TUM Institute for Cognitive Systems (ICS)

OpenWalker

Naming Conventions

Emmanuel Dean, Florian Bergner, Rogelio Guadarrama-Olvera,
Simon Armleder, and Gordon Cheng

February 14, 2020

1 General description.

1.1 General coding rules

1.1.1 Formating

1. Blocks are intended by **2 spaces**
2. Braces are opened and closed in their own lines

1.1.2 Naming

1. ROS packages are **under_scored** e.g. `"my_package"`
2. ROS topics/Services are **under_scored** e.g. `"my_topic"`
3. Files are **under_scored** e.g. `"my_class.cpp"`
4. Libraries are **under_scored** e.g. `"my_class.cpp"`
5. Classes are **CamelCase** e.g. `"MyClass"`
6. Functions are **camelCased** e.g. `"myFunction()"`
7. Variables are **under_scored** e.g. `"my_var"`
8. Member Variables are **under_scored** with a trailing underscore e.g. `"my_member_var_"`
9. Global Variables are **under_scored** with a leading **g_** added e.g. `"g_my_global_var_"`
10. Namespaces are **under_scored** e.g. `"my_namespace"`

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732287.

1.1.3 OW specific Naming

1. Code readability has higher priority than briefness.
2. Variable names for math expressions must follow the naming convention in Table 1.1, where "Op" is the acronym for "Operator" and "Qual" for "Qualifier".
3. The proposed notation is case sensitive.
4. Operator order must follow table 1.2.
5. Qualifier notation must follow table 1.3.

Table 1.1: General naming convension for math notation.

Name	Math	Code
Scalar	$name^{Op}_{\text{Qual, }index}$	`name<Op><Qual>< _ ><[index]>`
Vector	$\text{Base}\mathbf{name}^{\mathbf{Op1}\ Op2}_{\text{Qual, }index}$	`name<Op1><Op2><Qual>< _frame>< _base>< _ ><[index]>`
Matrix	$\mathbf{Name}^{\mathbf{Op1}\ Op2}_{\text{Qual, }index}$	`Name<Op1><Op2><Qual>< _ ><[index]>`
Homogeneous Transformation	$^{\text{Frame}}_{\text{Base}}\mathbf{Tname}^{Op}_{\text{Qual, }index}$	`Tname<Op><Qual>< _frame>< _base>< _ ><[index]>`

Table 1.2: Coding notation and order for operators.

Priority	Name	Math	Code
1	Derivative	$\dot{\bullet}$	`P`
2	Inverse	$\bullet^{-1}$ or $\bullet^{\dagger}$	`I`
3	Transposed	$\bullet^{\top}$	`T`

2 Variable glosary.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732287.

Table 1.3: Coding notation for qualifiers.

Name	**Abbreviation**	**Code**	**Description**
Reference	ref	`Ref`	Reference value from abstract simplified model.
Desired	d	`D`	Desired quantity to be tracked by controller.
Real	real	`Real`	Real quantity from sensor data.
Commanded	cmd	`Cmd`	Value commanded to the actuators.

Math	**Code**	**Name**
q	`q`	Joint state
$\mathbf{q}_{\text{real}}$	`qReal`	Real joint state
$\mathbf{q}_{\text{cmd}}$	`qCmd`	Commanded joint state
${}_{\text{W}}\mathbf{x}_{\text{F}_\text{d}}$	`XD_f_w`	Desired position of **f** wrt **w**
${}_{\text{W}}\dot{\mathbf{x}}_{\text{F}_\text{d}}$	`XDP_f_w`	Desired velocity of **f** wrt **w**
${}_{\text{W}}\ddot{\mathbf{x}}_{\text{F}_\text{d}}$	`XDPP_f_w`	Desired acceleration of **f** wrt **w**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732287.