FRC 2018 Software Documentation

Team 5572: The ROSBOTS

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Chapter 1

Namespace Index

1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

drivetrain 7
math 7

Chapter 2

Class Index

2.1 Class List

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

drivetrain::differential_drive 9
drivetrain::motion_profile 10
drivetrain::point 11

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

src/drivetrain/drivetrain.h 13
src/util/math.h 13

Chapter 4

Namespace Documentation

4.1 drivetrain Namespace Reference

Classes

- class differential_drive
- class motion_profile
- struct point

Functions

- std::pair< motion_profile, motion_profile > diffprofile (std::vector< point > points, double w)

  Generate differential drive motion profile.

4.1.1 Function Documentation

4.1.1.1 std::pair<motion_profile, motion_profile> drivetrain::diffprofile (std::vector< point > *points,* double *w*)

Generate differential drive motion profile.

Parameters

points	coordinates of motion
w	distance between left and right wheels

4.2 math Namespace Reference

Functions

- double wrapping_limit (double value, double min, double max)

  Enforces a wrapping limit on value.

4.2.1 Function Documentation

4.2.1.1 double math::wrapping_limit (double *value,* double *min,* double *max*) [inline]

Enforces a wrapping limit on value.

Wrapping is a constraint in which a minimum is equal to a maximum, and values exceeding either limit "wraps" to the other extremum. An example is angles. The angles 0, and 2π are equal in angles, so you may enforce a wrapping limit when checking for a value such as π.

Parameters

value	value to limit
min	minimum value
max	maximum value

Chapter 5

Class Documentation

5.1 drivetrain::differential_drive Class Reference

`#include <drivetrain.h>`

Public Member Functions

- ~differential_drive ()
- template<typename T >
  drivetrain::differential_drive fromMotors (std::vector< unsigned > left, std::vector< unsigned > right)

  creates differential drive given a motor-type and ids

Static Public Member Functions

- template<typename T >
  static differential_drive fromMotors (std::vector< unsigned > left, std::vector< unsigned > right)

  creates differential drive given a motor-type and ids

5.1.1 Constructor & Destructor Documentation

5.1.1.1 drivetrain::differential_drive::~differential_drive ( )

5.1.2 Member Function Documentation

5.1.2.1 template<typename T > static differential_drive drivetrain::differential_drive::fromMotors (std::vector< unsigned > *left,* std::vector< unsigned > *right*) [static]

creates differential drive given a motor-type and ids

5.1.2.2 template<typename T > drivetrain::differential_drive drivetrain::differential_drive::fromMotors (std::vector< unsigned > *left*, std::vector< unsigned > *right*) [inline]

creates differential drive given a motor-type and ids

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

- src/drivetrain/drivetrain.h

5.2 drivetrain::motion_profile Class Reference

`#include <drivetrain.h>`

Public Member Functions

- motion_profile ()
- ~motion_profile ()
- double operator() (double t)

  Retrieves velocity at a time.

Friends

- std::pair< motion_profile, motion_profile > profile (std::vector< point >)

5.2.1 Constructor & Destructor Documentation

5.2.1.1 drivetrain::motion_profile::motion_profile ( ) [inline]

5.2.1.2 drivetrain::motion_profile::~motion_profile ( ) [inline]

5.2.2 Member Function Documentation

5.2.2.1 double drivetrain::motion_profile::operator() (double *t*)

Retrieves velocity at a time.

Parameters

t	time

5.2.3 Friends And Related Function Documentation

5.2.3.1 std::pair<motion_profile, motion_profile> profile (std::vector< point >) [friend]

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

- src/drivetrain/drivetrain.h

5.3 drivetrain::point Struct Reference

`#include <drivetrain.h>`

Public Attributes

- double x
- double y

5.3.1 Member Data Documentation

5.3.1.1 double drivetrain::point::x

5.3.1.2 double drivetrain::point::y

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

- src/drivetrain/drivetrain.h

Chapter 6

File Documentation

6.1 src/drivetrain/drivetrain.h File Reference

```
#include <vector>
#include <utility>
#include "../util/math.h"
#include "WPILib.h"
```

Include dependency graph for drivetrain.h:

6.2 src/util/math.h File Reference

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

Namespaces

- math

Macros

- #define PI 3.141592654

Functions

- double math::wrapping_limit (double value, double min, double max)

  Enforces a wrapping limit on value.

6.2.1 Macro Definition Documentation

6.2.1.1 #define PI 3.141592654

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