

GravityGradientTorqueModel

5.3

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Chapter 1

Module Index

1.1 Modules

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Chapter 2

Namespace Index

2.1 Namespace List

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3.1 Data Structures

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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.

5.3.1 Detailed Description

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](#) ()=default
- [~GravityTorque](#) ()=default
- [GravityTorque](#) & [operator=](#) (const [GravityTorque](#) &)=delete
- [GravityTorque](#) (const [GravityTorque](#) &)=delete
- 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](#) {true}
Is the model active?

Protected Attributes

- DynBody * [subject_body](#) {}
The subject body for the gradient torque.

Friends

- class [InputProcessor](#)
- void [init_attrjeod__GravityTorque](#) ()

7.1.1 Detailed Description

Computes the torque on an object due to gravitation.

Definition at line 84 of file gravity_torque.hh.

7.1.2 Constructor & Destructor Documentation

7.1.2.1 GravityTorque() [1/2]

```
jeod::GravityTorque::GravityTorque ( ) [default]
```

7.1.2.2 ~GravityTorque()

```
jeod::GravityTorque::~~GravityTorque ( ) [default]
```

7.1.2.3 GravityTorque() [2/2]

```
jeod::GravityTorque::GravityTorque (
    const GravityTorque & ) [delete]
```

7.1.3 Member Function Documentation

7.1.3.1 initialize()

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

Initialize a [GravityTorque](#) object.

Parameters

<i>in, out</i>	<i>subject</i>	DynBody object subject to the torque
----------------	----------------	--------------------------------------

Definition at line 54 of file gravity_torque.cc.

References [subject_body](#).

7.1.3.2 operator=()

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

7.1.3.3 update()

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

Perform [GravityTorque](#) updates.

Definition at line 62 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 86 of file gravity_torque.hh.

7.1.5 Field Documentation

7.1.5.1 active

```
bool jeod::GravityTorque::active {true}
```

Is the model active?

[trick_units\(-\)](#)

Definition at line 104 of file gravity_torque.hh.

Referenced by [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 110 of file gravity_torque.hh.

Referenced by 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 99 of file gravity_torque.hh.

Referenced by 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>
```

Public Member Functions

- [GravityTorqueMessages](#) ()=delete
- [GravityTorqueMessages](#) (const [GravityTorqueMessages](#) &)=delete
- [GravityTorqueMessages](#) & operator= (const [GravityTorqueMessages](#) &)=delete

Static Public Attributes

- static const char * [initialization_error](#) = "interactions/gravity_torque/" "initialization_error"
Issued when the model has not been properly initialized.

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 81 of file gravity_torque_messages.hh.

7.2.2 Constructor & Destructor Documentation

7.2.2.1 GravityTorqueMessages() [1/2]

```
jeod::GravityTorqueMessages::GravityTorqueMessages ( ) [delete]
```

7.2.2.2 GravityTorqueMessages() [2/2]

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

7.2.3 Member Function Documentation

7.2.3.1 operator=()

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

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 83 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 88 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 <cstdlib>
#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 "utils/message/include/make_message_code.hh"  
#include "../include/gravity_torque_messages.hh"
```

Namespaces

- [jeod](#)

Namespace jeod.

Macros

- #define [MAKE_GRAVITYTORQUE_MESSAGE_CODE](#)(id) JEOD_MAKE_MESSAGE_CODE(GravityTorqueMessages, "interactions/gravity_torque/", id)

8.3.1 Detailed Description

Implement the class GravityTorqueMessages.

8.3.2 Macro Definition Documentation

8.3.2.1 MAKE_GRAVITYTORQUE_MESSAGE_CODE

```
#define MAKE_GRAVITYTORQUE_MESSAGE_CODE(  
    id ) JEOD_MAKE_MESSAGE_CODE(GravityTorqueMessages, "interactions/gravity_↵  
torque/", id)
```

Definition at line 43 of file gravity_torque_messages.cc.

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.

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