

## PyFactorGraph

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# Chapter 1

## Namespace Index

### 1.1 Packages

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### 2.1 Class List

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## Chapter 4

# Namespace Documentation

### 4.1 `factor_graph` Namespace Reference

#### Namespaces

- [factor\\_graph](#)
- [measurements](#)
- [name\\_utils](#)
- [parse\\_factor\\_graph](#)
- [priors](#)
- [variables](#)

### 4.2 `factor_graph.factor_graph` Namespace Reference

#### Classes

- class [FactorGraphData](#)

### 4.3 `factor_graph.measurements` Namespace Reference

#### Classes

- class [AmbiguousFGRangeMeasurement](#)
- class [AmbiguousPoseMeasurement](#)
- class [FGRangeMeasurement](#)
- class [PoseMeasurement](#)

#### Variables

- [frozen](#)

### 4.3.1 Variable Documentation

#### 4.3.1.1 frozen

`factor_graph.measurements.frozen`

## 4.4 `factor_graph.name_utils` Namespace Reference

### Functions

- def [check\\_is\\_valid\\_frame\\_name](#)
- def [get\\_idx\\_from\\_frame\\_name](#)
- def [get\\_robot\\_char\\_from\\_frame\\_name](#)
- def [get\\_robot\\_char\\_from\\_number](#)

### 4.4.1 Function Documentation

#### 4.4.1.1 `check_is_valid_frame_name()`

```
def factor_graph.name_utils.check_is_valid_frame_name (  
    frame )
```

#### 4.4.1.2 `get_idx_from_frame_name()`

```
def factor_graph.name_utils.get_idx_from_frame_name (  
    frame )
```

#### 4.4.1.3 `get_robot_char_from_frame_name()`

```
def factor_graph.name_utils.get_robot_char_from_frame_name (  
    frame )
```



#### 4.4.1.4 get\_robot\_char\_from\_number()

```
def factor_graph.name_utils.get_robot_char_from_number (
    robot_number )
```

## 4.5 factor\_graph.parse\_factor\_graph Namespace Reference

### Functions

- def [parse\\_efg\\_file](#)
- def [parse\\_pickle\\_file](#)

#### 4.5.1 Function Documentation

##### 4.5.1.1 parse\_efg\_file()

```
def factor_graph.parse_factor_graph.parse_efg_file (
    filepath )
```

##### 4.5.1.2 parse\_pickle\_file()

```
def factor_graph.parse_factor_graph.parse_pickle_file (
    filepath )
```

## 4.6 factor\_graph.priors Namespace Reference

### Classes

- class [LandmarkPrior](#)
- class [PosePrior](#)

### Variables

- [frozen](#)

#### 4.6.1 Variable Documentation

#### 4.6.1.1 frozen

`factor_graph.priors.frozen`

## 4.7 factor\_graph.variables Namespace Reference

### Classes

- class [LandmarkVariable](#)
- class [PoseVariable](#)

### Variables

- [frozen](#)

### 4.7.1 Variable Documentation

#### 4.7.1.1 frozen

`factor_graph.variables.frozen`

## Chapter 5

# Class Documentation

### 5.1 factor\_graph.measurements.AmbiguousFGRangeMeasurement Class Reference

#### Public Member Functions

- def [check\\_measured\\_association](#) (self, attribute, value)
- def [check\\_true\\_association](#) (self, attribute, value)
- def [landmark\\_idx](#) (self)
- def [pose\\_idx](#) (self)
- def [weight](#) (self)

#### Static Public Attributes

- [float](#)

#### 5.1.1 Detailed Description

A range measurement

Arguments:

```
var1 (str): one variable the measurement is associated with
var2 (str): the other variable the measurement is associated with
dist (float): The measured range
stddev (float): The standard deviation
```

#### 5.1.2 Member Function Documentation

##### 5.1.2.1 check\_measured\_association()

```
def factor_graph.measurements.AmbiguousFGRangeMeasurement.check_measured_association (
    self,
    attribute,
    value )
```

#### 5.1.2.2 check\_true\_association()

```
def factor_graph.measurements.AmbiguousFGRangeMeasurement.check_true_association (
    self,
    attribute,
    value )
```

#### 5.1.2.3 landmark\_idx()

```
def factor_graph.measurements.AmbiguousFGRangeMeasurement.landmark_idx (
    self )
```

Get the index of the landmark

#### 5.1.2.4 pose\_idx()

```
def factor_graph.measurements.AmbiguousFGRangeMeasurement.pose_idx (
    self )
```

Get the index of the pose

#### 5.1.2.5 weight()

```
def factor_graph.measurements.AmbiguousFGRangeMeasurement.weight (
    self )
```

Get the weight of the measurement

### 5.1.3 Member Data Documentation

#### 5.1.3.1 float

```
factor_graph.measurements.AmbiguousFGRangeMeasurement.float [static]
```

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

- [/home/alan/PyFactorGraph/factor\\_graph/measurements.py](/home/alan/PyFactorGraph/factor_graph/measurements.py)

## 5.2 factor\_graph.measurements.AmbiguousPoseMeasurement Class Reference

### Public Member Functions

- def [covariance](#) (self)
- def [rotation\\_matrix](#) (self)
- def [transformation\\_matrix](#) (self)
- def [translation\\_vector](#) (self)

### Static Public Attributes

- [float](#)
- [str](#)

### 5.2.1 Detailed Description

An ambiguous odom measurement

`base_pose (str)`: the name of the base pose which the measurement is in the reference frame of  
`measured_to_pose (str)`: the name of the pose the measurement thinks it is to  
`true_to_pose (str)`: the name of the pose the measurement is to  
`x (float)`: the change in x  
`y (float)`: the change in y  
`theta (float)`: the change in theta  
`covariance (np.ndarray)`: a 3x3 covariance matrix

### 5.2.2 Member Function Documentation

#### 5.2.2.1 `covariance()`

```
def factor_graph.measurements.AmbiguousPoseMeasurement.covariance (  
    self )
```

Get the covariance matrix

#### 5.2.2.2 `rotation_matrix()`

```
def factor_graph.measurements.AmbiguousPoseMeasurement.rotation_matrix (  
    self )
```

Get the rotation matrix for the measurement

#### 5.2.2.3 transformation\_matrix()

```
def factor_graph.measurements.AmbiguousPoseMeasurement.transformation_matrix (
    self )
```

Get the transformation matrix

#### 5.2.2.4 translation\_vector()

```
def factor_graph.measurements.AmbiguousPoseMeasurement.translation_vector (
    self )
```

Get the translation vector for the measurement

### 5.2.3 Member Data Documentation

#### 5.2.3.1 float

```
factor_graph.measurements.AmbiguousPoseMeasurement.float [static]
```

#### 5.2.3.2 str

```
factor_graph.measurements.AmbiguousPoseMeasurement.str [static]
```

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

- [/home/alan/PyFactorGraph/factor\\_graph/measurements.py](/home/alan/PyFactorGraph/factor_graph/measurements.py)

## 5.3 factor\_graph.factor\_graph.FactorGraphData Class Reference

### Public Member Functions

- def [\\_\\_str\\_\\_](#) (self)
- def [add\\_ambiguous\\_pose\\_measurement](#)
- def [add\\_ambiguous\\_range\\_measurement](#)
- def [add\\_landmark\\_prior](#)
- def [add\\_landmark\\_variable](#)
- def [add\\_pose\\_measurement](#)
- def [add\\_pose\\_prior](#)
- def [add\\_pose\\_variable](#)
- Add data.*
- def [add\\_range\\_measurement](#)
- def [dimension](#) (self)
- def [dist\\_measurements\\_vect](#) (self)
- def [distance\\_variables\\_dimension](#) (self)
- def [get\\_ambiguous\\_pose\\_measurement\\_string](#)
- def [get\\_ambiguous\\_range\\_measurement\\_string](#)
- def [get\\_beacon\\_var\\_string](#)
- def [get\\_landmark\\_translation\\_variable\\_indices](#)
- def [get\\_normal\\_pose\\_measurement\\_string](#)
- def [get\\_pose\\_rotation\\_variable\\_indices](#)
- def [get\\_pose\\_translation\\_variable\\_indices](#)
- def [get\\_pose\\_var\\_string](#)
- def [get\\_prior\\_to\\_pin\\_string](#)
- def [get\\_range\\_dist\\_variable\\_indices](#)
- def [get\\_range\\_measurement\\_landmark](#)
- def [get\\_range\\_measurement\\_pose](#)
- Accessors for the data.*
- def [get\\_range\\_measurement\\_string](#)
- def [measurements\\_weight\\_vect](#) (self)
- def [num\\_landmarks](#) (self)
- def [num\\_pose\\_measurements](#) (self)
- def [num\\_poses](#) (self)
- def [num\\_range\\_measurements](#) (self)
- def [num\\_total\\_measurements](#) (self)
- def [num\\_translations](#) (self)
- def [poses\\_and\\_landmarks\\_dimension](#) (self)
- def [save\\_to\\_file](#)
- def [sum\\_weighted\\_measurements\\_squared](#) (self)
- def [true\\_values\\_vector](#) (self)
- def [weighted\\_dist\\_measurements\\_vect](#) (self)

### Static Public Attributes

- [covar\\_info](#)
- [cur\\_id](#)
- [d](#)
- [default](#)
- [del\\_theta](#)
- [del\\_x](#)
- [del\\_y](#)

- [factory](#)
- [file\\_writer](#)
- [int](#)
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- [landmark\\_name](#)
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- [measured\\_robot\\_id](#)
- [offset](#)
- [pose\\_idx](#)
- [range\\_factor\\_type](#)
- [robot\\_id](#)
- [start](#)
- [stop](#)
- [true\\_beacon\\_id](#)
- [true\\_measure\\_id](#)
- [true\\_robot\\_id](#)

### 5.3.1 Detailed Description

Just a container for the data in a FactorGraph. Only considers standard gaussian measurements.

Args:

```
pose_variables (List[PoseVariable]): a list of the pose variables
landmark_variables (List[LandmarkVariable]): a list of the landmarks
pose_measurements (List[PoseMeasurement]): a list of odom
measurements
ambiguous_pose_measurements (List[AmbiguousPoseMeasurement]): a list of
ambiguous pose measurements
range_measurements (List[FGRangeMeasurement]): a list of range
measurements
ambiguous_range_measurements (List[AmbiguousFGRangeMeasurement]): a list
of ambiguous range measurements
pose_priors (List[PosePrior]): a list of the pose priors
landmark_priors (List[LandmarkPrior]): a list of the landmark priors
```

### 5.3.2 Member Function Documentation

#### 5.3.2.1 `__str__()`

```
def factor_graph.factor_graph.FactorGraphData.__str__ (
    self )
```

#### 5.3.2.2 `add_ambiguous_pose_measurement()`

```
def factor_graph.factor_graph.FactorGraphData.add_ambiguous_pose_measurement (
    self,
    measure )
```



#### 5.3.2.3 add\_ambiguous\_range\_measurement()

```
def factor_graph.factor_graph.FactorGraphData.add_ambiguous_range_measurement (
    self,
    measure )
```

#### 5.3.2.4 add\_landmark\_prior()

```
def factor_graph.factor_graph.FactorGraphData.add_landmark_prior (
    self,
    landmark_prior )
```

#### 5.3.2.5 add\_landmark\_variable()

```
def factor_graph.factor_graph.FactorGraphData.add_landmark_variable (
    self,
    landmark_var )
```

#### 5.3.2.6 add\_pose\_measurement()

```
def factor_graph.factor_graph.FactorGraphData.add_pose_measurement (
    self,
    odom_meas )
```

#### 5.3.2.7 add\_pose\_prior()

```
def factor_graph.factor_graph.FactorGraphData.add_pose_prior (
    self,
    pose_prior )
```

#### 5.3.2.8 add\_pose\_variable()

```
def factor_graph.factor_graph.FactorGraphData.add_pose_variable (
    self,
    pose_var )
```

Add data.

#### 5.3.2.9 add\_range\_measurement()

```
def factor_graph.factor_graph.FactorGraphData.add_range_measurement (
    self,
    range_meas )
```

#### 5.3.2.10 dimension()

```
def factor_graph.factor_graph.FactorGraphData.dimension (
    self )
```

#### 5.3.2.11 dist\_measurements\_vect()

```
def factor_graph.factor_graph.FactorGraphData.dist_measurements_vect (
    self,
    np,
    ndarray )
```

Get a vector of the distance measurements

Returns:

np.ndarray: a vector of the distance measurements

#### 5.3.2.12 distance\_variables\_dimension()

```
def factor_graph.factor_graph.FactorGraphData.distance_variables_dimension (
    self )
```

#### 5.3.2.13 get\_ambiguous\_pose\_measurement\_string()

```
def factor_graph.factor_graph.FactorGraphData.get_ambiguous_pose_measurement_string (
    pose_measure )
```

#### 5.3.2.14 get\_ambiguous\_range\_measurement\_string()

```
def factor_graph.factor_graph.FactorGraphData.get_ambiguous_range_measurement_string (
    range_measure )
```

#### 5.3.2.15 get\_beacon\_var\_string()

```
def factor_graph.factor_graph.FactorGraphData.get_beacon_var_string (
    beacon )
```

#### 5.3.2.16 get\_landmark\_translation\_variable\_indices()

```
def factor_graph.factor_graph.FactorGraphData.get_landmark_translation_variable_indices (
    self,
    landmark )
```

#### 5.3.2.17 get\_normal\_pose\_measurement\_string()

```
def factor_graph.factor_graph.FactorGraphData.get_normal_pose_measurement_string (
    pose_measure )
```

#### 5.3.2.18 get\_pose\_rotation\_variable\_indices()

```
def factor_graph.factor_graph.FactorGraphData.get_pose_rotation_variable_indices (
    self,
    pose )
```

#### 5.3.2.19 get\_pose\_translation\_variable\_indices()

```
def factor_graph.factor_graph.FactorGraphData.get_pose_translation_variable_indices (
    self,
    pose )
```

#### 5.3.2.20 get\_pose\_var\_string()

```
def factor_graph.factor_graph.FactorGraphData.get_pose_var_string (
    pose )
```

#### 5.3.2.21 `get_prior_to_pin_string()`

```
def factor_graph.factor_graph.FactorGraphData.get_prior_to_pin_string (
    prior )
```

#### 5.3.2.22 `get_range_dist_variable_indices()`

```
def factor_graph.factor_graph.FactorGraphData.get_range_dist_variable_indices (
    self,
    measurement )
```

#### 5.3.2.23 `get_range_measurement_landmark()`

```
def factor_graph.factor_graph.FactorGraphData.get_range_measurement_landmark (
    self,
    measure )
```

#### 5.3.2.24 `get_range_measurement_pose()`

```
def factor_graph.factor_graph.FactorGraphData.get_range_measurement_pose (
    self,
    measure )
```

Accessors for the data.

#### 5.3.2.25 `get_range_measurement_string()`

```
def factor_graph.factor_graph.FactorGraphData.get_range_measurement_string (
    range_measure )
```

#### 5.3.2.26 `measurements_weight_vect()`

```
def factor_graph.factor_graph.FactorGraphData.measurements_weight_vect (
    self,
    np,
    ndarray )
```

Get the weights of the measurements

**5.3.2.27 num\_landmarks()**

```
def factor_graph.factor_graph.FactorGraphData.num_landmarks (
    self )
```

**5.3.2.28 num\_pose\_measurements()**

```
def factor_graph.factor_graph.FactorGraphData.num_pose_measurements (
    self )
```

**5.3.2.29 num\_poses()**

```
def factor_graph.factor_graph.FactorGraphData.num_poses (
    self )
```

**5.3.2.30 num\_range\_measurements()**

```
def factor_graph.factor_graph.FactorGraphData.num_range_measurements (
    self )
```

**5.3.2.31 num\_total\_measurements()**

```
def factor_graph.factor_graph.FactorGraphData.num_total_measurements (
    self )
```

**5.3.2.32 num\_translations()**

```
def factor_graph.factor_graph.FactorGraphData.num_translations (
    self )
```

**5.3.2.33 poses\_and\_landmarks\_dimension()**

```
def factor_graph.factor_graph.FactorGraphData.poses_and_landmarks_dimension (
    self )
```

#### 5.3.2.34 save\_to\_file()

```
def factor_graph.factor_graph.FactorGraphData.save_to_file (
    self,
    filepath )
```

#### 5.3.2.35 sum\_weighted\_measurements\_squared()

```
def factor_graph.factor_graph.FactorGraphData.sum_weighted_measurements_squared (
    self,
    float )
```

Get the sum of the squared weighted measurements

#### 5.3.2.36 true\_values\_vector()

```
def factor_graph.factor_graph.FactorGraphData.true_values_vector (
    self,
    np,
    ndarray )
```

returns the true values in a vectorized form

#### 5.3.2.37 weighted\_dist\_measurements\_vect()

```
def factor_graph.factor_graph.FactorGraphData.weighted_dist_measurements_vect (
    self,
    np,
    ndarray )
```

Get of the distance measurements weighted by their precision

### 5.3.3 Member Data Documentation

#### 5.3.3.1 covar\_info

```
factor_graph.factor_graph.FactorGraphData.covar_info [static]
```

#### 5.3.3.2 cur\_id

factor\_graph.factor\_graph.FactorGraphData.cur\_id [static]

#### 5.3.3.3 d

factor\_graph.factor\_graph.FactorGraphData.d [static]

#### 5.3.3.4 default

factor\_graph.factor\_graph.FactorGraphData.default [static]

#### 5.3.3.5 del\_theta

factor\_graph.factor\_graph.FactorGraphData.del\_theta [static]

#### 5.3.3.6 del\_x

factor\_graph.factor\_graph.FactorGraphData.del\_x [static]

#### 5.3.3.7 del\_y

factor\_graph.factor\_graph.FactorGraphData.del\_y [static]

#### 5.3.3.8 factory

factor\_graph.factor\_graph.FactorGraphData.factory [static]

#### 5.3.3.9 file\_writer

factor\_graph.factor\_graph.FactorGraphData.file\_writer [static]

**5.3.3.10 int**

`factor_graph.factor_graph.FactorGraphData.int` [static]

**5.3.3.11 landmark\_idx**

`factor_graph.factor_graph.FactorGraphData.landmark_idx` [static]

**5.3.3.12 landmark\_name**

`factor_graph.factor_graph.FactorGraphData.landmark_name` [static]

**5.3.3.13 line**

`factor_graph.factor_graph.FactorGraphData.line` [static]

**5.3.3.14 measure\_id**

`factor_graph.factor_graph.FactorGraphData.measure_id` [static]

**5.3.3.15 measured\_beacon\_id**

`factor_graph.factor_graph.FactorGraphData.measured_beacon_id` [static]

**5.3.3.16 measured\_robot\_id**

`factor_graph.factor_graph.FactorGraphData.measured_robot_id` [static]

**5.3.3.17 offset**

`factor_graph.factor_graph.FactorGraphData.offset` [static]



#### 5.3.3.18 pose\_idx

factor\_graph.factor\_graph.FactorGraphData.pose\_idx [static]

#### 5.3.3.19 range\_factor\_type

factor\_graph.factor\_graph.FactorGraphData.range\_factor\_type [static]

#### 5.3.3.20 robot\_id

factor\_graph.factor\_graph.FactorGraphData.robot\_id [static]

#### 5.3.3.21 start

factor\_graph.factor\_graph.FactorGraphData.start [static]

#### 5.3.3.22 stop

factor\_graph.factor\_graph.FactorGraphData.stop [static]

#### 5.3.3.23 true\_beacon\_id

factor\_graph.factor\_graph.FactorGraphData.true\_beacon\_id [static]

#### 5.3.3.24 true\_measure\_id

factor\_graph.factor\_graph.FactorGraphData.true\_measure\_id [static]

### 5.3.3.25 true\_robot\_id

`factor_graph.factor_graph.FactorGraphData.true_robot_id` [static]

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

- [/home/alan/PyFactorGraph/factor\\_graph/factor\\_graph.py](#)

## 5.4 factor\_graph.measurements.FGRangeMeasurement Class Reference

### Public Member Functions

- `def check\_association (self, attribute, value)`
- `def landmark\_idx (self)`
- `def pose\_idx (self)`
- `def weight (self)`

### Static Public Attributes

- [float](#)

### 5.4.1 Detailed Description

A range measurement

Arguments:

`association` (Tuple[str]): the data associations of the measurement  
`dist` (float): The measured range  
`stddev` (float): The standard deviation

### 5.4.2 Member Function Documentation

#### 5.4.2.1 `check_association()`

```
def factor_graph.measurements.FGRangeMeasurement.check_association (
    self,
    attribute,
    value )
```

#### 5.4.2.2 landmark\_idx()

```
def factor_graph.measurements.FGRangeMeasurement.landmark_idx (
    self )
```

Get the index of the landmark

#### 5.4.2.3 pose\_idx()

```
def factor_graph.measurements.FGRangeMeasurement.pose_idx (
    self )
```

Get the index of the pose

#### 5.4.2.4 weight()

```
def factor_graph.measurements.FGRangeMeasurement.weight (
    self )
```

Get the weight of the measurement

### 5.4.3 Member Data Documentation

#### 5.4.3.1 float

```
factor_graph.measurements.FGRangeMeasurement.float [static]
```

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

- [/home/alan/PyFactorGraph/factor\\_graph/measurements.py](#)

## 5.5 factor\_graph.priors.LandmarkPrior Class Reference

### Static Public Attributes

- [ndarray](#)
- [str](#)

### 5.5.1 Detailed Description

A prior on the landmark

Arguments:

name (str): the name of the landmark variable  
position (Tuple[float, float]): the prior of the position  
covariance (np.ndarray): the covariance of the prior

### 5.5.2 Member Data Documentation

#### 5.5.2.1 ndarray

factor\_graph.priors.LandmarkPrior.ndarray [static]

#### 5.5.2.2 str

factor\_graph.priors.LandmarkPrior.str [static]

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

- [/home/alan/PyFactorGraph/factor\\_graph/priors.py](/home/alan/PyFactorGraph/factor_graph/priors.py)

## 5.6 factor\_graph.variables.LandmarkVariable Class Reference

### Public Member Functions

- def [true\\_x](#) (self)
- def [true\\_y](#) (self)

### Static Public Attributes

- [str](#)

### 5.6.1 Detailed Description

A variable which is a landmark

Arguments:

name (str): the name of the variable  
true\_position (Tuple[float, float]): the true position of the landmark

## 5.6.2 Member Function Documentation

### 5.6.2.1 true\_x()

```
def factor_graph.variables.LandmarkVariable.true_x (  
    self )
```

### 5.6.2.2 true\_y()

```
def factor_graph.variables.LandmarkVariable.true_y (  
    self )
```

## 5.6.3 Member Data Documentation

### 5.6.3.1 str

```
factor_graph.variables.LandmarkVariable.str [static]
```

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

- [/home/alan/PyFactorGraph/factor\\_graph/variables.py](#)

## 5.7 factor\_graph.measurements.PoseMeasurement Class Reference

### Public Member Functions

- def [base\\_pose\\_idx](#) (self)
- def [covariance](#) (self)
- def [rotation\\_matrix](#) (self)
- def [to\\_pose\\_idx](#) (self)
- def [transformation\\_matrix](#) (self)
- def [translation\\_vector](#) (self)

### Static Public Attributes

- [float](#)
- [str](#)

### 5.7.1 Detailed Description

An pose measurement

`base_pose (str)`: the name of the base pose which the measurement is in the reference frame of  
`local_pose (str)`: the name of the pose the measurement is to  
`x (float)`: the change in x coordinate of the measurement  
`y (float)`: the change in y coordinate of the measurement  
`theta (float)`: the change in theta  
`covariance (np.ndarray)`: a 3x3 covariance matrix

### 5.7.2 Member Function Documentation

#### 5.7.2.1 `base_pose_idx()`

```
def factor_graph.measurements.PoseMeasurement.base_pose_idx (  
    self,  
    int )
```

Get the index of the base pose

#### 5.7.2.2 `covariance()`

```
def factor_graph.measurements.PoseMeasurement.covariance (  
    self )
```

Get the covariance matrix

#### 5.7.2.3 `rotation_matrix()`

```
def factor_graph.measurements.PoseMeasurement.rotation_matrix (  
    self )
```

Get the rotation matrix for the measurement

#### 5.7.2.4 to\_pose\_idx()

```
def factor_graph.measurements.PoseMeasurement.to_pose_idx (
    self,
    int )
```

Get the index of the to pose

#### 5.7.2.5 transformation\_matrix()

```
def factor_graph.measurements.PoseMeasurement.transformation_matrix (
    self )
```

Get the transformation matrix

#### 5.7.2.6 translation\_vector()

```
def factor_graph.measurements.PoseMeasurement.translation_vector (
    self )
```

Get the translation vector for the measurement

### 5.7.3 Member Data Documentation

#### 5.7.3.1 float

```
factor_graph.measurements.PoseMeasurement.float [static]
```

#### 5.7.3.2 str

```
factor_graph.measurements.PoseMeasurement.str [static]
```

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

- /home/alan/PyFactorGraph/factor\_graph/[measurements.py](#)

## 5.8 factor\_graph.priors.PosePrior Class Reference

### Public Member Functions

- def `x` (self)
- def `y` (self)

### Static Public Attributes

- `float`
- `ndarray`
- `str`

### 5.8.1 Detailed Description

A prior on the robot pose

Arguments:

name (str): the name of the pose variable  
position (Tuple[float, float]): the prior of the position  
theta (float): the prior of the theta  
covariance (np.ndarray): the covariance of the prior

### 5.8.2 Member Function Documentation

#### 5.8.2.1 `x()`

```
def factor_graph.priors.PosePrior.x (  
    self )
```

#### 5.8.2.2 `y()`

```
def factor_graph.priors.PosePrior.y (  
    self )
```

### 5.8.3 Member Data Documentation

#### 5.8.3.1 `float`

```
factor_graph.priors.PosePrior.float [static]
```



### 5.8.3.2 ndarray

```
factor_graph.priors.PosePrior.ndarray [static]
```

### 5.8.3.3 str

```
factor_graph.priors.PosePrior.str [static]
```

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

- [/home/alan/PyFactorGraph/factor\\_graph/priors.py](#)

## 5.9 factor\_graph.variables.PoseVariable Class Reference

### Public Member Functions

- [def rotation\\_matrix](#) (self)
- [def true\\_x](#) (self)
- [def true\\_y](#) (self)

### Static Public Attributes

- [float](#)
- [str](#)

### 5.9.1 Detailed Description

A variable which is a robot pose

Arguments:

```
name (str): the name of the variable (defines the frame)
true_position (Tuple[float, float]): the true position of the robot
true_theta (float): the true orientation of the robot
```

### 5.9.2 Member Function Documentation

#### 5.9.2.1 rotation\_matrix()

```
def factor_graph.variables.PoseVariable.rotation_matrix (
    self )
```

Get the rotation matrix for the measurement

#### 5.9.2.2 true\_x()

```
def factor_graph.variables.PoseVariable.true_x (  
    self )
```

#### 5.9.2.3 true\_y()

```
def factor_graph.variables.PoseVariable.true_y (  
    self )
```

### 5.9.3 Member Data Documentation

#### 5.9.3.1 float

```
factor_graph.variables.PoseVariable.float [static]
```

#### 5.9.3.2 str

```
factor_graph.variables.PoseVariable.str [static]
```

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

- [/home/alan/PyFactorGraph/factor\\_graph/variables.py](#)

## Chapter 6

# File Documentation

### 6.1 /home/alan/PyFactorGraph/factor\_graph/\_\_init\_\_.py File Reference

#### Namespaces

- [factor\\_graph](#)

### 6.2 /home/alan/PyFactorGraph/factor\_graph/factor\_graph.py File Reference

#### Classes

- class [factor\\_graph.factor\\_graph.FactorGraphData](#)

#### Namespaces

- [factor\\_graph.factor\\_graph](#)

### 6.3 /home/alan/PyFactorGraph/factor\_graph/measurements.py File Reference

#### Classes

- class [factor\\_graph.measurements.AmbiguousFGRangeMeasurement](#)
- class [factor\\_graph.measurements.AmbiguousPoseMeasurement](#)
- class [factor\\_graph.measurements.FGRangeMeasurement](#)
- class [factor\\_graph.measurements.PoseMeasurement](#)

#### Namespaces

- [factor\\_graph.measurements](#)

## Variables

- [factor\\_graph.measurements.frozen](#)

## 6.4 /home/alan/PyFactorGraph/factor\_graph/name\_utils.py File Reference

### Namespaces

- [factor\\_graph.name\\_utils](#)

### Functions

- [def factor\\_graph.name\\_utils.check\\_is\\_valid\\_frame\\_name](#)
- [def factor\\_graph.name\\_utils.get\\_idx\\_from\\_frame\\_name](#)
- [def factor\\_graph.name\\_utils.get\\_robot\\_char\\_from\\_frame\\_name](#)
- [def factor\\_graph.name\\_utils.get\\_robot\\_char\\_from\\_number](#)

## 6.5 /home/alan/PyFactorGraph/factor\_graph/parse\_factor\_graph.py File Reference

### Namespaces

- [factor\\_graph.parse\\_factor\\_graph](#)

### Functions

- [def factor\\_graph.parse\\_factor\\_graph.parse\\_efg\\_file](#)
- [def factor\\_graph.parse\\_factor\\_graph.parse\\_pickle\\_file](#)

## 6.6 /home/alan/PyFactorGraph/factor\_graph/priors.py File Reference

### Classes

- [class factor\\_graph.priors.LandmarkPrior](#)
- [class factor\\_graph.priors.PosePrior](#)

### Namespaces

- [factor\\_graph.priors](#)

## Variables

- [factor\\_graph.priors.frozen](#)

## 6.7 /home/alan/PyFactorGraph/factor\_graph/variables.py File Reference

### Classes

- class [factor\\_graph.variables.LandmarkVariable](#)
- class [factor\\_graph.variables.PoseVariable](#)

### Namespaces

- [factor\\_graph.variables](#)

### Variables

- [factor\\_graph.variables.frozen](#)



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