.hpp File Reference

```
#include "../../DriveCommandSubscriber.hpp"
```

Include dependency graph for DriveCommandSubscriberMock.hpp:



This graph shows which files directly or indirectly include this file:

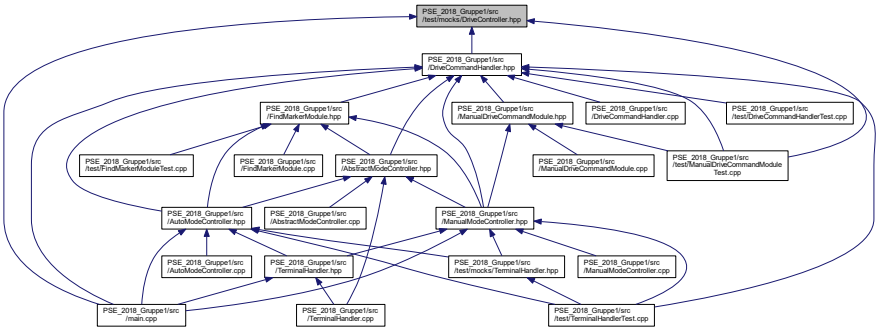


Classes

- class DriveCommandSubscriberMock

5.41 PSE_2018_Gruppe1/src/test/mocks/DriveController.hpp File Reference

This graph shows which files directly or indirectly include this file:



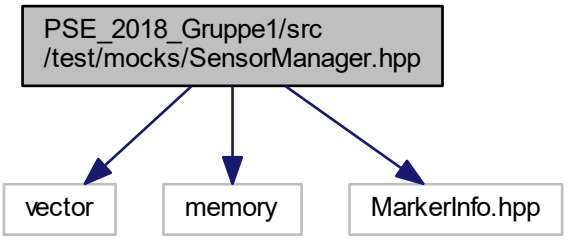
Classes

- class DriveController

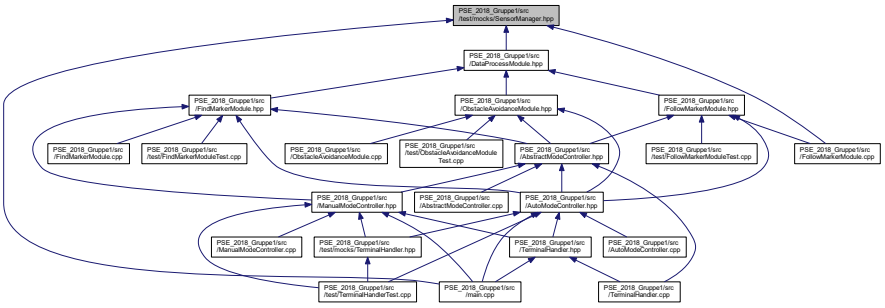
5.42 PSE_2018_Gruppe1/src/test/mocks/SensorManager.hpp File Reference

```
#include <vector>
#include <memory>
#include <MarkerInfo.hpp>
```

Include dependency graph for SensorManager.hpp:



This graph shows which files directly or indirectly include this file:



Classes

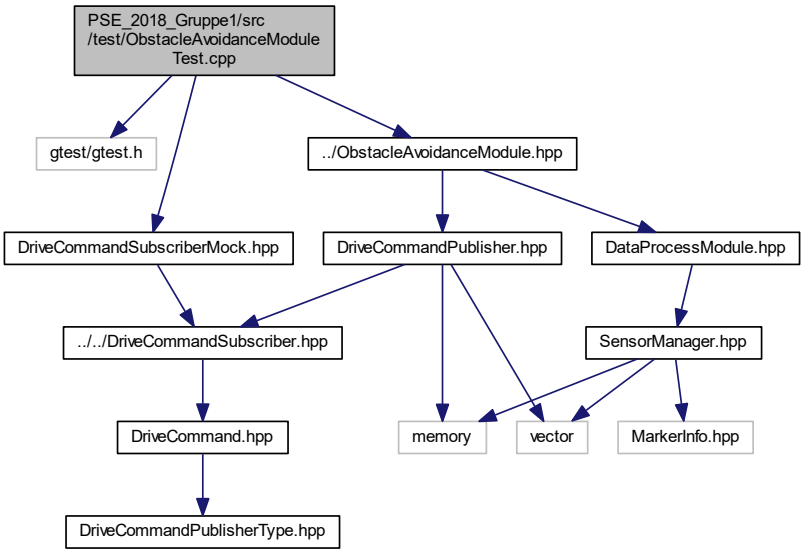
- class SensorManager

  Sensor and image processing manager.

5.43 PSE_2018_Gruppe1/src/test/ObstacleAvoidanceModuleTest.cpp File Reference

```
#include <gtest/gtest.h>
#include <DriveCommandSubscriberMock.hpp>
#include "../ObstacleAvoidanceModule.hpp"
```

Include dependency graph for ObstacleAvoidanceModuleTest.cpp:



Functions

- TEST (ObstacleAvoidanceModuleTest, obstacleTest)

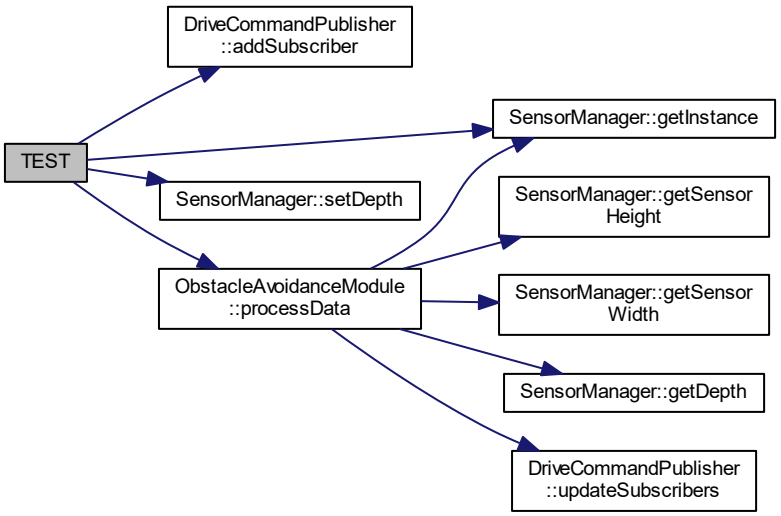
5.43.1 Function Documentation

5.43.1.1 TEST()

```
TEST (
            ObstacleAvoidanceModuleTest ,
            obstacleTest  )
```

Definition at line 5 of file ObstacleAvoidanceModuleTest.cpp.

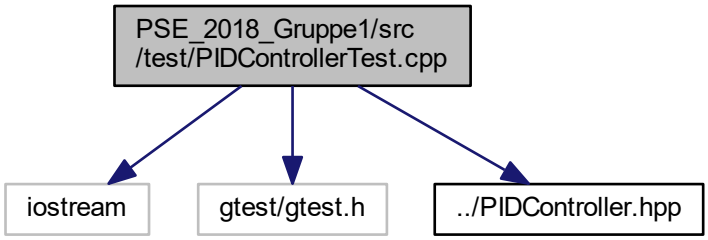
Here is the call graph for this function:



5.44 PSE_2018_Gruppe1/src/test/PIDControllerTest.cpp File Reference

```
#include <iostream>
#include <gtest/gtest.h>
#include "../PIDController.hpp"
```

Include dependency graph for PIDControllerTest.cpp:



Functions

- TEST (PIDControllerTest, PID)

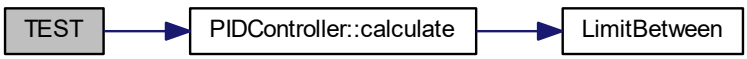
5.44.1 Function Documentation

5.44.1.1 TEST()

```
TEST (
            PIDControllerTest ,
            PID  )
```

Definition at line 7 of file PIDControllerTest.cpp.

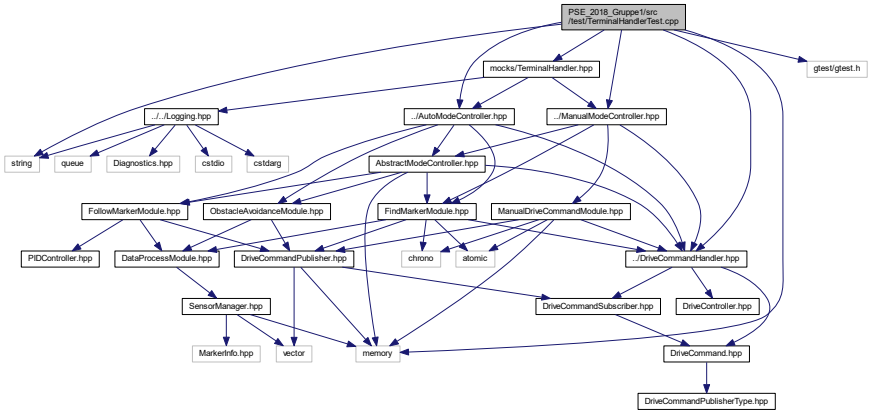
Here is the call graph for this function:



5.45 PSE_2018_Gruppe1/src/test/TerminalHandlerTest.cpp File Reference

```
#include <string>
#include <memory>
#include <gtest/gtest.h>
#include "../DriveCommandHandler.hpp"
#include "../AutoModeController.hpp"
#include "../ManualModeController.hpp"
#include "mocks/TerminalHandler.hpp"
```

Include dependency graph for TerminalHandlerTest.cpp:



Classes

- class TerminalHandlerTest

Functions

- TEST_F (TerminalHandlerTest, SPLITSTRING)

  tests the TerminalHandler::splitString() function
- TEST_F (TerminalHandlerTest, MODECOMMAND)

  test parsing of the mode-command - handled by TerminalHandler::handleModeCommand()
- TEST_F (TerminalHandlerTest, SET_L_COMMAND)

  test parsing of the set command if the first parameter is "-l" - handled by TerminalHandler::HandleSetCommand() sets log level so only values between 0 and 4 are allowed
- TEST_F (TerminalHandlerTest, SET_T_COMMAND)

  test parsing of the set command if the first parameter is "-t" - handled by TerminalHandler::HandleSetCommand() sets timeout, so only positive values are allowed
- TEST_F (TerminalHandlerTest, SET_D_COMMAND)

  test parsing of the set command if the first parameter is "-d" - handled by TerminalHandler::HandleSetCommand() sets distance to vehicle in front so only positive values are allowed
- TEST_F (TerminalHandlerTest, DRIVE_COMMAND_NUM_PARAMS)

  tests whether TerminalHandler::handleDriveCommand() correctly checks for the number of supplied arguments
- TEST_F (TerminalHandlerTest, DRIVE_COMMAND_PARAM_SANITY)

  Tests whether TerminalHandler::handleDriveCommand() accepts non-numerical input for its three arguments.
- TEST_F (TerminalHandlerTest, DRIVE_COMMAND_TIME)

  Test whether drive command times are handled correctly in TerminalHandler::handleDriveCommand()

- TEST_F (TerminalHandlerTest, DRIVE_COMMAND_VELO)

  Tests whether TerminalHandler::handleDriveCommand() handles various velocity values correctly.
- TEST_F (TerminalHandlerTest, DRIVE_COMMAND_STEER)

  Tests whether TerminalHandler::handleDriveCommand() handles various steering values correctly.
- TEST_F (TerminalHandlerTest, DISABLED_BLOCKING_DONT_ENABLE)

5.45.1 Function Documentation

5.45.1.1 TEST_F() [1/11]

```
TEST_F (
            TerminalHandlerTest ,
            SPLITSTRING  )
```

tests the TerminalHandler::splitString() function

Definition at line 33 of file TerminalHandlerTest.cpp.

5.45.1.2 TEST_F() [2/11]

```
TEST_F (
            TerminalHandlerTest ,
            MODECOMMAND  )
```

test parsing of the mode-command - handled by TerminalHandler::handleModeCommand()

Definition at line 67 of file TerminalHandlerTest.cpp.

5.45.1.3 TEST_F() [3/11]

```
TEST_F (
            TerminalHandlerTest ,
            SET_L_COMMAND  )
```

test parsing of the set command if the first parameter is "-l" - handled by TerminalHandler::HandleSetCommand() sets log level so only values between 0 and 4 are allowed

Definition at line 92 of file TerminalHandlerTest.cpp.

5.45.1.4 TEST_F() [4/11]

```
TEST_F (
            TerminalHandlerTest ,
            SET_T_COMMAND  )
```

test parsing of the set command if the first parameter is "-t" - handled by TerminalHandler::HandleSetCommand() sets timeout, so only positive values are allowed

Definition at line 123 of file TerminalHandlerTest.cpp.

5.45.1.5 TEST_F() [5/11]

```
TEST_F (
            TerminalHandlerTest ,
            SET_D_COMMAND  )
```

test parsing of the set command if the first parameter is "-d" - handled by TerminalHandler::HandleSetCommand() sets distance to vehicle in front so only positive values are allowed

Definition at line 154 of file TerminalHandlerTest.cpp.

5.45.1.6 TEST_F() [6/11]

```
TEST_F (
            TerminalHandlerTest ,
            DRIVE_COMMAND_NUM_PARAMS  )
```

tests whether TerminalHandler::handleDriveCommand() correctly checks for the number of supplied arguments

Definition at line 184 of file TerminalHandlerTest.cpp.

5.45.1.7 TEST_F() [7/11]

```
TEST_F (
            TerminalHandlerTest ,
            DRIVE_COMMAND_PARAM_SANITY  )
```

Tests whether TerminalHandler::handleDriveCommand() accepts non-numerical input for its three arguments.

Definition at line 204 of file TerminalHandlerTest.cpp.

5.45.1.8 TEST_F() [8/11]

```
TEST_F (
            TerminalHandlerTest ,
            DRIVE_COMMAND_TIME  )
```

Test whether drive command times are handled correctly in TerminalHandler::handleDriveCommand()

Definition at line 217 of file TerminalHandlerTest.cpp.

5.45.1.9 TEST_F() [9/11]

```
TEST_F (
            TerminalHandlerTest ,
            DRIVE_COMMAND_VELO  )
```

Tests whether TerminalHandler::handleDriveCommand() handles various velocity values correctly.

Definition at line 255 of file TerminalHandlerTest.cpp.

5.45.1.10 TEST_F() [10/11]

```
TEST_F (
            TerminalHandlerTest ,
            DRIVE_COMMAND_STEER  )
```

Tests whether TerminalHandler::handleDriveCommand() handles various steering values correctly.

Definition at line 291 of file TerminalHandlerTest.cpp.

5.45.1.11 TEST_F() [11/11]

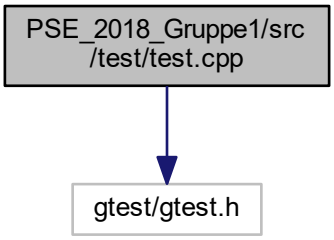
```
TEST_F (
            TerminalHandlerTest ,
            DISABLED_BLOCKING_DONT_ENABLE  )
```

Definition at line 329 of file TerminalHandlerTest.cpp.

5.46 PSE_2018_Gruppe1/src/test/test.cpp File Reference

```
#include <gtest/gtest.h>
```

Include dependency graph for test.cpp:



Functions

- TEST (EmptyTest, TrueAndFalse)
- int main (int argc, char **argv)

5.46.1 Function Documentation

5.46.1.1 main()

```
int main (
            int argc,
            char ** argv )
```

Definition at line 10 of file test.cpp.

5.46.1.2 TEST()

```
TEST (
            EmptyTest ,
            TrueAndFalse  )
```

Definition at line 3 of file test.cpp.

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