## Modules

Here is a list of all modules:

<table>
<thead>
<tr>
<th>[detail level 1 2 3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼ MIDDLEWARES</td>
</tr>
<tr>
<td>▼ MOTION_AR</td>
</tr>
<tr>
<td>MOTION_AR_Exported_Types</td>
</tr>
<tr>
<td>MOTION_AR_Exported_Functions</td>
</tr>
</tbody>
</table>

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by [doxygen](http://www.stackoverflow.com) 1.8.9.1
# MotionAR Software Library

MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MIDDLEWARES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Modules
<table>
<thead>
<tr>
<th>Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTION_AR</td>
</tr>
</tbody>
</table>
## MotionAR Software Library

MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
</table>

**MOTION_AR**

**MIDDLEWARES**

Modules
### Modules

<table>
<thead>
<tr>
<th>Module Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTION_AR_Exported_Types</td>
</tr>
<tr>
<td>MOTION_AR_Exported_Functions</td>
</tr>
</tbody>
</table>
MotionAR Software Library
MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
</table>

MOTION_AR_Exported Types

MIDDLEWARES » MOTION_AR
Data Structures

```c
struct MAR_input_t
```

## Enumerations

```c
enum MAR_output_t {
    MAR_NOACTIVITY = 0x00, MAR_STATIONARY = 0x01,
    MAR_WALKING = 0x02, MAR_FASTWALKING = 0x03,
    MAR_JOGGING = 0x04, MAR_BIKING = 0x05,
    MAR_DRIVING = 0x06
}
```
Detailed Description

Enumeration Type Documentation

**enum** `MAR_output_t`

<table>
<thead>
<tr>
<th>Enumerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR_NOACTIVITY</td>
</tr>
<tr>
<td>MAR_STATIONARY</td>
</tr>
<tr>
<td>MAR_WALKING</td>
</tr>
<tr>
<td>MAR_FASTWALKING</td>
</tr>
<tr>
<td>MAR_JOGGING</td>
</tr>
<tr>
<td>MAR_BIKING</td>
</tr>
<tr>
<td>MAR_DRIVING</td>
</tr>
</tbody>
</table>

Definition at line 70 of file `motion_ar.h`. 

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by [doxygen](https://github.com/doxygen) 1.8.9.1
MAR_input_t Struct
Reference

MIDDLEWARES » MOTION_AR » MOTION_AR_Exported_Types

#include <motion_ar.h>
# Data Fields

<table>
<thead>
<tr>
<th>Type</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>float</td>
<td>AccX</td>
</tr>
<tr>
<td>float</td>
<td>AccY</td>
</tr>
<tr>
<td>float</td>
<td>AccZ</td>
</tr>
</tbody>
</table>
Detailed Description

Definition at line 63 of file motion_ar.h.
## Field Documentation

<table>
<thead>
<tr>
<th>Field</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>float</td>
<td>AccX</td>
</tr>
<tr>
<td></td>
<td>Definition at line 65 of file <code>motion_ar.h</code>.</td>
</tr>
<tr>
<td>float</td>
<td>AccY</td>
</tr>
<tr>
<td></td>
<td>Definition at line 66 of file <code>motion_ar.h</code>.</td>
</tr>
<tr>
<td>float</td>
<td>AccZ</td>
</tr>
<tr>
<td></td>
<td>Definition at line 67 of file <code>motion_ar.h</code>.</td>
</tr>
</tbody>
</table>

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

- algorithms/Middlewares/ST/STM32_MotionAR.Library/Inc/motion_ar.h
MotionAR Software Library
MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOTION_AR_Exported_Functions</strong></td>
<td>MIDDLEWARES » MOTION_AR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Functions

<table>
<thead>
<tr>
<th>Type</th>
<th>Function Name</th>
<th>Description</th>
<th>More...</th>
</tr>
</thead>
<tbody>
<tr>
<td>void</td>
<td><strong>MotionAR_Initialize</strong> (void)</td>
<td>Initialize the MotionAR engine.</td>
<td></td>
</tr>
<tr>
<td>void</td>
<td><strong>MotionAR_SetOrientation_Acc</strong> (const char *acc_orientation)</td>
<td>Set the MotionAR accelerometer data orientation.</td>
<td></td>
</tr>
<tr>
<td>void</td>
<td><strong>MotionAR_Update</strong> (MAR_input_t *data_in, MAR_output_t *data_out)</td>
<td>Run activity recognition algorithm.</td>
<td></td>
</tr>
<tr>
<td>void</td>
<td><strong>MotionAR_Reset</strong> (void)</td>
<td>Reset activity recognition algorithm.</td>
<td></td>
</tr>
<tr>
<td>uint8_t</td>
<td><strong>MotionAR_GetLibVersion</strong> (char *version)</td>
<td>Get the library version.</td>
<td></td>
</tr>
</tbody>
</table>
Detailed Description

Function Documentation

`uint8_t MotionAR_GetLibVersion ( char * version )`

Get the library version.

**Parameters**
- `version` pointer to an array of 35 char

**Return values**
- `Number` of characters in the version string

`void MotionAR_Initialize ( void )`

Initialize the MotionAR engine.

**Parameters**
- `none`

**Return values**
- `none`

`void MotionAR_Reset ( void )`

Reset activity recognition algorithm.

**Parameters**
- `none`
void MotionAR_SetOrientation_Acc ( const char * acc_orientation )

Set the MotionAR accelerometer data orientation.

Parameters
   *acc_orientation reference system of the accelerometer raw data (for instance: south west up became "swu", north east up became "ned"

Return values
   none

void MotionAR_Update ( MAR_input_t * data_in, 
                       MAR_output_t * data_out )

Run activity recognition algorithm.

Parameters
   data_in pointer to acceleration in [g]
   data_out pointer to activity index

Return values
   none
Data Structures

Here are the data structures with brief descriptions:

MAR_input_t
# Data Structure Index

<table>
<thead>
<tr>
<th>M</th>
</tr>
</thead>
</table>

**MAR_input_t**
Here is a list of all struct and union fields with links to the structures/unions they belong to:

- AccX : `MAR_input_t`
- AccY : `MAR_input_t`
- AccZ : `MAR_input_t`
### MotionAR Software Library

#### MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Structures</td>
<td>Data Structure Index</td>
<td>Data Fields</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>Variables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- AccX : **MAR_input_t**
- AccY : **MAR_input_t**
- AccZ : **MAR_input_t**

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by [doxygen](#) 1.8.9.1
MotionAR Software Library

MotionAR Software Library Documentation

Main Page  Modules  Data Structures  Files

File List

Here is a list of all files with brief descriptions:

<table>
<thead>
<tr>
<th>Algorithms</th>
<th>Middlewares</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST</td>
<td></td>
</tr>
<tr>
<td>STM32_MotionAR_Library</td>
<td></td>
</tr>
<tr>
<td>Inc</td>
<td></td>
</tr>
<tr>
<td>motion_ar.h</td>
<td>Header for motion_ar module</td>
</tr>
</tbody>
</table>

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by doxygen 1.8.9.1
# MotionAR Software Library

## MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>algorithms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## algorithms Directory Reference
MotionAR Software Library
MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>algorithms</td>
<td>Middlewares</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Middlewares Directory Reference
## Directories

| directory | ST |

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by doxygen 1.8.9.1
# ST Directory Reference

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>algorithms</td>
<td>Middlewares</td>
<td>ST</td>
<td></td>
</tr>
</tbody>
</table>
Directories

directory  STM32_MotionAR_Library

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by doxygen 1.8.9.1
MotionAR Software Library
MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>algorithms</td>
<td>Middlewares</td>
<td>ST</td>
<td>STM32_MotionAR_Library</td>
</tr>
</tbody>
</table>

STM32_MotionAR_Library Directory Reference
MotionAR Software Library
MotionAR Software Library Documentation

Inc Directory Reference
Files

<table>
<thead>
<tr>
<th>file</th>
<th>motion_ar.h [code]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Header for motion_ar module.</td>
</tr>
</tbody>
</table>

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by doxygen 1.8.9.1
motion_ar.h File
Reference

Header for motion_ar module. More...

#include <stdint.h>

Go to the source code of this file.
Data Structures

```c
struct MAR_input_t
```
Enumerations

```c
enum MAR_output_t {
    MAR_NOACTIVITY = 0x00, MAR_STATIONARY = 0x01,
    MAR_WALKING = 0x02, MAR_FASTWALKING = 0x03,
    MAR_JOGGING = 0x04, MAR_BIKING = 0x05,
    MAR_DRIVING = 0x06
}
```
## Functions

<table>
<thead>
<tr>
<th>void</th>
<th><code>MotionAR.Initialize</code> (void)</th>
<th>Initialize the MotionAR engine. More...</th>
</tr>
</thead>
<tbody>
<tr>
<td>void</td>
<td><code>MotionAR_SetOrientation_Acc</code> (const char *acc_orientation)</td>
<td>Set the MotionAR accelerometer data orientation. More...</td>
</tr>
<tr>
<td>void</td>
<td><code>MotionAR_Update</code> (MAR_input_t *data_in, MAR_output_t *data_out)</td>
<td>Run activity recognition algorithm. More...</td>
</tr>
<tr>
<td>void</td>
<td><code>MotionAR_Reset</code> (void)</td>
<td>Reset activity recognition algorithm. More...</td>
</tr>
<tr>
<td>uint8_t</td>
<td><code>MotionAR_GetLibVersion</code> (char *version)</td>
<td>Get the library version. More...</td>
</tr>
</tbody>
</table>
Detailed Description

Header for motion_ar module.

Author
    MEMS Application Team

Version
    V2.0.0

Date
    01-May-2017

| Attention |
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of STMicroelectronics nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Definition in file \texttt{motion\_ar.h}.
Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- MAR_BIKING : motion_ar.h
- MAR_DRIVING : motion_ar.h
- MAR_FASTWALKING : motion_ar.h
- MAR_JOGGING : motion_ar.h
- MAR_NOACTIVITY : motion_ar.h
- MAR_output_t : motion_ar.h
- MAR_STATINARY : motion_ar.h
- MAR_WALKING : motion_ar.h
- MotionAR_GetLibVersion() : motion_ar.h
- MotionAR_Initialize() : motion_ar.h
- MotionAR_Reset() : motion_ar.h
- MotionAR_SetOrientation_Acc() : motion_ar.h
- MotionAR_Update() : motion_ar.h
## MotionAR Software Library

### MotionAR Software Library Documentation

<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>File List</td>
<td><strong>Globals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td><strong>Functions</strong></td>
<td>Enumerations</td>
<td>Enumerator</td>
</tr>
</tbody>
</table>

- `MotionAR_GetLibVersion()` : `motion_ar.h`
- `MotionAR_Initialize()` : `motion_ar.h`
- `MotionAR_Reset()` : `motion_ar.h`
- `MotionAR_SetOrientation_Acc()` : `motion_ar.h`
- `MotionAR_Update()` : `motion_ar.h`

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by [doxygen](http://www.stackoverflow.com) version 1.8.9.1
### MAR_output_t: `motion_ar.h`

---

Generated on Fri Mar 31 2017 10:57:12 for MotionAR Software Library by [doxygen](http://www.stackoverflow.com) 1.8.9.1
<table>
<thead>
<tr>
<th>Main Page</th>
<th>Modules</th>
<th>Data Structures</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>File List</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>Functions</td>
<td>Enumerations</td>
<td>Enumerator</td>
</tr>
</tbody>
</table>

- MAR_BIKING: `motion_ar.h`
- MAR_DRIVING: `motion_ar.h`
- MAR_FASTWALKING: `motion_ar.h`
- MAR_JOGGING: `motion_ar.h`
- MAR_NOACTIVITY: `motion_ar.h`
- MAR_STATIONARY: `motion_ar.h`
- MAR_WALKING: `motion_ar.h`
motion_ar.h

Go to the documentation of this file.

```c
/* Define to prevent recursive inclusion ----------------------------------*/
#ifndef _MOTION_AR_H_
#define _MOTION_AR_H_

#ifdef __cplusplus
extern "C" {
#endif

/* Includes ---------------------------------*/
#include <stdint.h>

/* Exported types --------------------------------*/
typedef struct {
  float AccX; /* Acceleration in X axis in [g] */
  float AccY; /* Acceleration in Y axis in [g] */
  float AccZ; /* Acceleration in Z axis in [g] */
} motion_ar_t;

#ifdef __cplusplus
}
#endif
#endif

/*-----------------------------------------------*/
*/
```
typedef enum
{
    MAR_NOACTIVITY    = 0x00,
    MAR_STATIONARY    = 0x01,
    MAR_WALKING       = 0x02,
    MAR_FASTWALKING   = 0x03,
    MAR_JOGGING       = 0x04,
    MAR_BIKING        = 0x05,
    MAR_DRIVING       = 0x06
} MAR_output_t;

void MotionAR_Initialize(void);
void MotionAR_SetOrientation_Acc(const char *acc_orientation);
void MotionAR_Update(MAR_input_t *data_in, MAR_output_t *data_out);
void MotionAR_Reset(void);
uint8_t MotionAR_GetLibVersion(char *version);
```c
#ifdef __cplusplus
}
#endif
#endif /* _MOTION_AR_H_ */

/**************************** (C) COPYRIGHT
STMicroelectronics *****END OF FILE****/
```