GravityGradientTorqueModel

5.0

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Contents

Chapter 1

Module Index

1.1 Modules

Here is a list of all modules:

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

Chapter 3

Data Structure Index

3.1 Data Structures

Here are the data structures with brief descriptions:

Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

Chapter 5

Module Documentation

5.1 Models

Modules

- Interactions

5.1.1 Detailed Description

5.2 Interactions

Modules

- GravityTorque

5.2.1 Detailed Description

5.3 GravityTorque

Files

- file gravity_torque.hh

  Defines the class GravityTorque.
- file gravity_torque_messages.hh

  Define the class GravityTorqueMessages, the class that specifies the message IDs used in the gravity torque model.
- file gravity_torque.cc

  Gravity gradient torque model.
- file gravity_torque_messages.cc

  Implement the class GravityTorqueMessages.

Namespaces

- jeod

  Namespace jeod.

Macros

- #define PATH "interactions/gravity_torque/"

5.3.1 Detailed Description

5.3.2 Macro Definition Documentation

5.3.2.1 PATH

```
#define PATH "interactions/gravity_torque/"
```

Definition at line 37 of file gravity_torque_messages.cc.

Chapter 6

Namespace Documentation

6.1 jeod Namespace Reference

Namespace jeod.

Data Structures

- class GravityTorque

  Computes the torque on an object due to gravitation.
- class GravityTorqueMessages

  Specifies the message IDs used in the gravity torque model.

6.1.1 Detailed Description

Namespace jeod.

Chapter 7

Data Structure Documentation

7.1 jeod::GravityTorque Class Reference

Computes the torque on an object due to gravitation.

`#include <gravity_torque.hh>`

Public Member Functions

- GravityTorque ()
  Construct a GravityTorque object.
- ~GravityTorque ()
  Destruct a GravityTorque object.
- void initialize (DynBody &subject)
  Initialize a GravityTorque object.
- void update ()
  Perform GravityTorque updates.

Data Fields

- double torque [3]
  The output torque, in the structural frame.
- bool active
  Is the model active?

Protected Attributes

- DynBody * subject_body
  The subject body for the gradient torque.

Private Member Functions

- GravityTorque & operator= (const GravityTorque &rhs)
- GravityTorque (const GravityTorque &rhs)

Friends

- class InputProcessor
- void init_attrjeod__GravityTorque ()

7.1.1 Detailed Description

Computes the torque on an object due to gravitation.

Definition at line 85 of file gravity_torque.hh.

7.1.2 Constructor & Destructor Documentation

7.1.2.1 GravityTorque() [1/2]

```
jeod::GravityTorque::GravityTorque (
            void  )
```

Construct a GravityTorque object.

Definition at line 53 of file gravity_torque.cc.

References active, subject_body, and torque.

7.1.2.2 ~GravityTorque()

```
jeod::GravityTorque::~GravityTorque (
            void  )
```

Destruct a GravityTorque object.

Definition at line 65 of file gravity_torque.cc.

7.1.2.3 GravityTorque() [2/2]

```
jeod::GravityTorque::GravityTorque (
            const GravityTorque & rhs )  [private]
```

7.1.3 Member Function Documentation

7.1.3.1 initialize()

```
void jeod::GravityTorque::initialize (
            DynBody & subject )
```

Initialize a GravityTorque object.

Parameters

in,out	*subject*	DynBody object subject to the torque

Definition at line 77 of file gravity_torque.cc.

References subject_body.

7.1.3.2 operator=()

```
GravityTorque& jeod::GravityTorque::operator= (
            const GravityTorque & rhs )  [private]
```

7.1.3.3 update()

```
void jeod::GravityTorque::update (
            void  )
```

Perform GravityTorque updates.

Definition at line 90 of file gravity_torque.cc.

References active, jeod::GravityTorqueMessages::initialization_error, subject_body, and torque.

7.1.4 Friends And Related Function Documentation

7.1.4.1 init_attrjeod__GravityTorque

```
void init_attrjeod__GravityTorque ( )  [friend]
```

7.1.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 87 of file gravity_torque.hh.

7.1.5 Field Documentation

7.1.5.1 active

```
bool jeod::GravityTorque::active
```

Is the model active?

trick_units(–)

Definition at line 109 of file gravity_torque.hh.

Referenced by GravityTorque(), and update().

7.1.5.2 subject_body

```
DynBody* jeod::GravityTorque::subject_body  [protected]
```

The subject body for the gradient torque.

trick_units(–)

Definition at line 118 of file gravity_torque.hh.

Referenced by GravityTorque(), initialize(), and update().

7.1.5.3 torque

```
double jeod::GravityTorque::torque[3]
```

The output torque, in the structural frame.

trick_units(N∗m)

Definition at line 104 of file gravity_torque.hh.

Referenced by GravityTorque(), and update().

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

- gravity_torque.hh
- gravity_torque.cc

7.2 jeod::GravityTorqueMessages Class Reference

Specifies the message IDs used in the gravity torque model.

```
#include <gravity_torque_messages.hh>
```

Static Public Attributes

- static char const * initialization_error = "interactions/gravity_torque/" "initialization_error"

  Issued when the model has not been properly initialized.

Private Member Functions

- GravityTorqueMessages (void)
- GravityTorqueMessages (const GravityTorqueMessages &)
- GravityTorqueMessages & operator= (const GravityTorqueMessages &)

Friends

- class InputProcessor
- void init_attrjeod__GravityTorqueMessages ()

7.2.1 Detailed Description

Specifies the message IDs used in the gravity torque model.

Definition at line 83 of file gravity_torque_messages.hh.

7.2.2 Constructor & Destructor Documentation

7.2.2.1 GravityTorqueMessages() [1/2]

```
jeod::GravityTorqueMessages::GravityTorqueMessages (
            void ) [private]
```

7.2.2.2 GravityTorqueMessages() [2/2]

```
jeod::GravityTorqueMessages::GravityTorqueMessages (
            const GravityTorqueMessages & ) [private]
```

7.2.3 Member Function Documentation

7.2.3.1 operator=()

```
GravityTorqueMessages& jeod::GravityTorqueMessages::operator= (
            const GravityTorqueMessages &  )  [private]
```

7.2.4 Friends And Related Function Documentation

7.2.4.1 init_attrjeod__GravityTorqueMessages

```
void init_attrjeod__GravityTorqueMessages ( )  [friend]
```

7.2.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 85 of file gravity_torque_messages.hh.

7.2.5 Field Documentation

7.2.5.1 initialization_error

```
char const * jeod::GravityTorqueMessages::initialization_error = "interactions/gravity_↩
torque/" "initialization_error"  [static]
```

Issued when the model has not been properly initialized.

trick_units(–)

Definition at line 93 of file gravity_torque_messages.hh.

Referenced by jeod::GravityTorque::update().

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

- gravity_torque_messages.hh
- gravity_torque_messages.cc

Chapter 8

File Documentation

8.1 gravity_torque.cc File Reference

Gravity gradient torque model.

```
#include <cstddef>
#include "dynamics/dyn_body/include/dyn_body.hh"
#include "utils/math/include/matrix3x3.hh"
#include "utils/math/include/vector3.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/gravity_torque.hh"
#include "../include/gravity_torque_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

8.1.1 Detailed Description

Gravity gradient torque model.

8.2 gravity_torque.hh File Reference

Defines the class GravityTorque.

```
#include "dynamics/dyn_body/include/class_declarations.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::GravityTorque
  Computes the torque on an object due to gravitation.

Namespaces

- jeod
  Namespace jeod.

8.2.1 Detailed Description

Defines the class GravityTorque.

8.3 gravity_torque_messages.cc File Reference

Implement the class GravityTorqueMessages.

```
#include "../include/gravity_torque_messages.hh"
```

Namespaces

- jeod
  Namespace jeod.

Macros

- #define PATH "interactions/gravity_torque/"

8.3.1 Detailed Description

Implement the class GravityTorqueMessages.

8.4 gravity_torque_messages.hh File Reference

Define the class GravityTorqueMessages, the class that specifies the message IDs used in the gravity torque model.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::GravityTorqueMessages
  Specifies the message IDs used in the gravity torque model.

Namespaces

- jeod
  Namespace jeod.

8.4.1 Detailed Description

Define the class GravityTorqueMessages, the class that specifies the message IDs used in the gravity torque model.

Index