

# Drawing examples in L<sup>A</sup>T<sub>E</sub>X

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# Introduction

## The aim of document

The aim of this file is to help people interested in learning how to use L<sup>A</sup>T<sub>E</sub>X for drawing. In particular, already structured examples will help to develop one's own through the source code provided. The draws have been made during my research activity as PhD candidate.

The file is divided into four main chapters (parts):

- *Block Diagrams* (see Ch. 1): this part contains block diagrams;
- *Matlab Plots* (see Ch. 2): this part contains MATLAB<sup>®</sup> and the MATLAB package *matlab2tikz*<sup>1</sup>.
- *Drawing on Images* (see Ch. 3): this part contains draws made on image files;
- *Various* (see Ch. 4): this part contains several drawings that do not belong to the sections listed above.

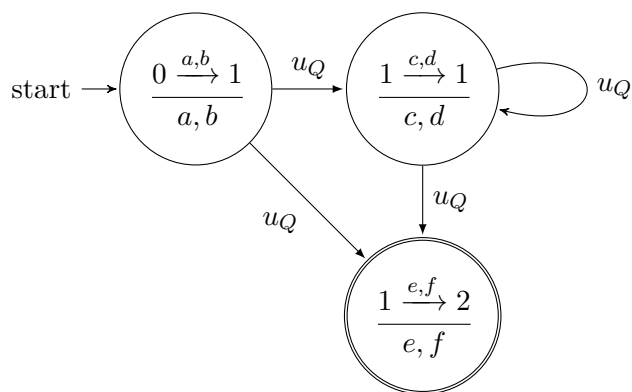
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<sup>1</sup>It is available at the link <https://github.com/matlab2tikz/matlab2tikz>

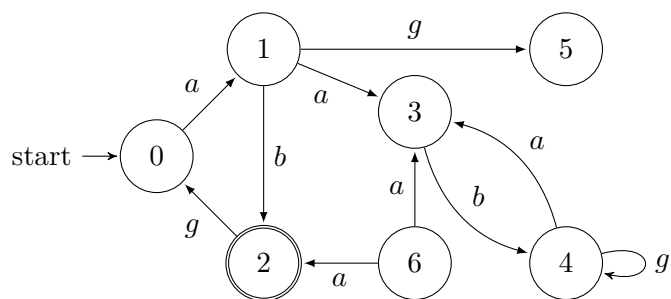
# Chapter 1

## Block Diagram

### 1.1 Example 1



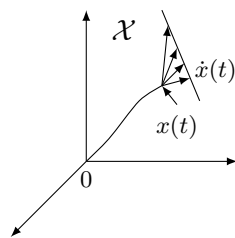
### 1.2 Example 2



### 1.3 Example 3

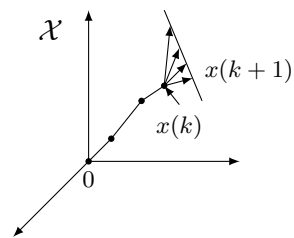
*Continuous-time:*

$$\begin{aligned}\dot{x}(t) &= Ax(t) + Bu(t) \\ y(t) &= Cx(t)\end{aligned}$$

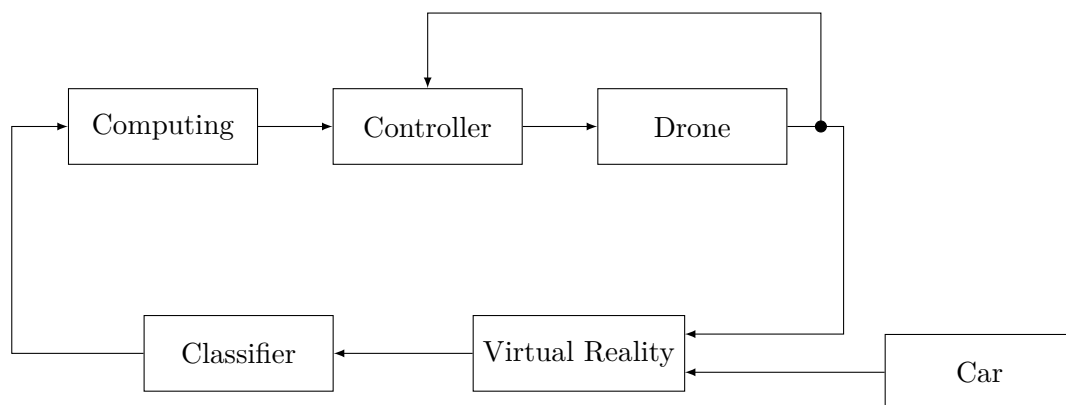


*Discrete-time:*

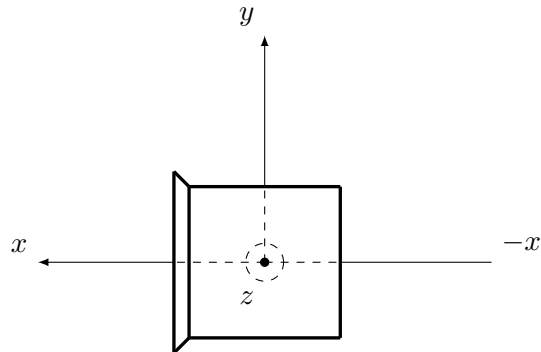
$$\begin{aligned}x(k+1) &= Ax(k) + Bu(k) \\ y(k) &= Cx(k)\end{aligned}$$



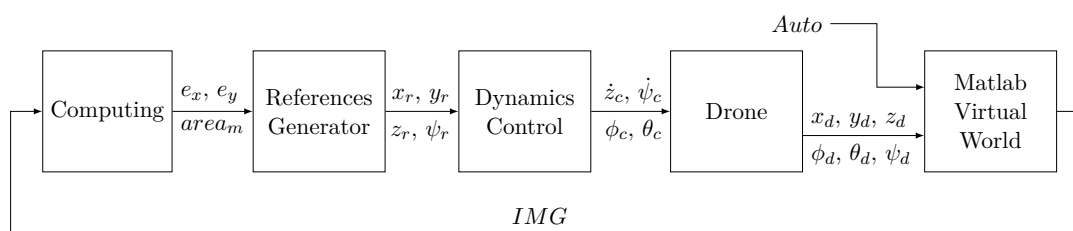
### 1.4 Example 4



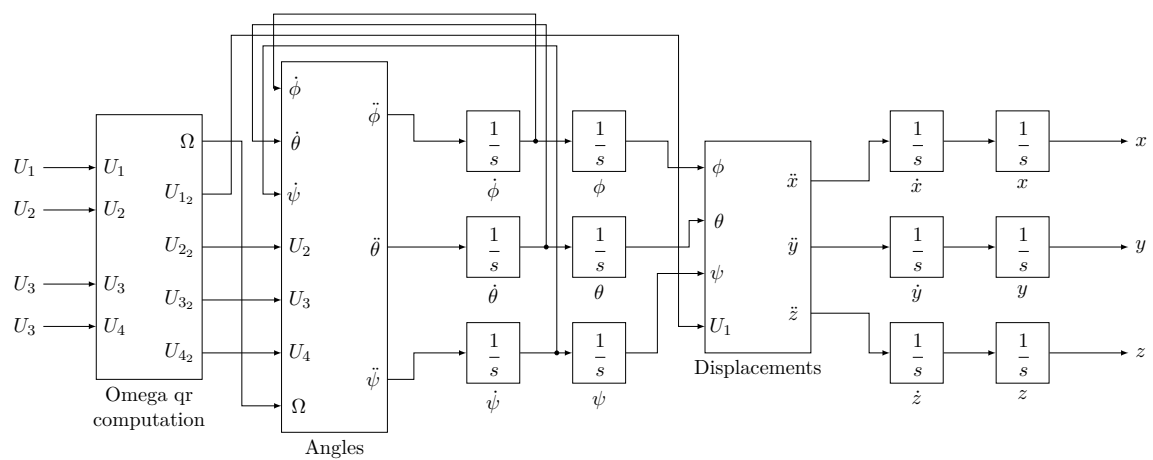
### 1.5 Example 5



### 1.6 Example 6

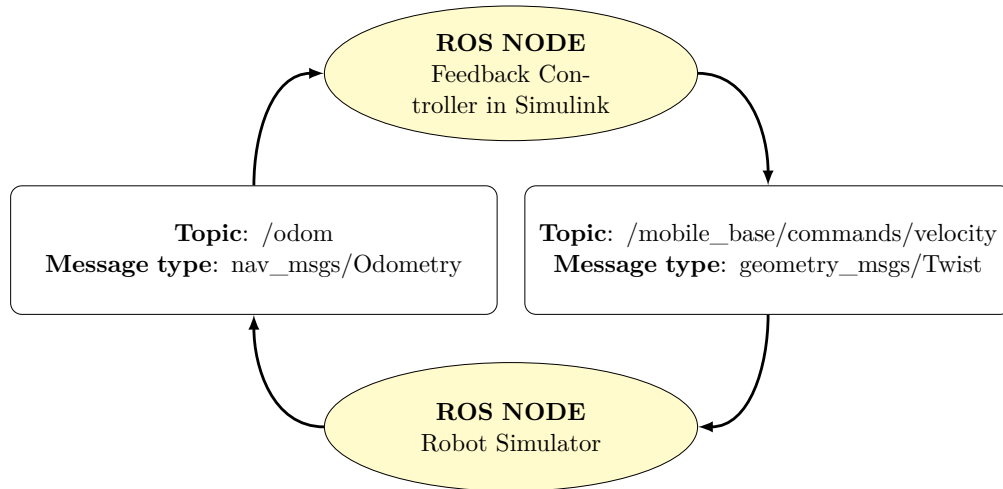


### 1.7 Example 7

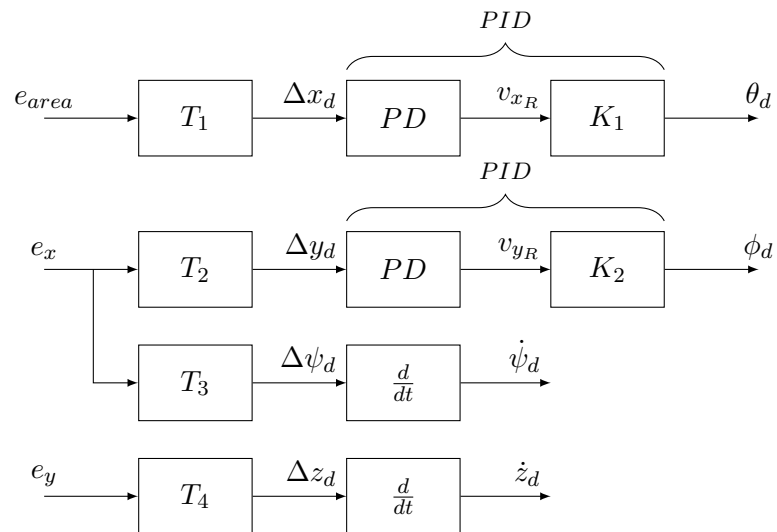




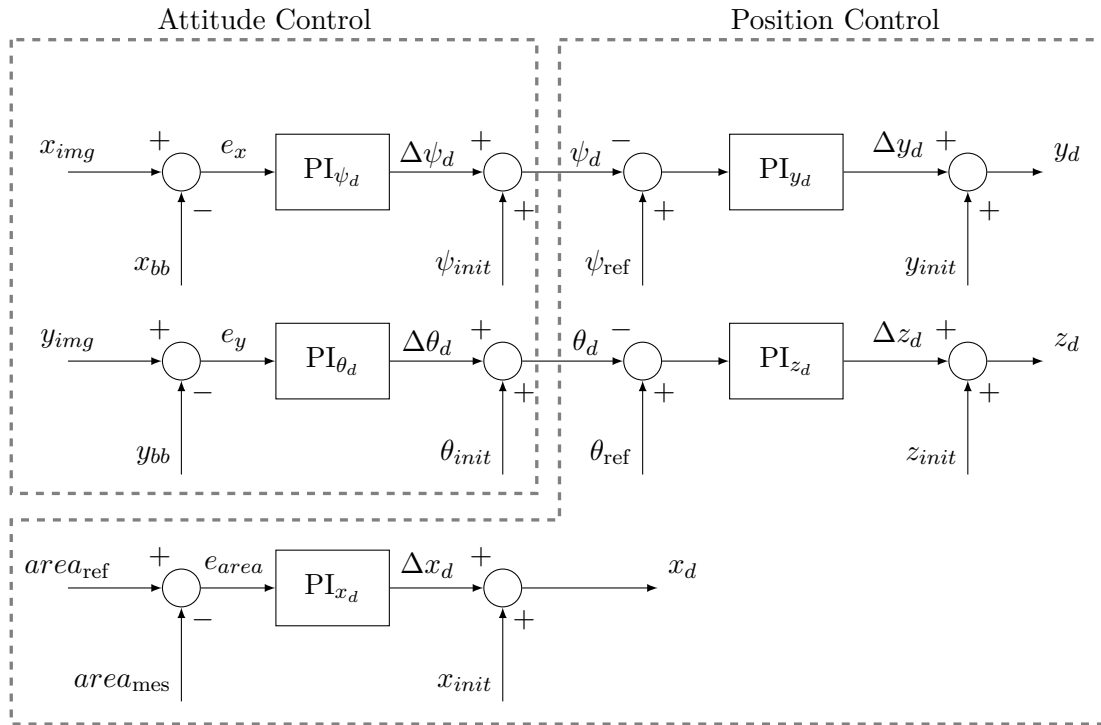
## 1.8 Example 8



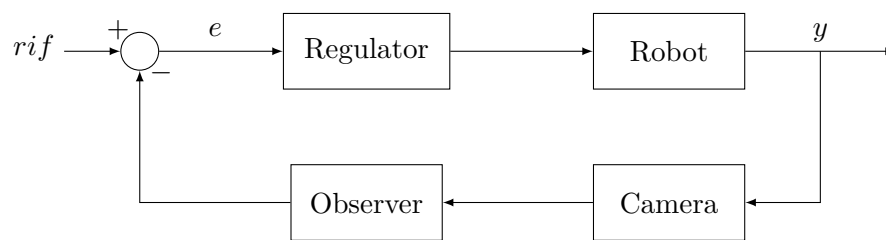
## 1.9 Example 9



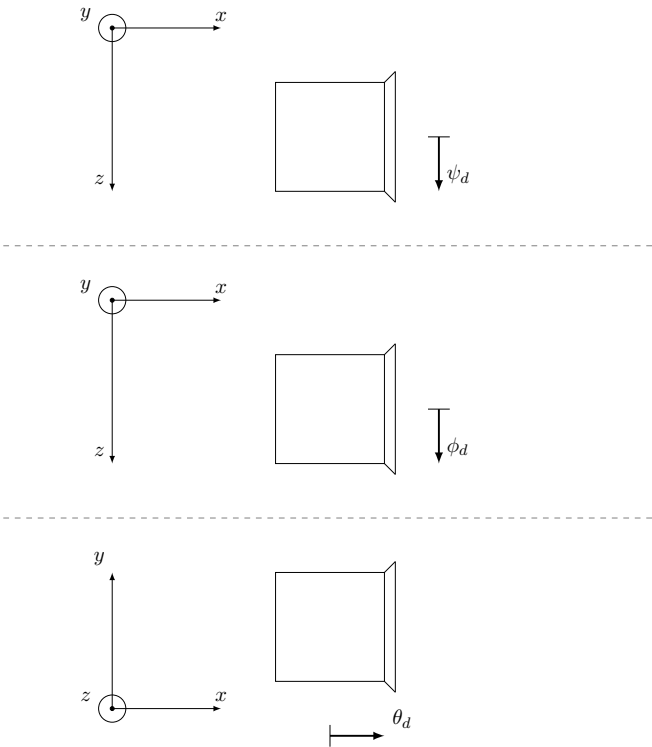
## 1.10 Example 10



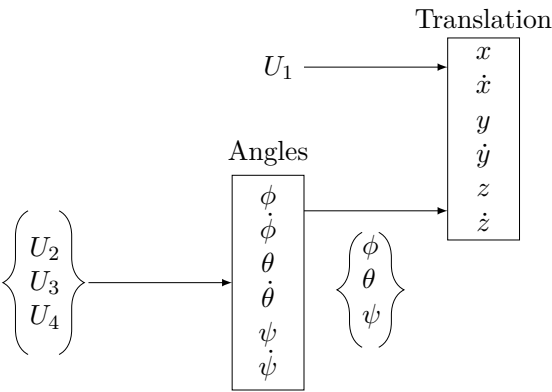
## 1.11 Example 11



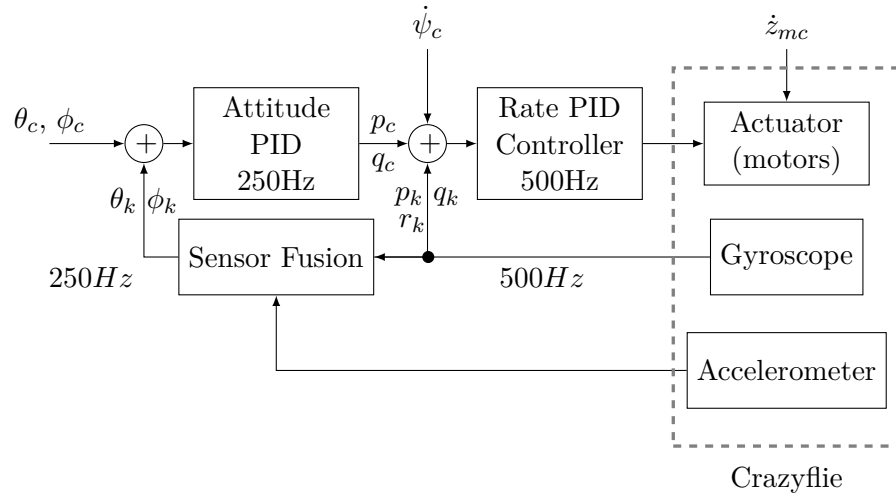
1.12 Example 12



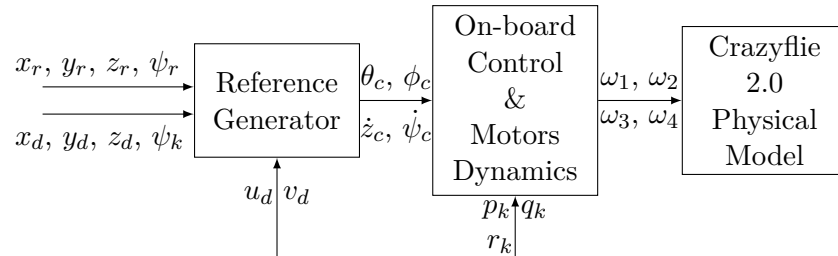
1.13 Example 13



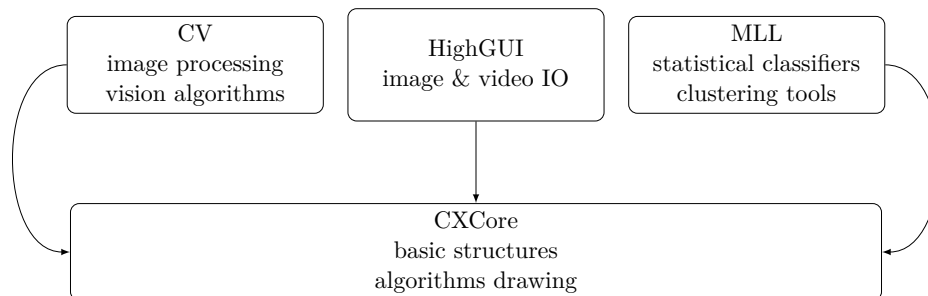
## 1.14 Example 14



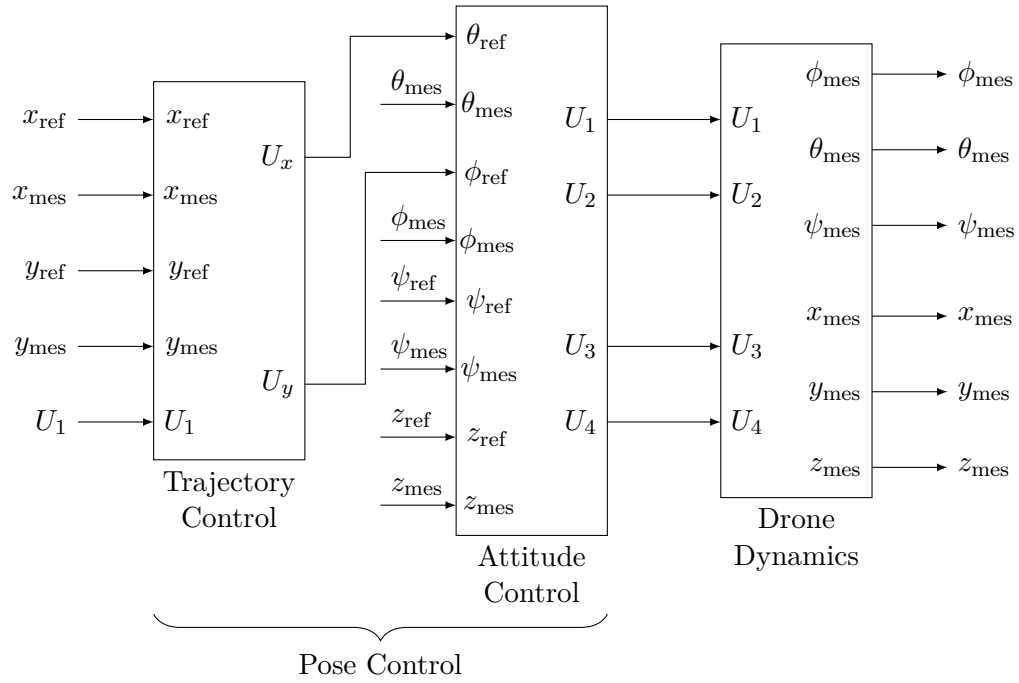
## 1.15 Example 15



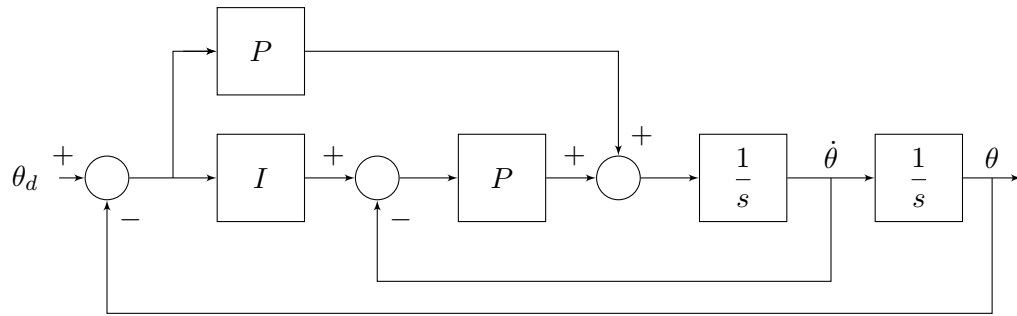
## 1.16 Example 16



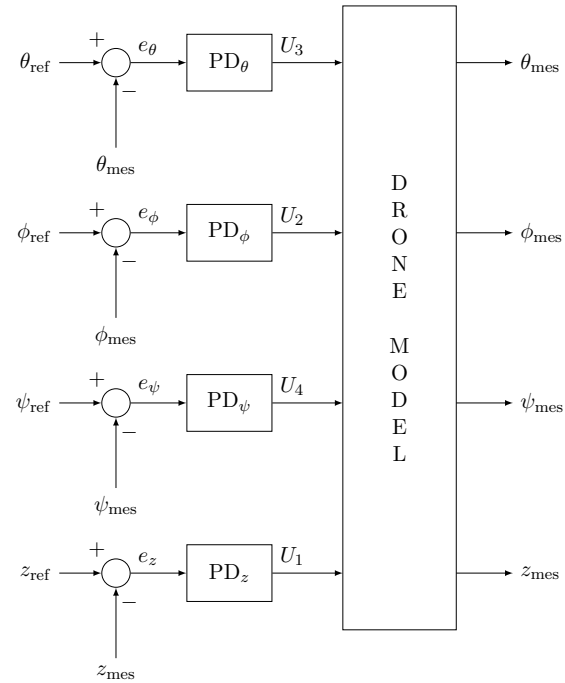
## 1.17 Example 17



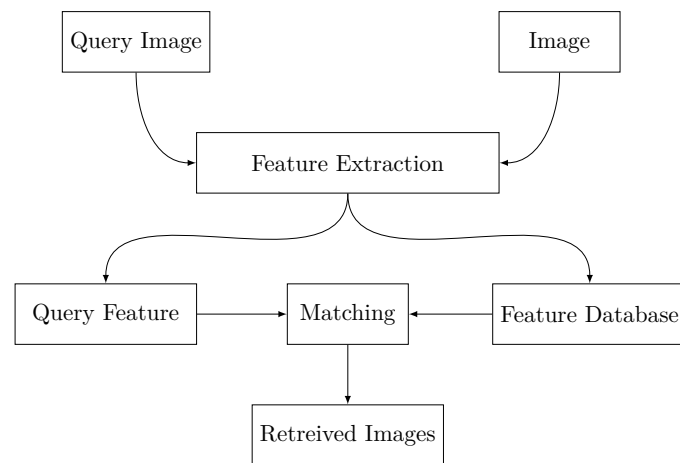
## 1.18 Example 18



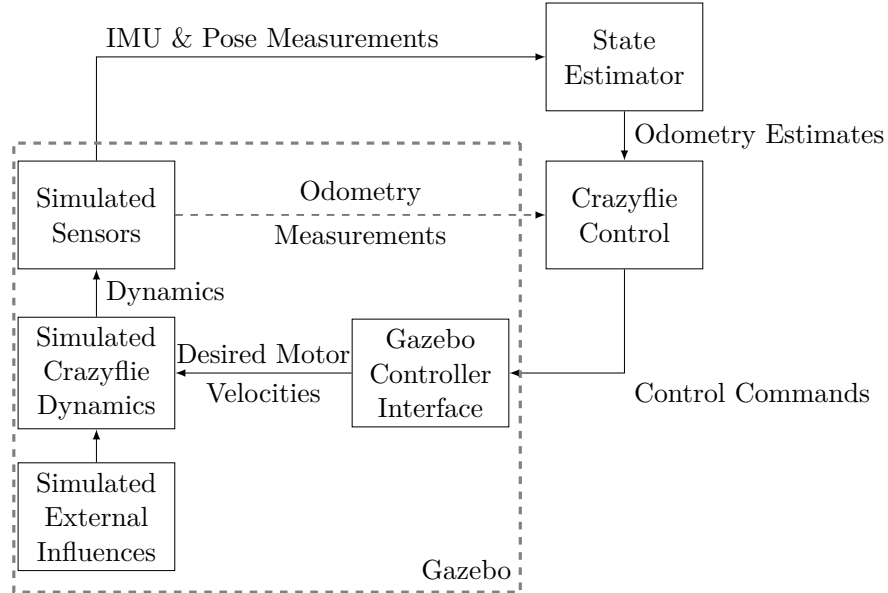
## 1.19 Example 19



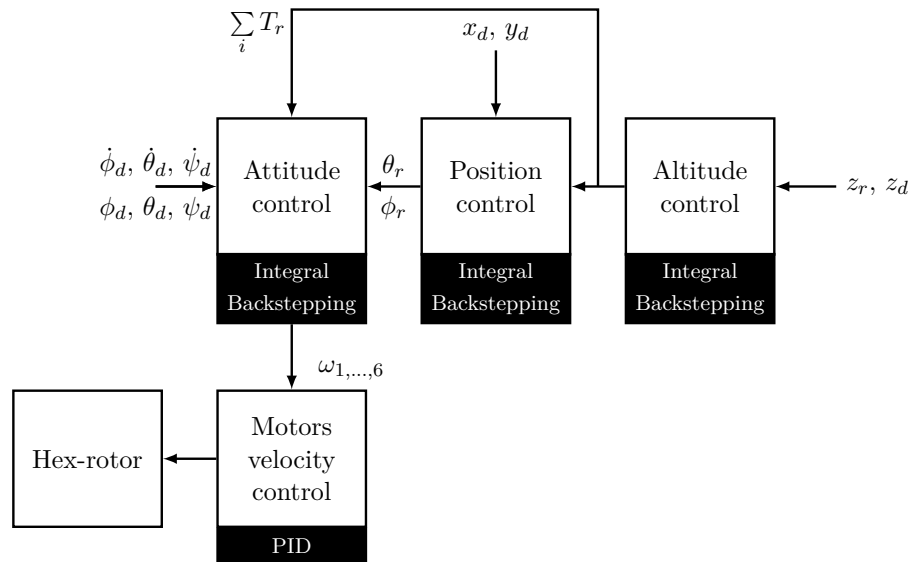
## 1.20 Example 20



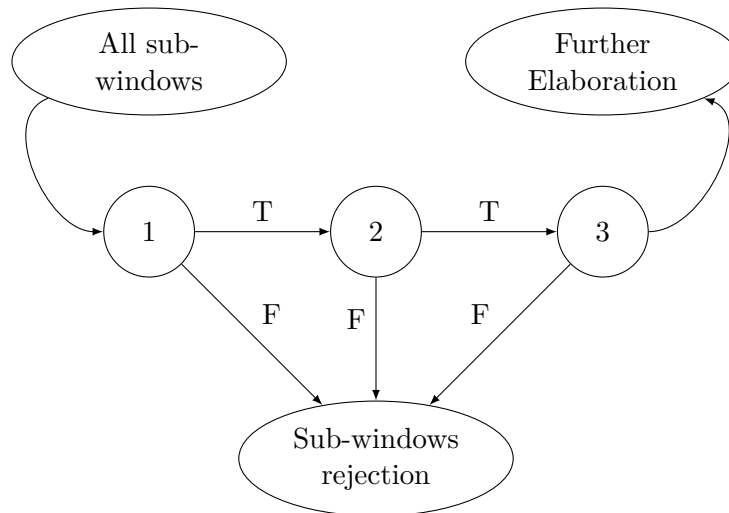
## 1.21 Example 21



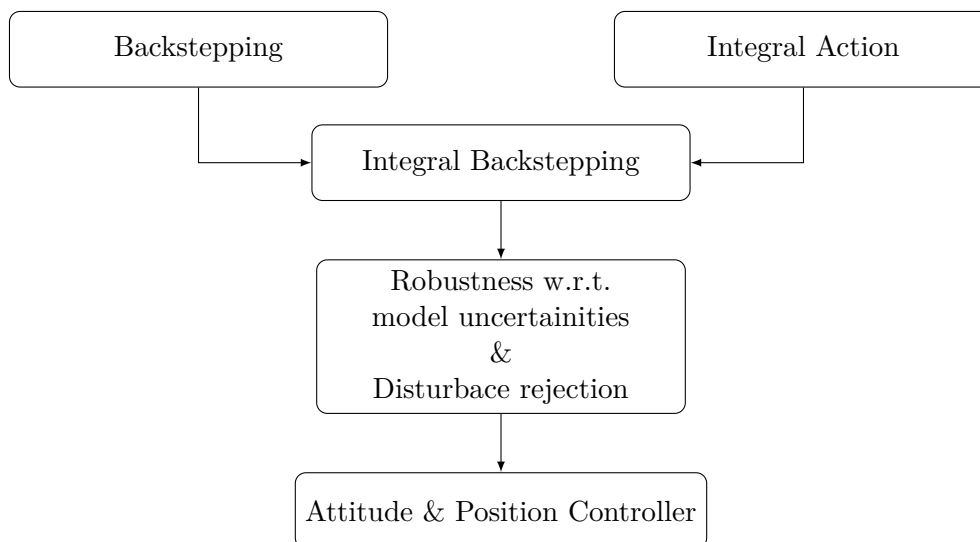
## 1.22 Example 22



### 1.23 Example 23

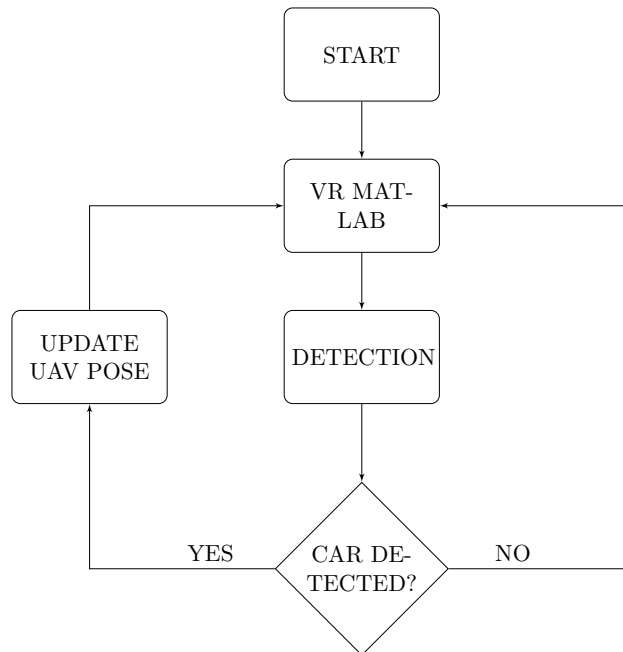


### 1.24 Example 24

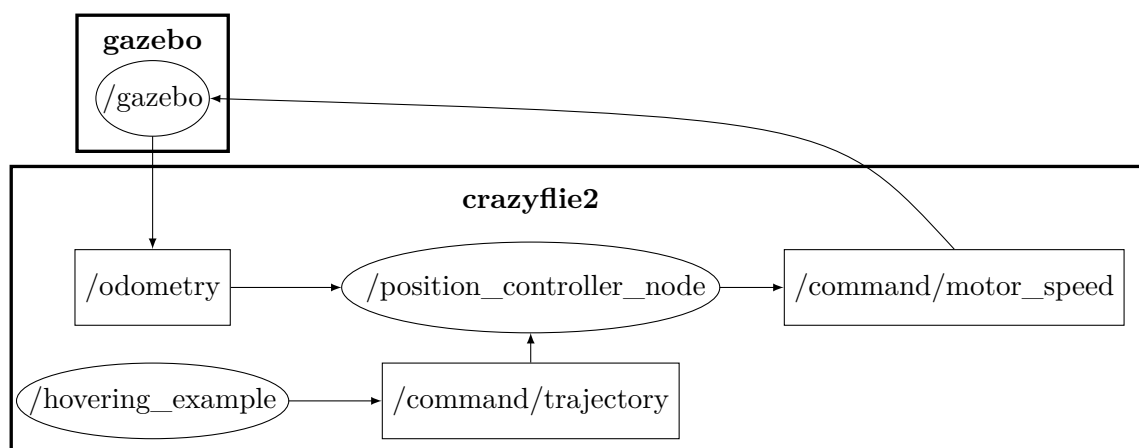




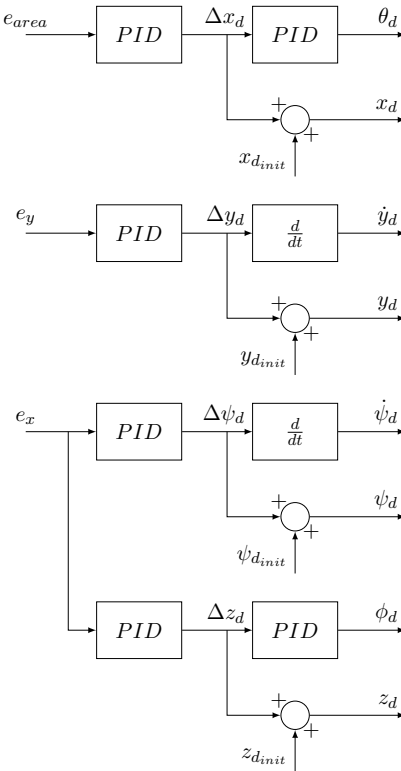
## 1.25 Example 25



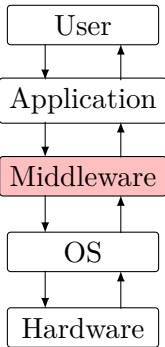
## 1.26 Example 26



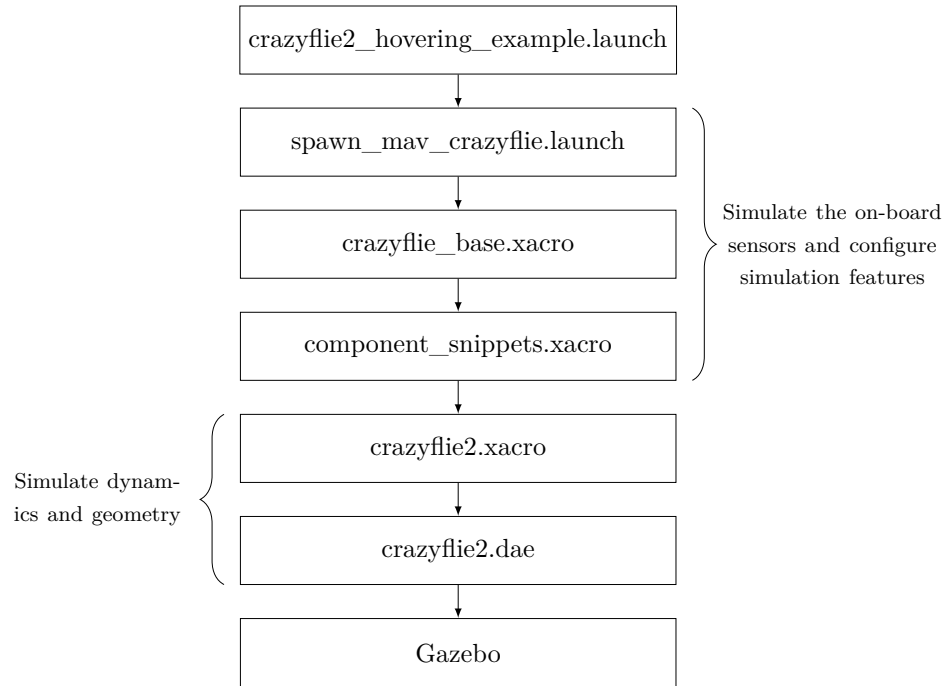
1.27 Example 27



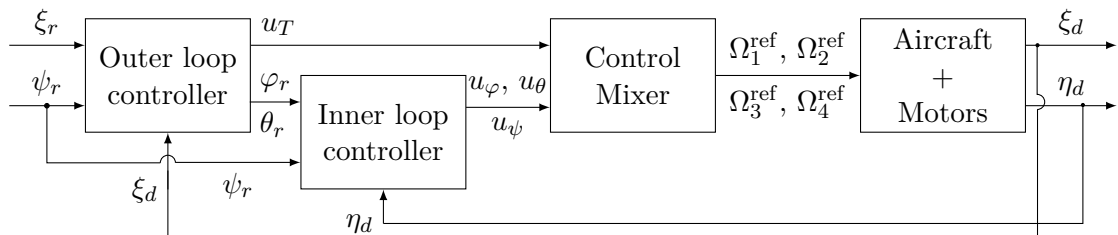
1.28 Example 28



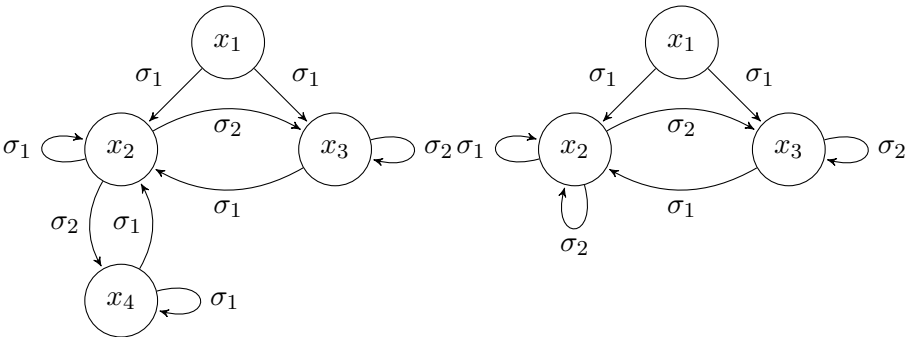
## 1.29 Example 29



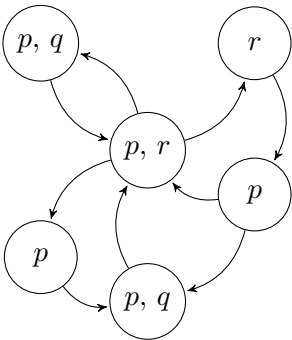
## 1.30 Example 30



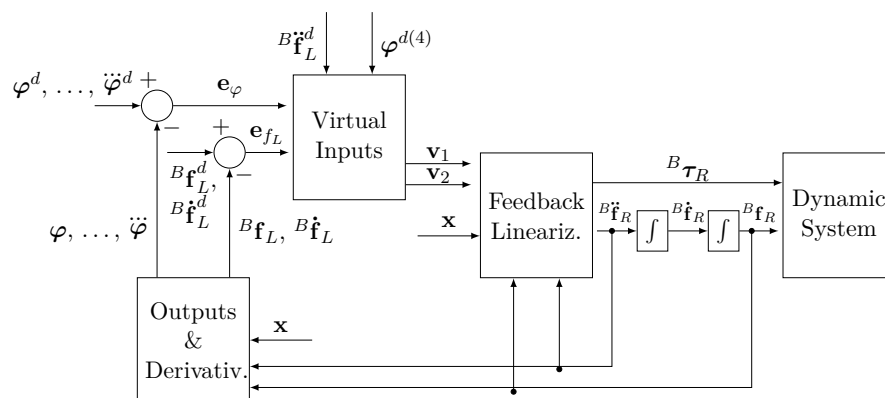
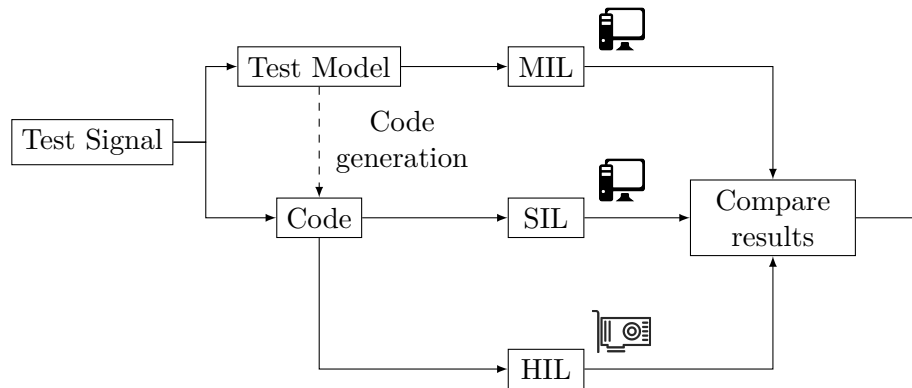
1.31 Example 31



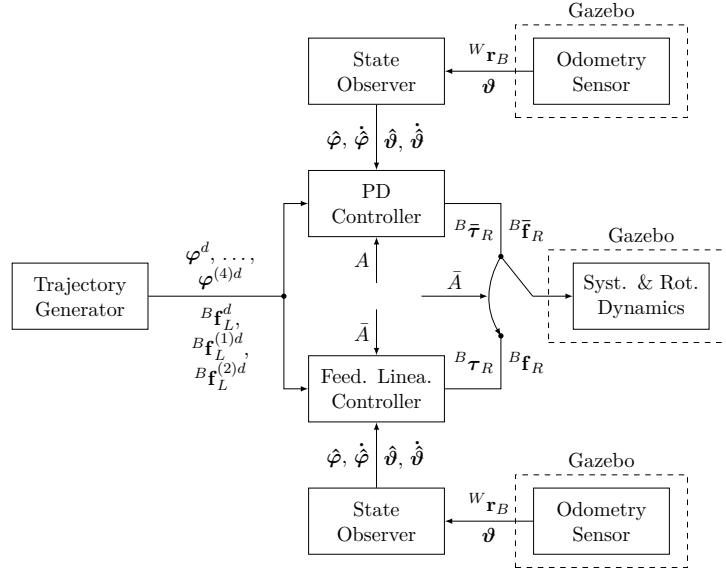
1.32 Example 32



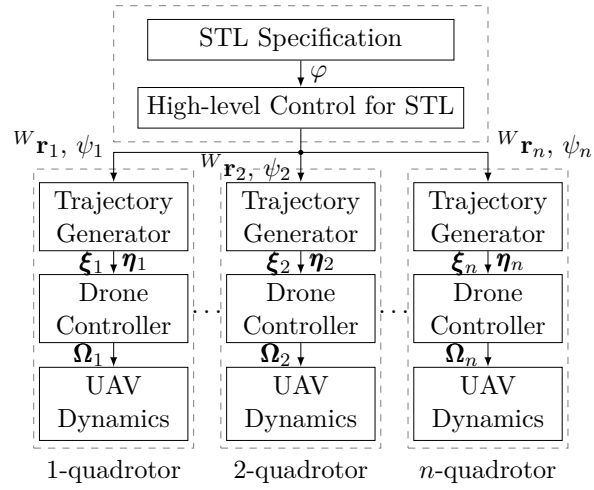
### 1.34 Example 34



## 1.35 Example 35



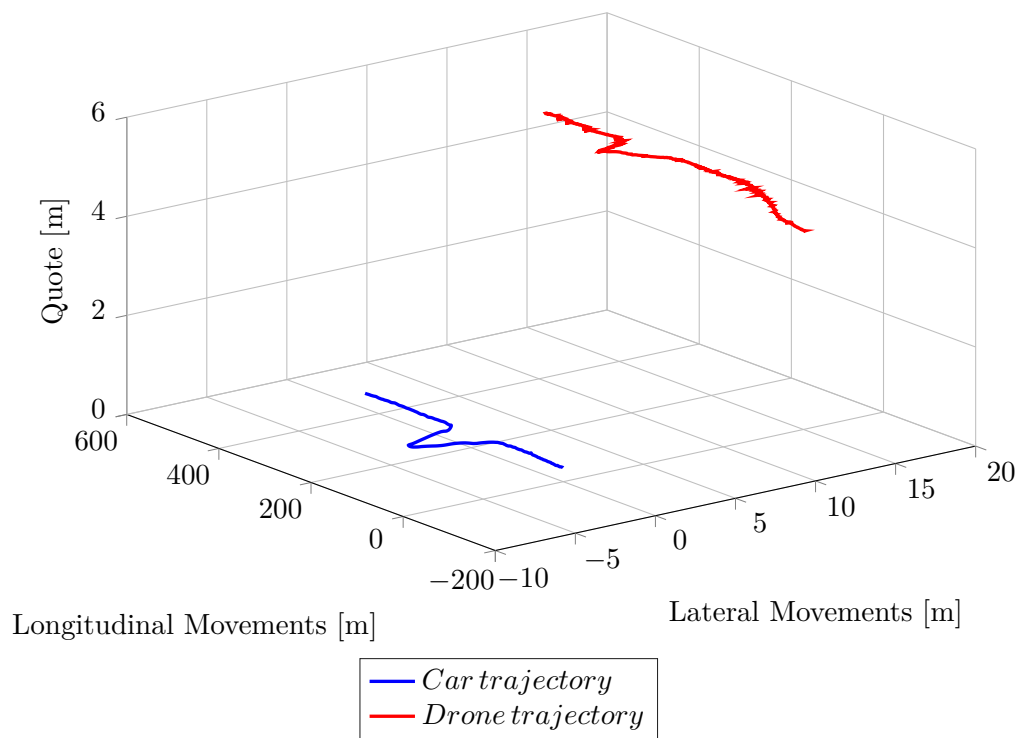
## 1.36 Example 36



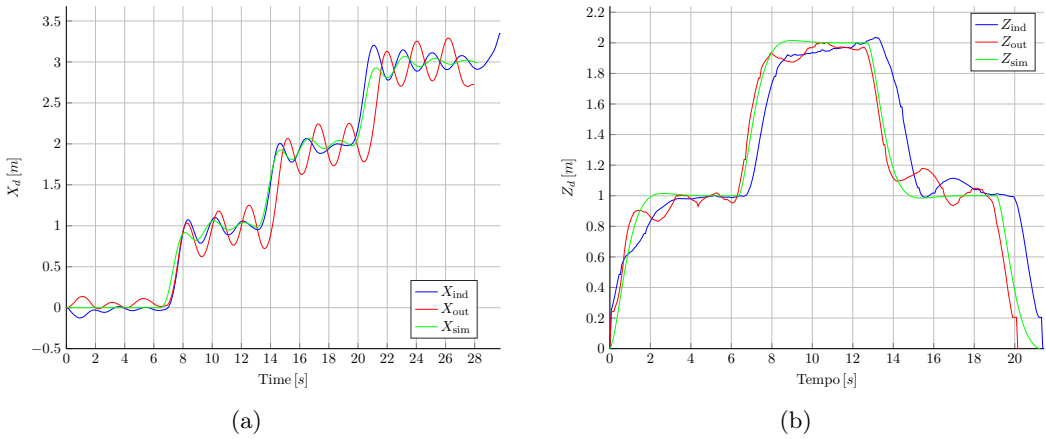
## Chapter 2

# Matlab Plots

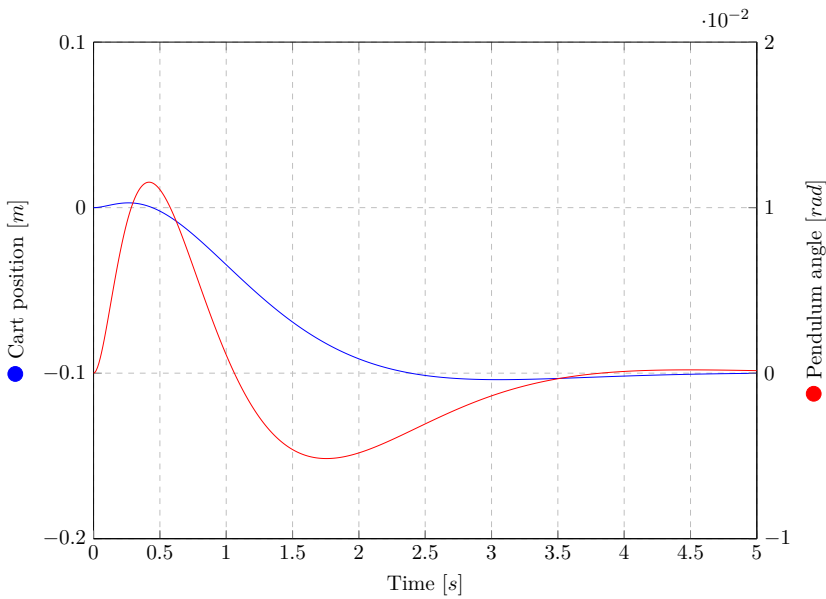
### 2.1 Example 1



2.2 Example 2

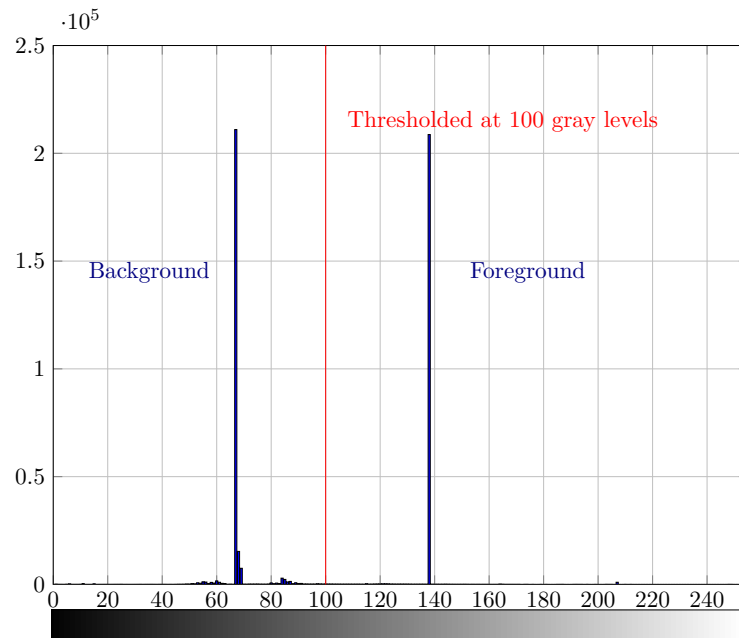


2.3 Example 3





## 2.4 Example 4

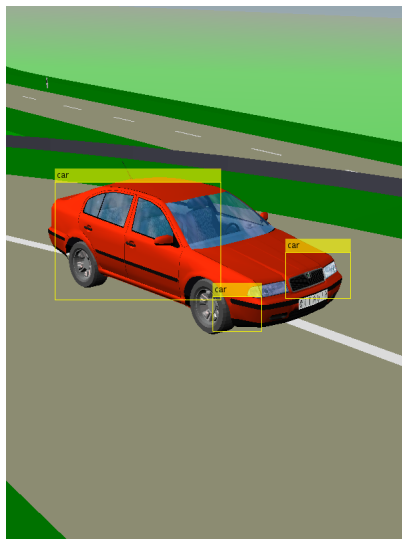


## Chapter 3

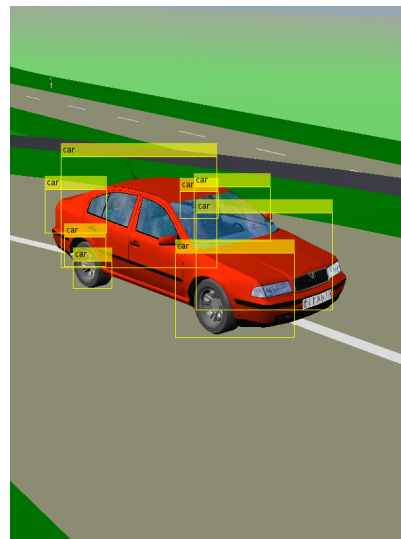
# Drawing on Images

### 3.1 Example 1

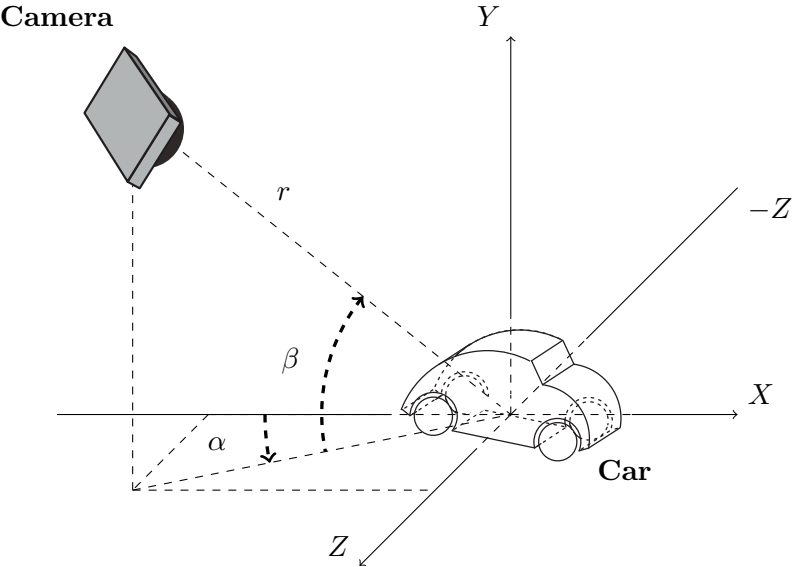
Haar cascade



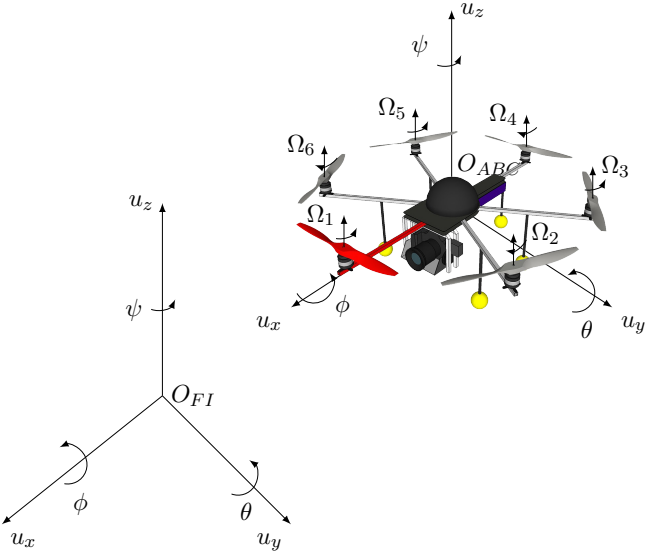
HOG



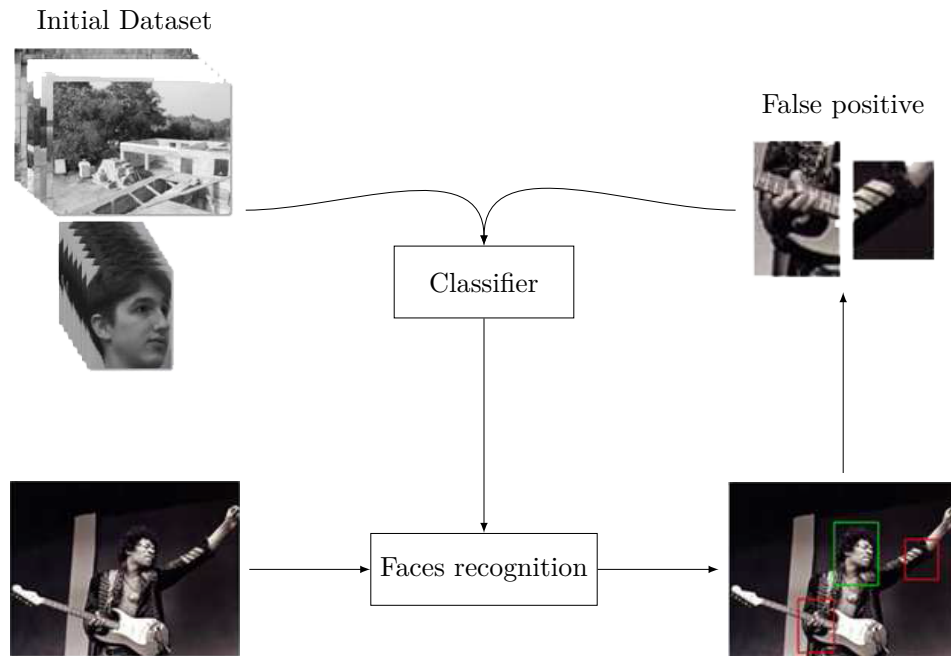
3.2 Example 2



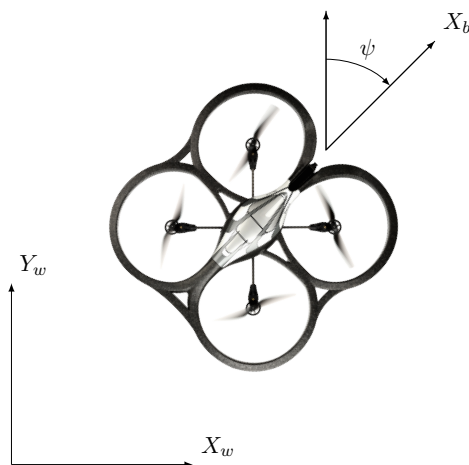
3.3 Example 3



### 3.4 Example 4



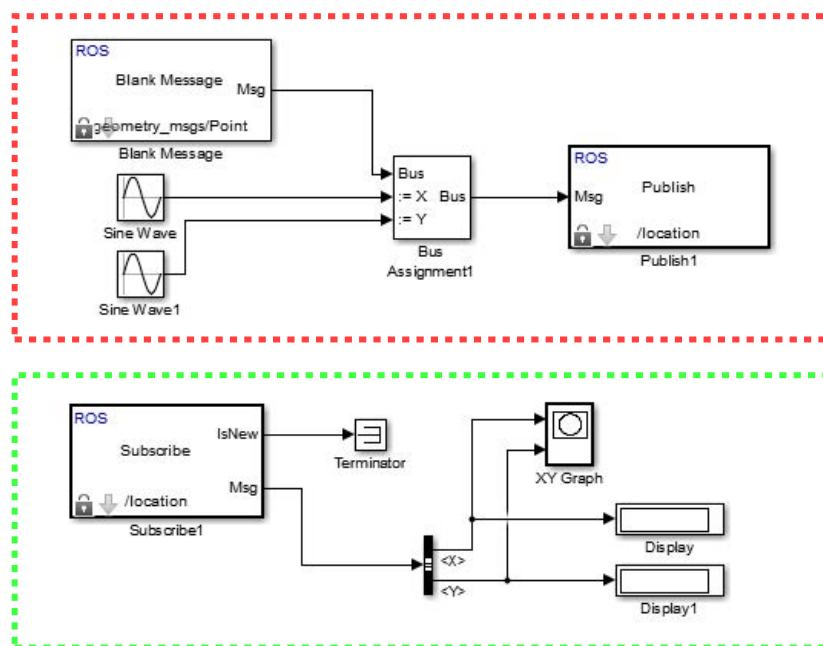
### 3.5 Example 5



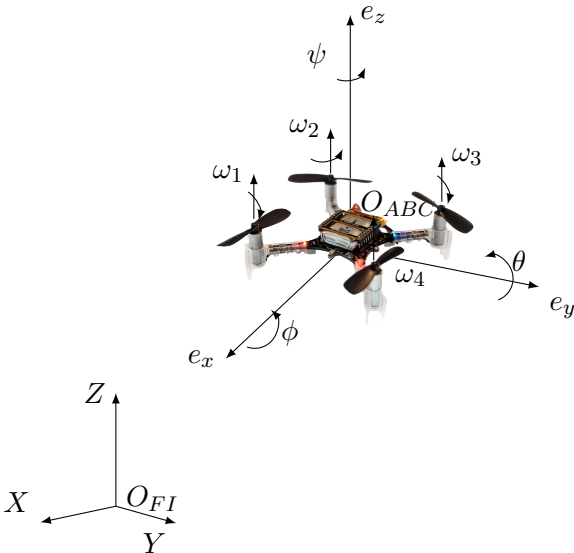
### 3.6 Example 6



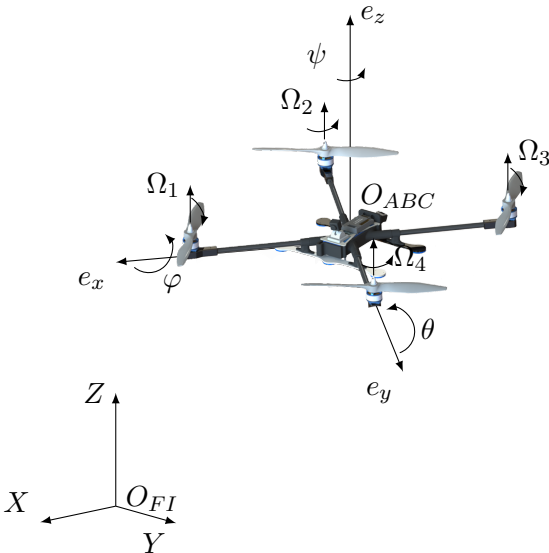
### 3.7 Example 7



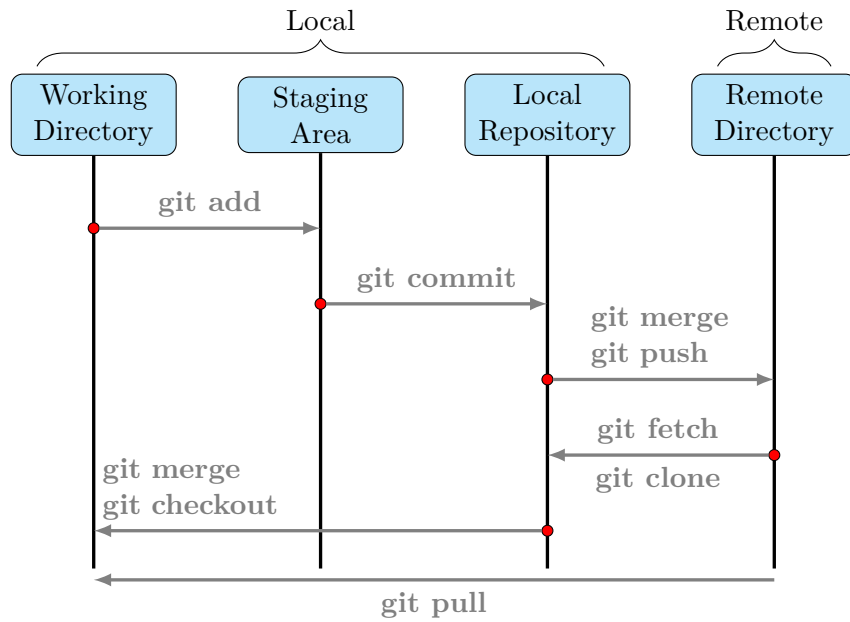
3.8 Example 8



3.9 Example 9



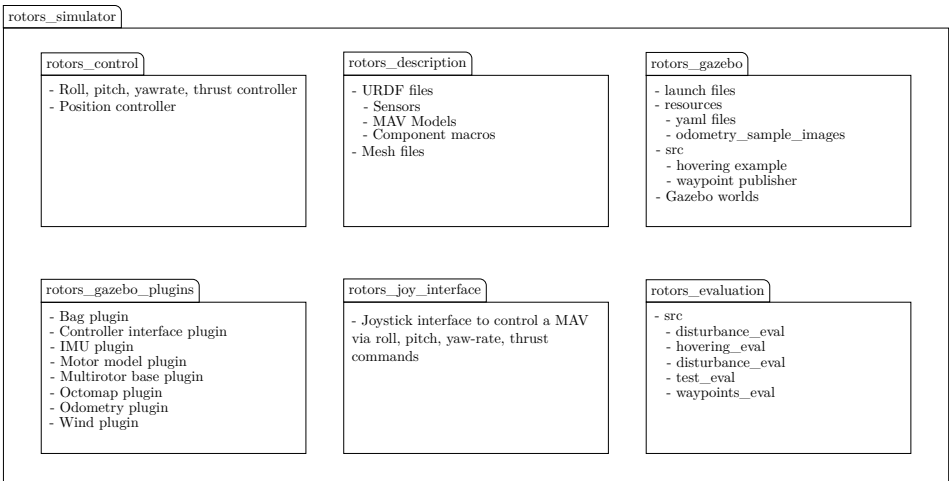
## 3.10 Example 10



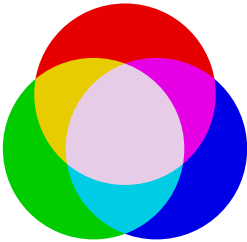
# Chapter 4

## Various

### 4.1 Example 1

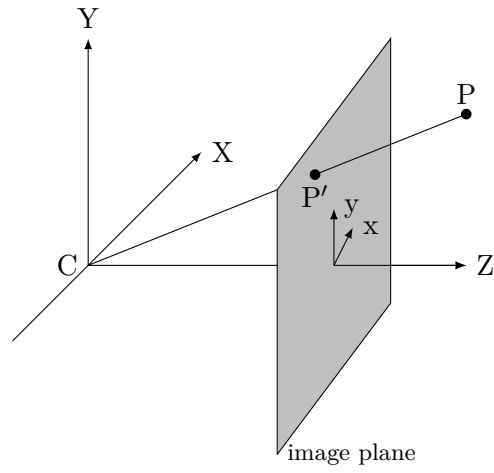


### 4.2 Example 2

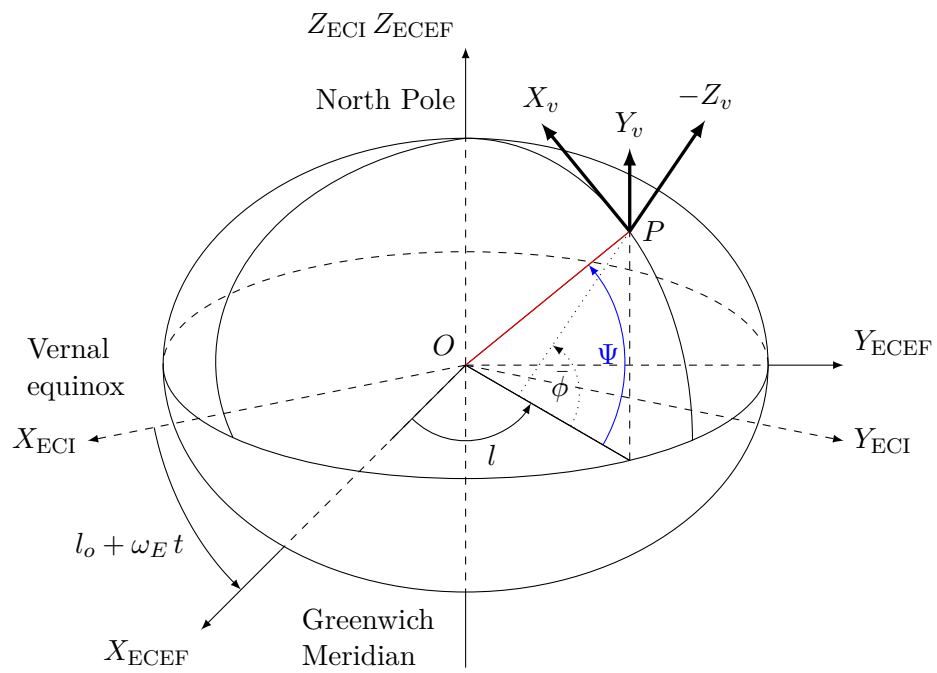




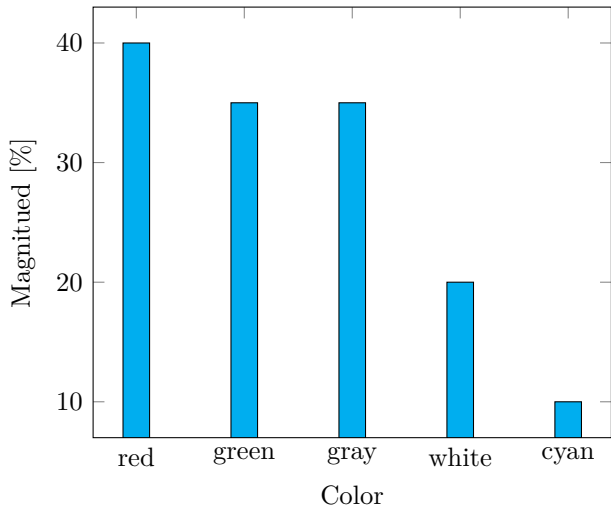
## 4.3 Example 3



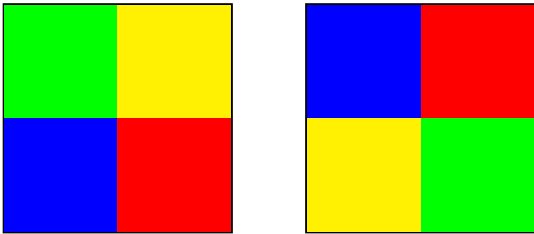
## 4.4 Example 4



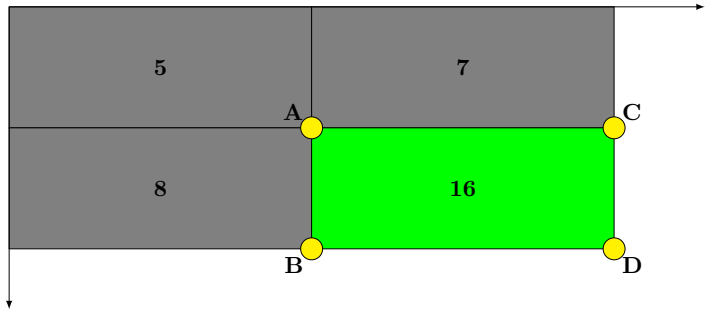
4.5 Example 5



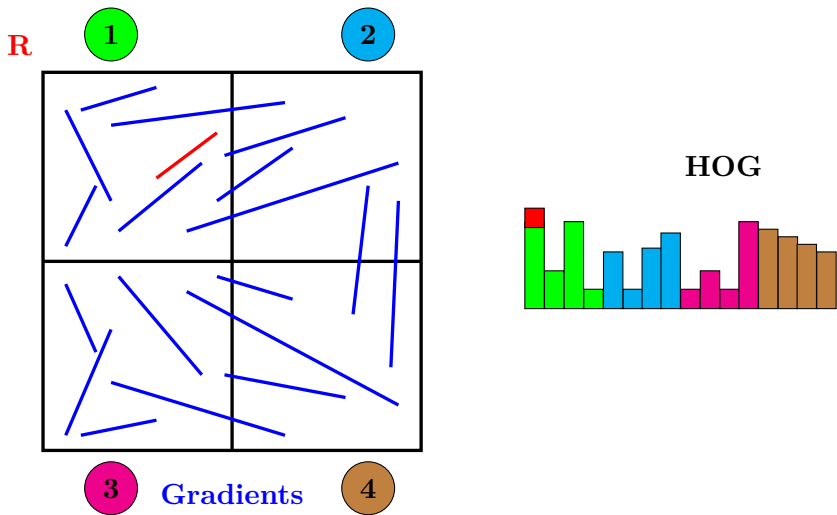
4.6 Example 6



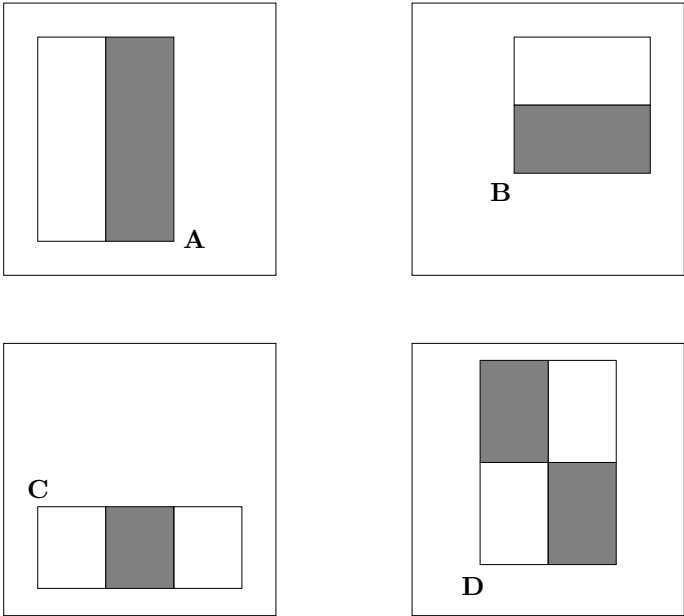
4.7 Example 7



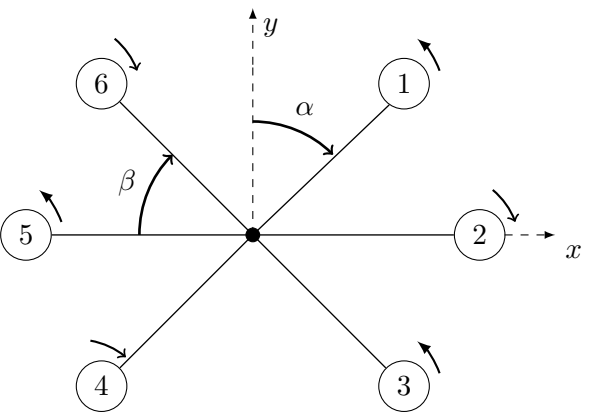
4.8 Example 8



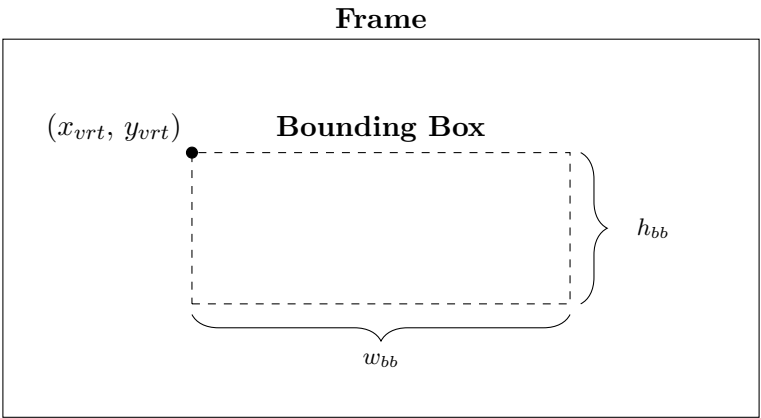
4.9 Example 9



4.10 Example 10



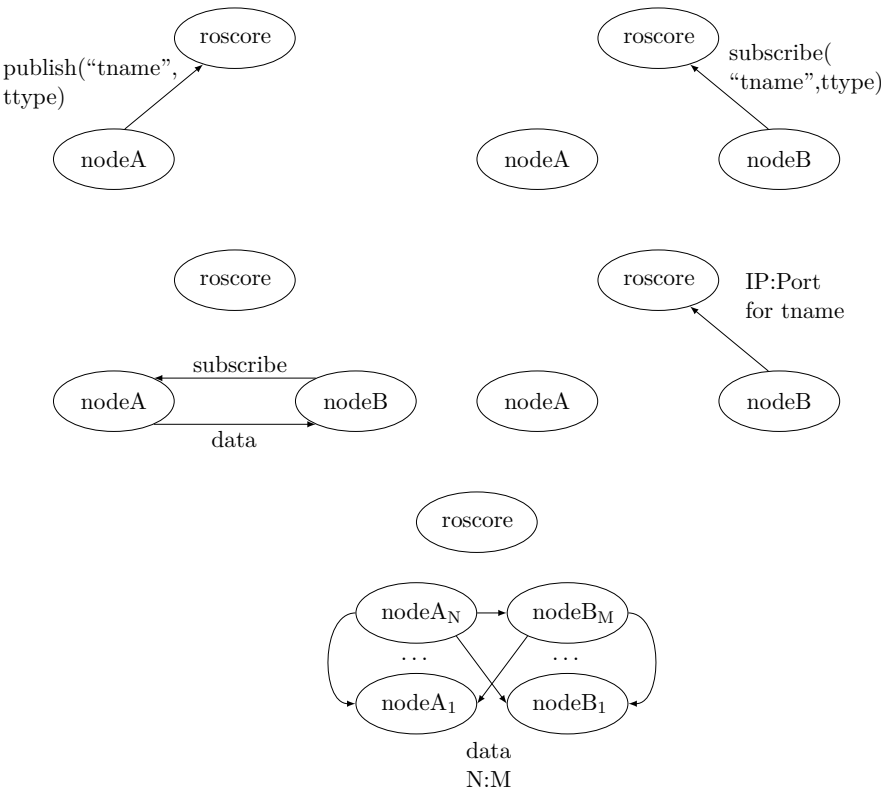
4.11 Example 11



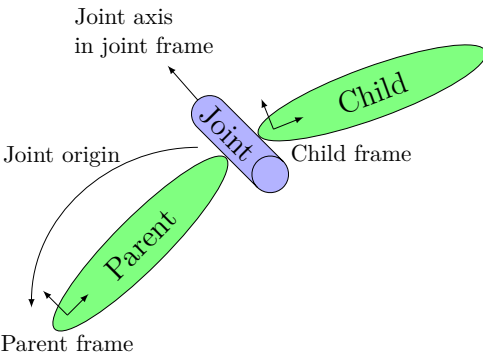
4.12 Example 12

0	1	2	3	4	5	6 to n+6	n+7	n+8
str	lgt	seq	cmp	sys	msg	dat	cks	cks

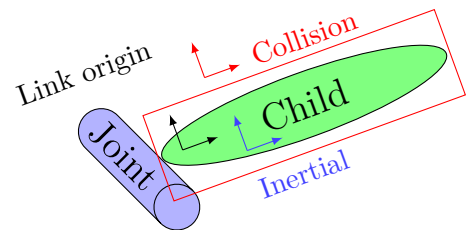
4.13 Example 13



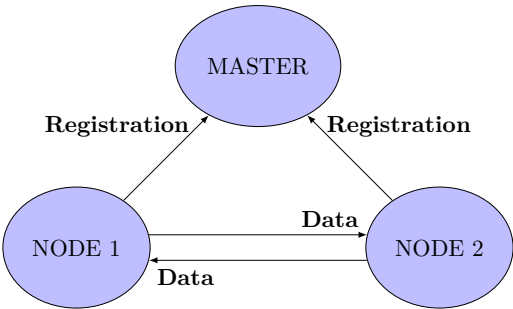
4.14 Example 14



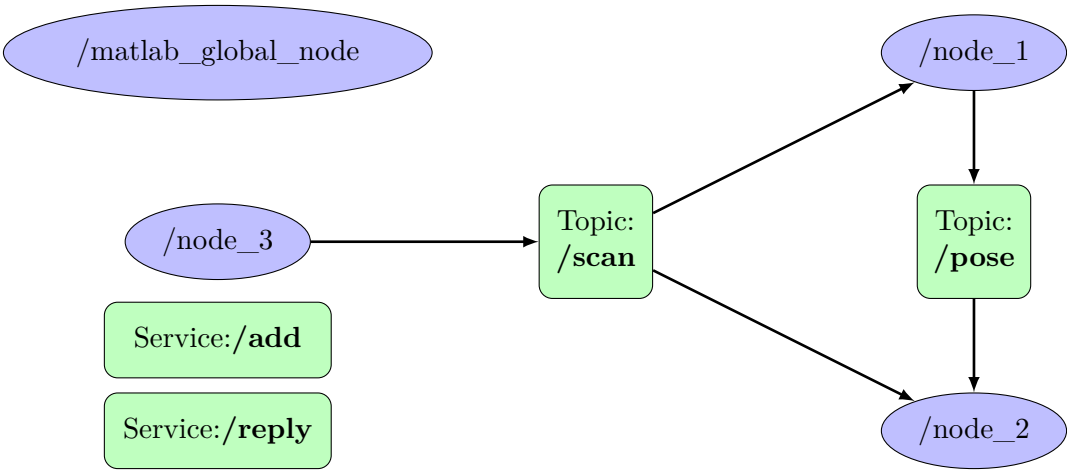
4.15 Example 15



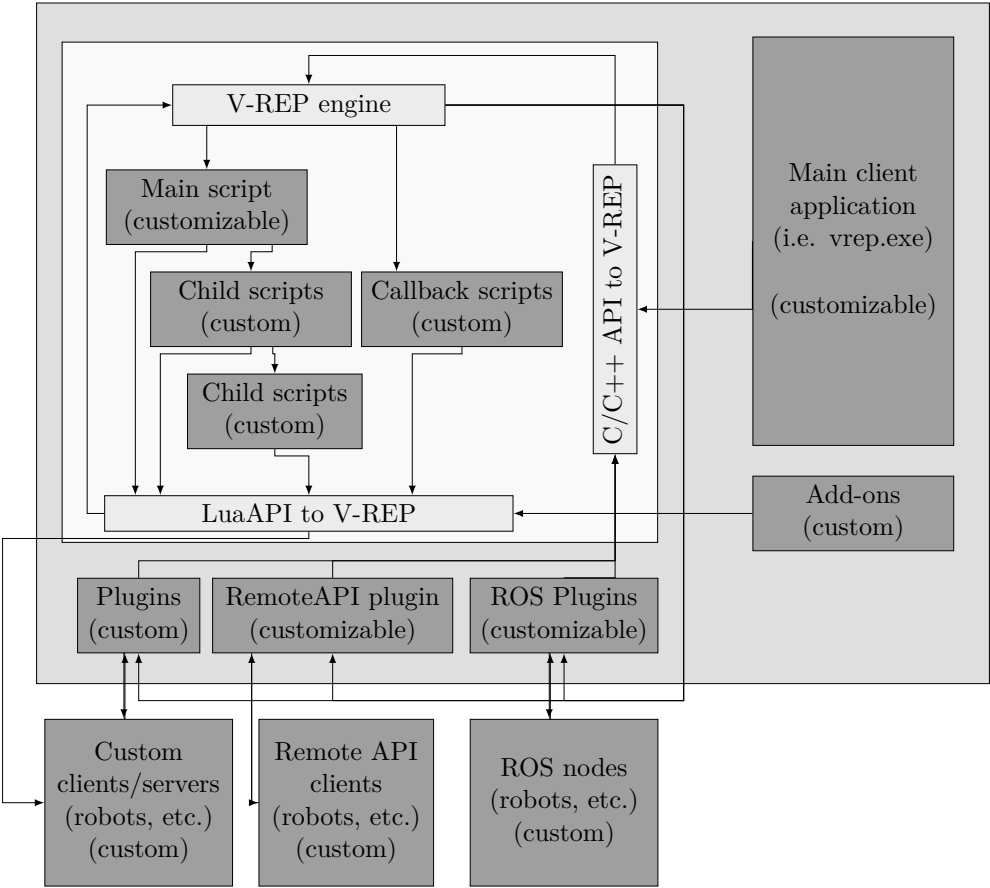
4.16 Example 16



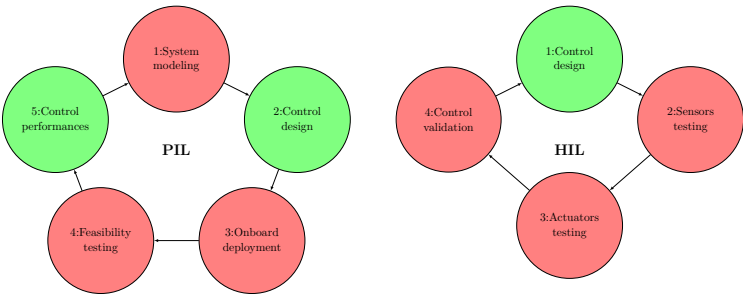
4.17 Example 17



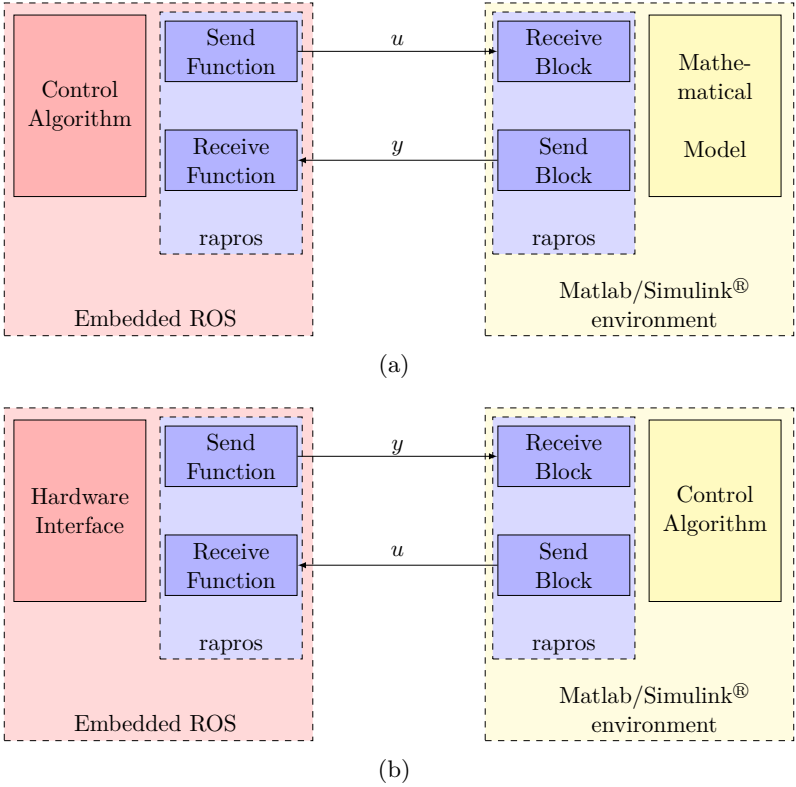
4.18 Example 18



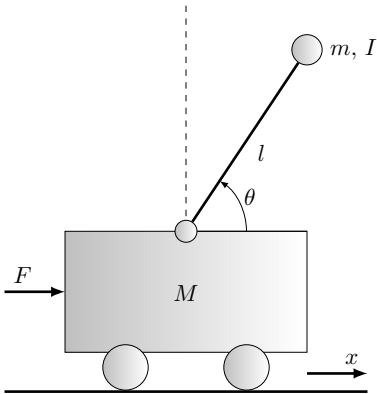
4.19 Example 19



4.20 Example 20

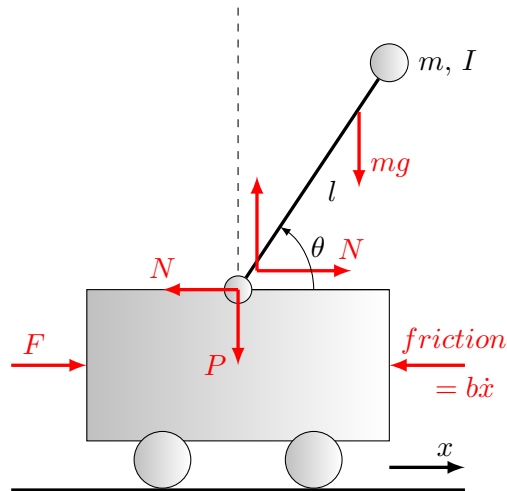


4.21 Example 21

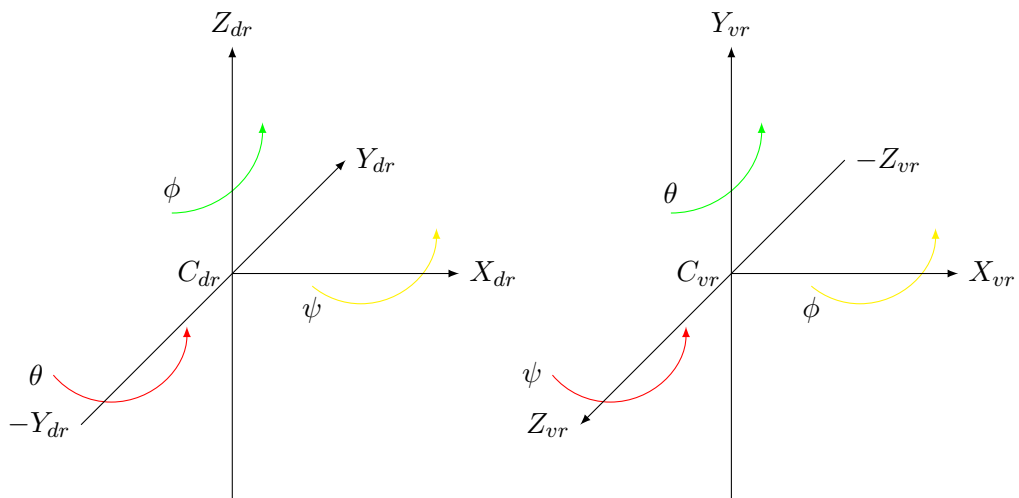




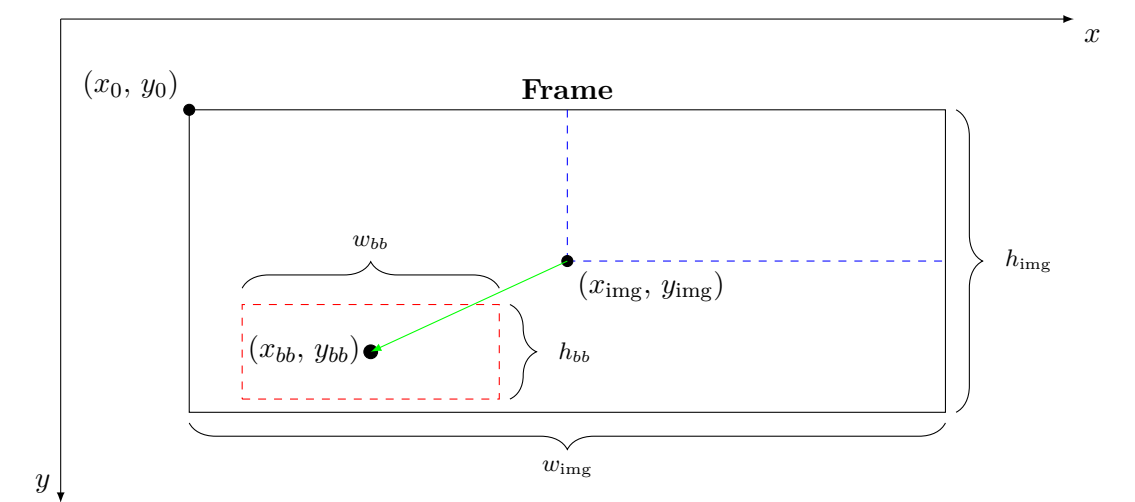
## 4.22 Example 22



## 4.23 Example 23

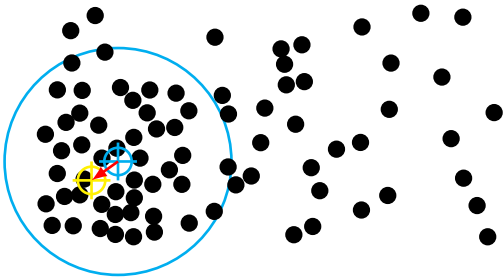


4.24 Example 24

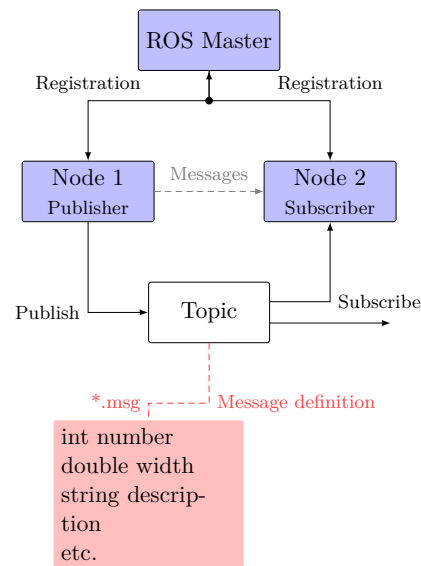


4.25 Example 25

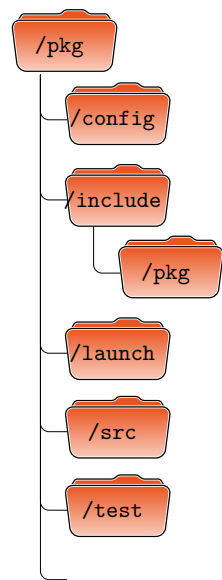
- Region of interest
- Center of mass
- CAMShift vector



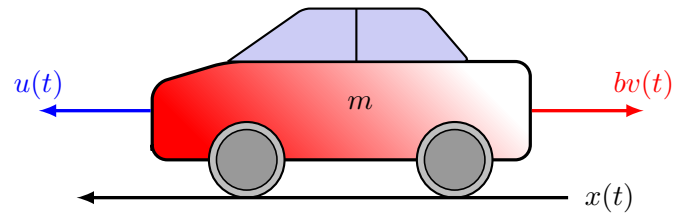
4.26 Example 26



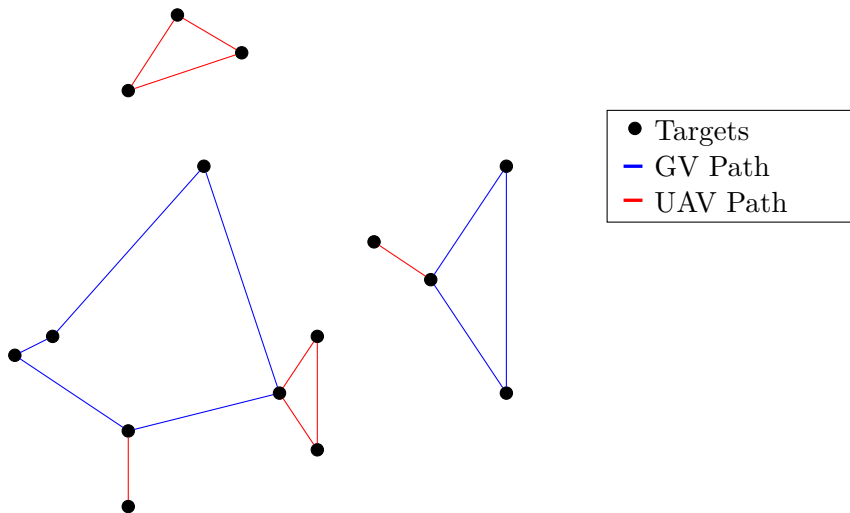
4.27 Example 27



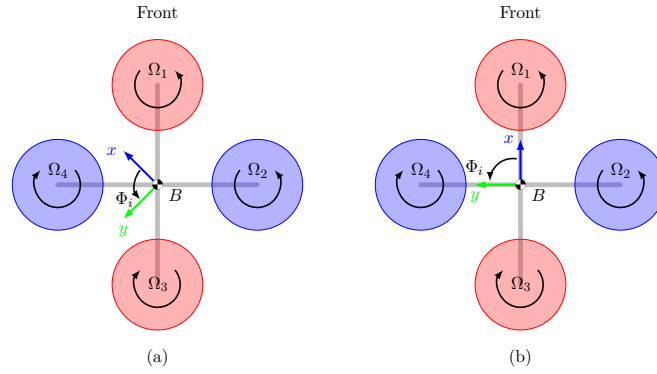
## 4.28 Example 28



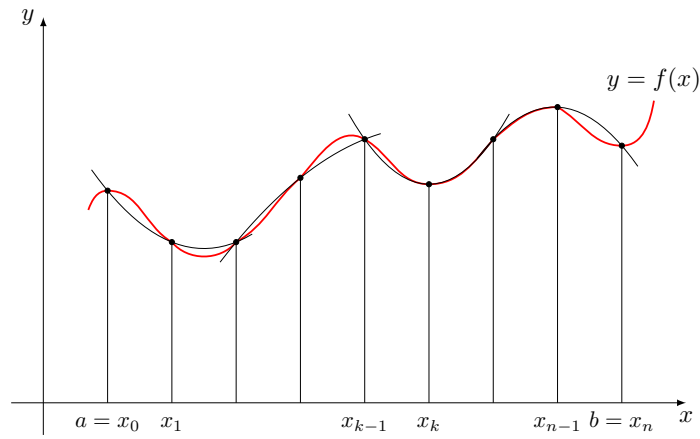
## 4.29 Example 29



## 4.30 Example 30



## 4.31 Example 37



## 4.32 Example 38

- L1: Problem definition ends. MATLAB final simulations results are coming.
- L2: Gazebo simulations ends. The experimental setup can be discussed.
- L3: Experiments campaign ends.
- L4: Deadline (tentative) for the XX + XX submission.

