Drawing examples in LaTeX

GIUSEPPE SILANO

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Contents

Introduction

The aim of document

The aim of this file is to help people interested in learning how to use LaTeX 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*: this part contains block diagrams;

- *Matlab Plots*: this part contains MATLAB® and the MATLAB package *matlab2tikz*[1].

- *Drawing on Images*: this part contains draws made on image files;

- *Various*: this part contains several drawings that do not belong to the sections listed above.
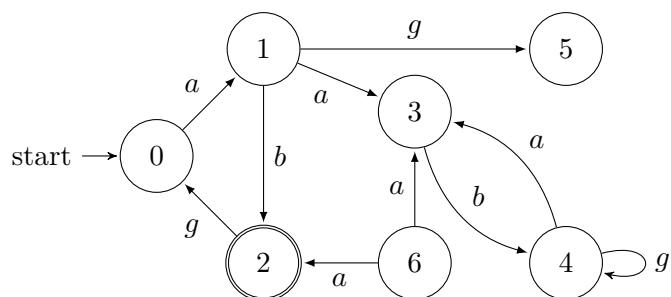
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[1]It is available at the link `https://github.com/matlab2tikz/matlab2tikz`

Chapter 2

Block Diagram

2.1 Example 1
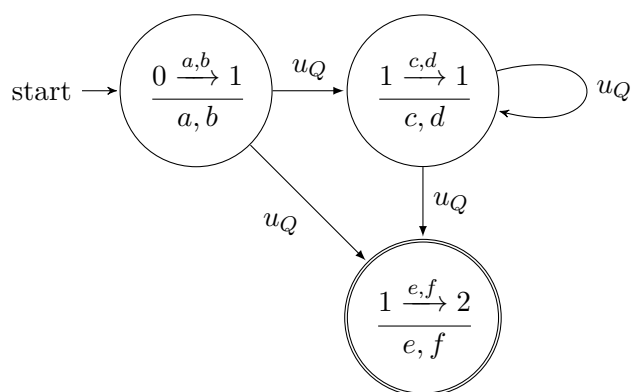
2.2 Example 2

2.3   Example 3

Continuos-time: *Discrete-time:*

$$\dot{x}(t) = Ax(t) + Bu(t)$$
$$y(t) = Cx(t)$$
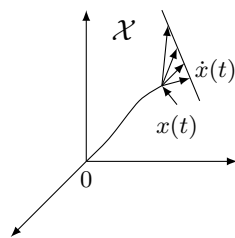
$$x(k+1) = Ax(k) + Bu(k)$$
$$y(k) = Cx(k)$$
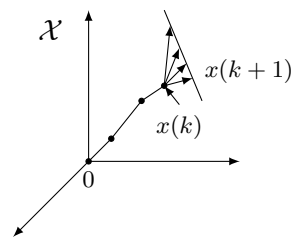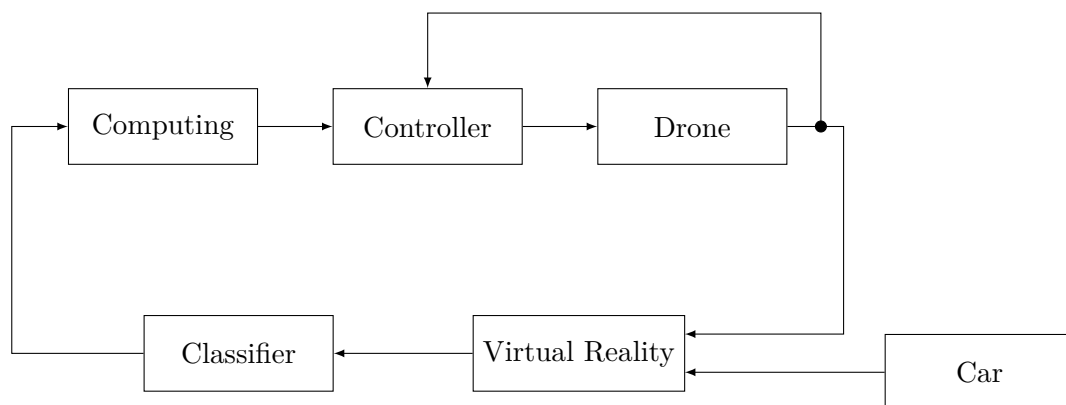
2.4   Example 4

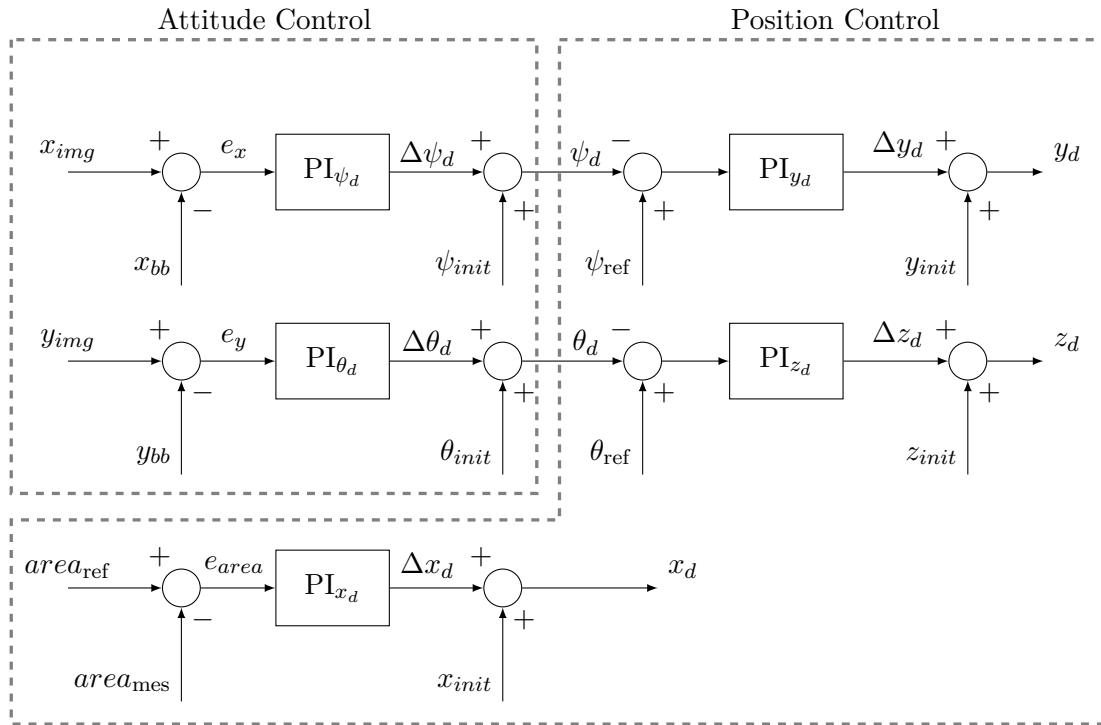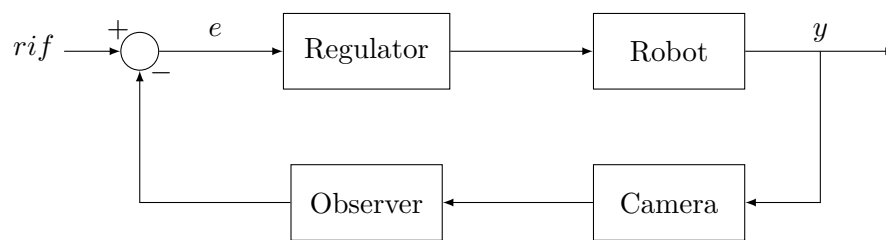## 2.5   Example 5
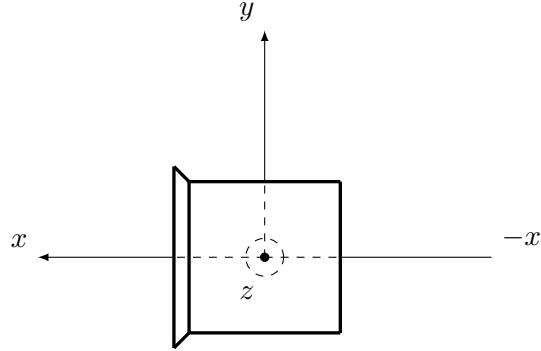
2.6   Example 6
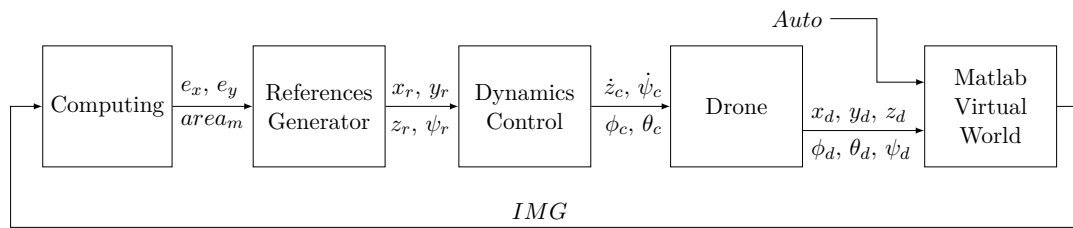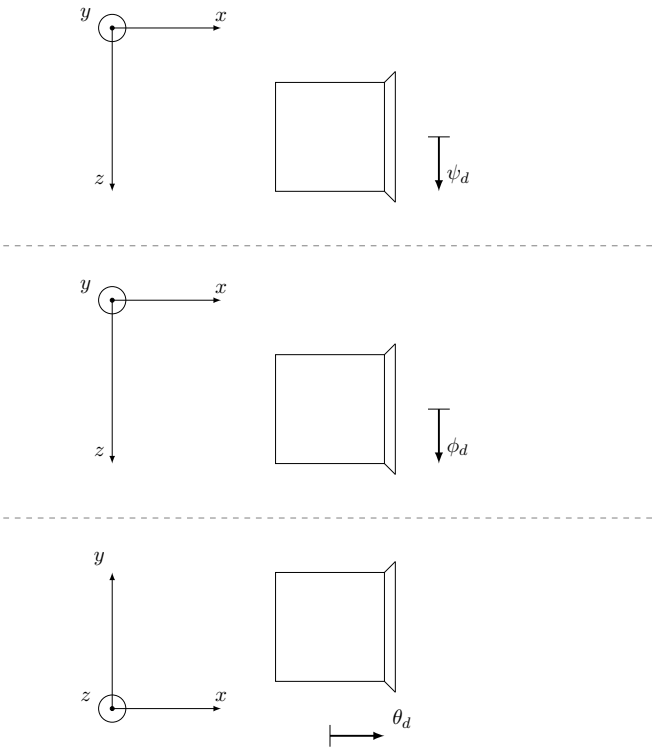

2.7   Example 7
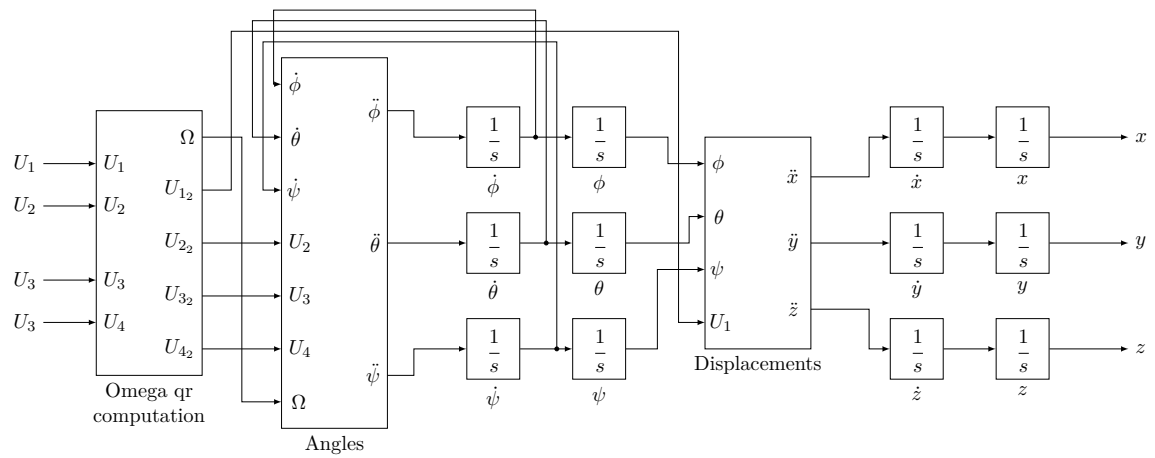
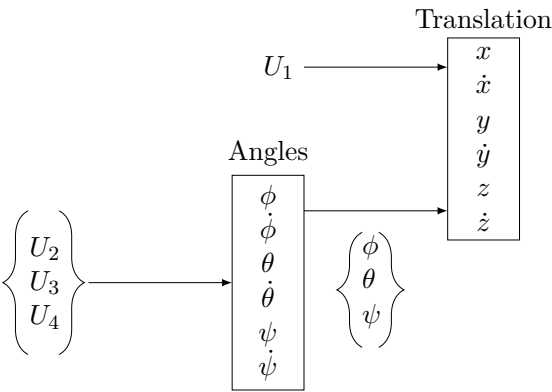## 2.8   Example 8
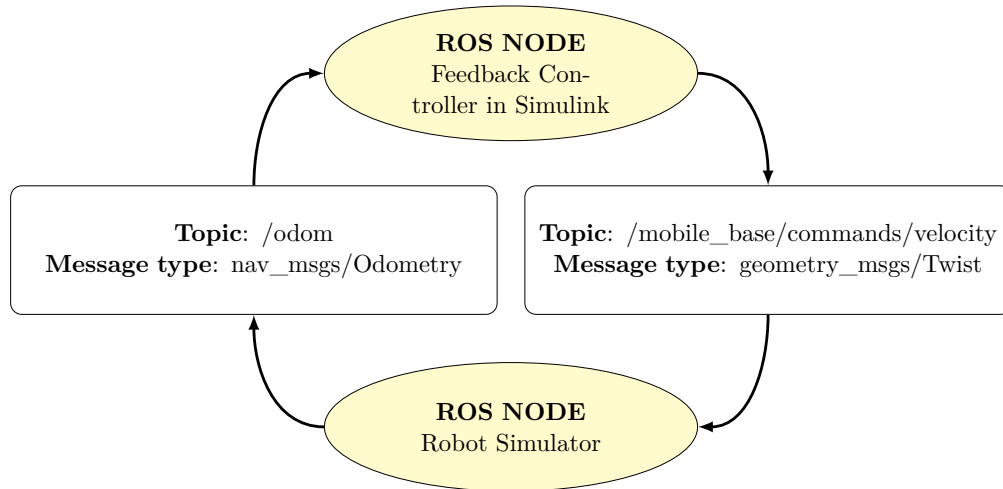
2.9   Example 9

2.10   Example 10

Attitude Control

Position Control

$$x_{img} \xrightarrow{+} \bigcirc \xrightarrow{e_x} \boxed{\text{PI}_{\psi_d}} \xrightarrow{\Delta\psi_d} \bigcirc$$

x_{img} + e_x PI_{ψ_d} $\Delta\psi_d$ + ψ_d $-$ PI_{y_d} Δy_d + y_d
$-$ $+$ $+$ $+$
x_{bb} ψ_{init} ψ_{ref} y_{init}

y_{img} + e_y PI_{θ_d} $\Delta\theta_d$ + θ_d $-$ PI_{z_d} Δz_d + z_d
$-$ $+$ $+$ $+$
y_{bb} θ_{init} θ_{ref} z_{init}

$area_{\text{ref}}$ + e_{area} PI_{x_d} Δx_d + x_d
$-$ $+$
$area_{\text{mes}}$ x_{init}

2.11   Example 11

$rif \xrightarrow{+} \bigcirc \xrightarrow{e} \boxed{\text{Regulator}} \longrightarrow \boxed{\text{Robot}} \xrightarrow{y}$

$-$

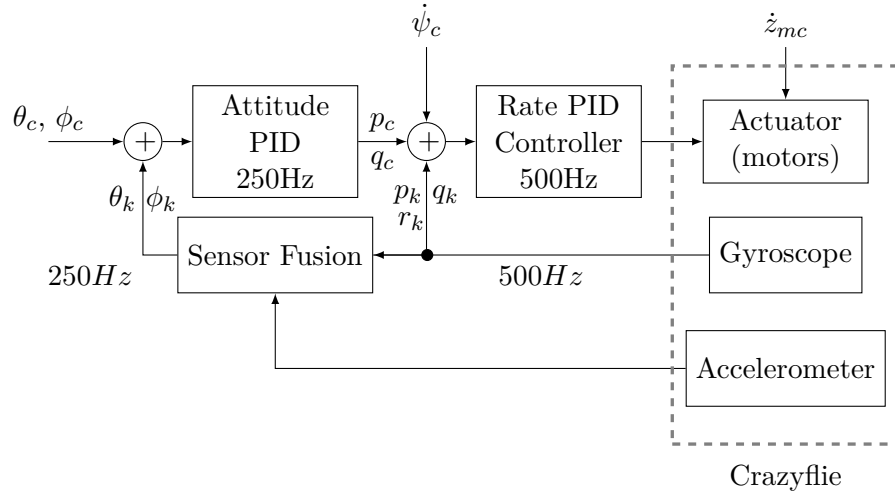$\boxed{\text{Observer}} \longleftarrow \boxed{\text{Camera}}$
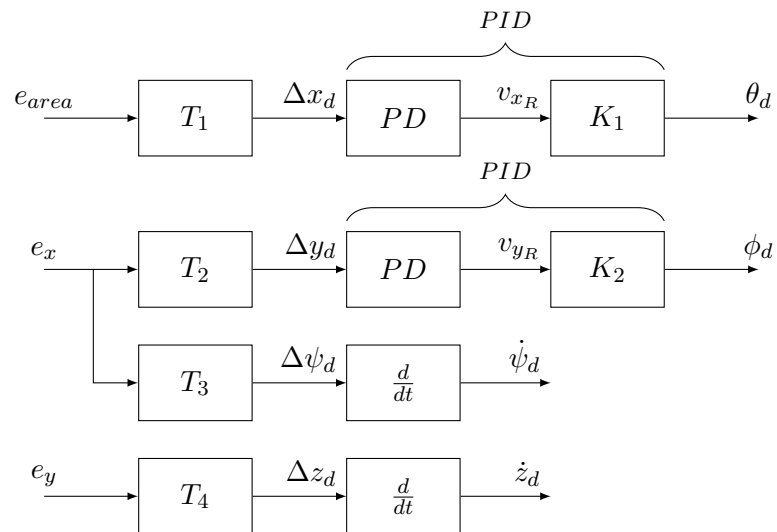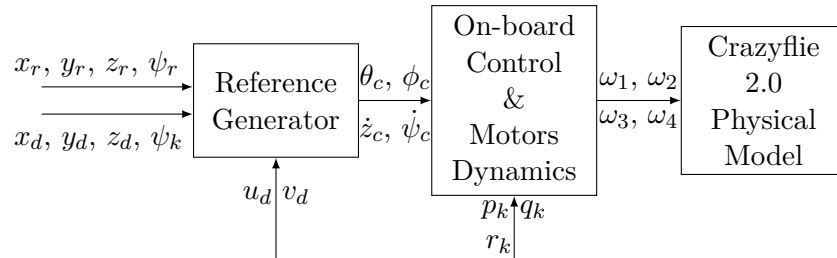
2.12 Example 12
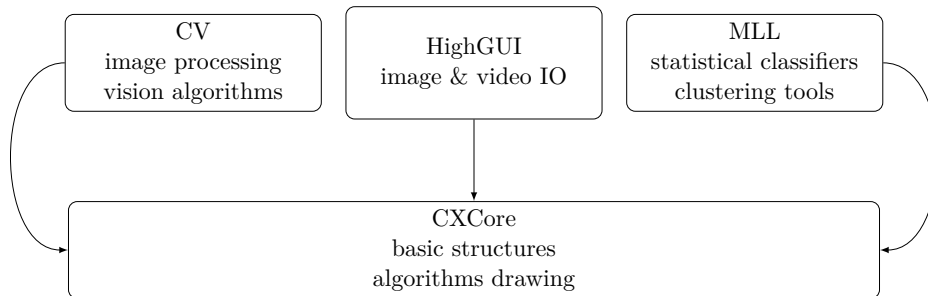

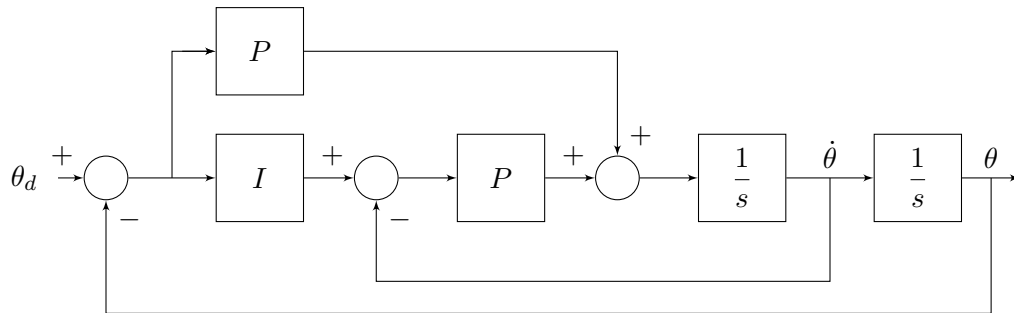
2.13 Example 13

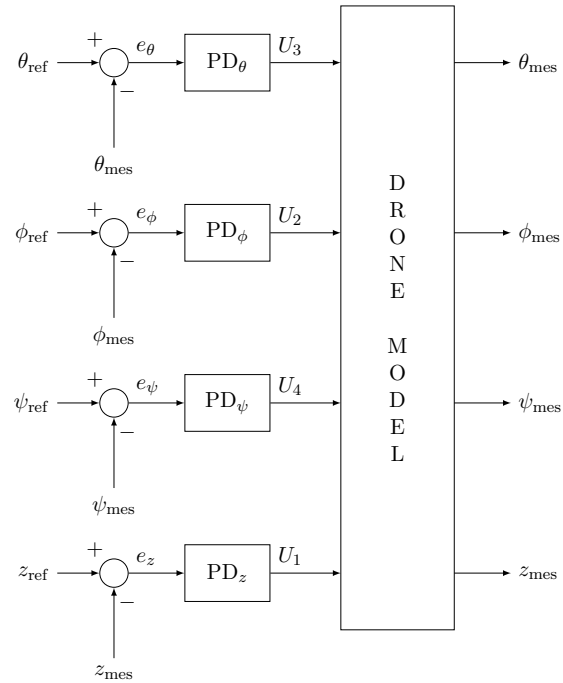## 2.14   Example 14

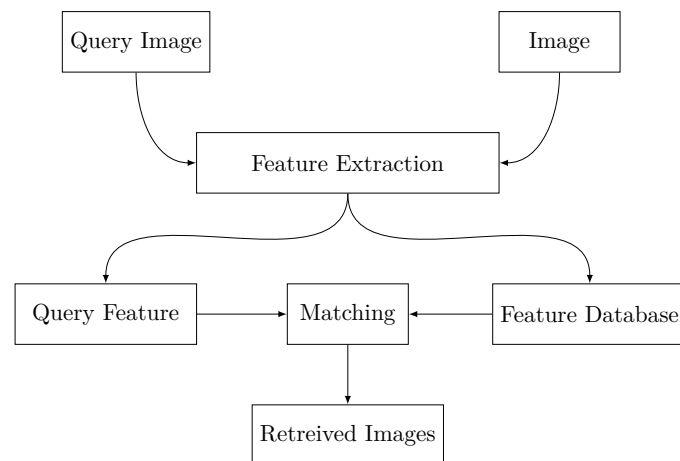## 2.15   Example 15

2.16   Example 16

2.17   Example 17

Trajectory Control

Attitude Control

Drone Dynamics

Pose Control
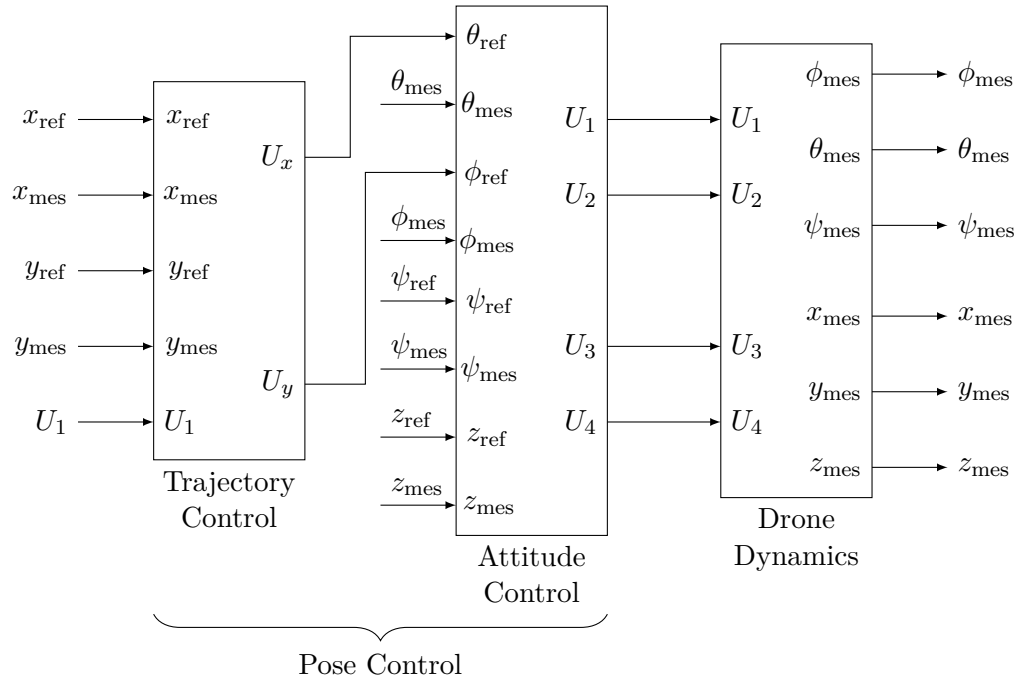
2.18   Example 18

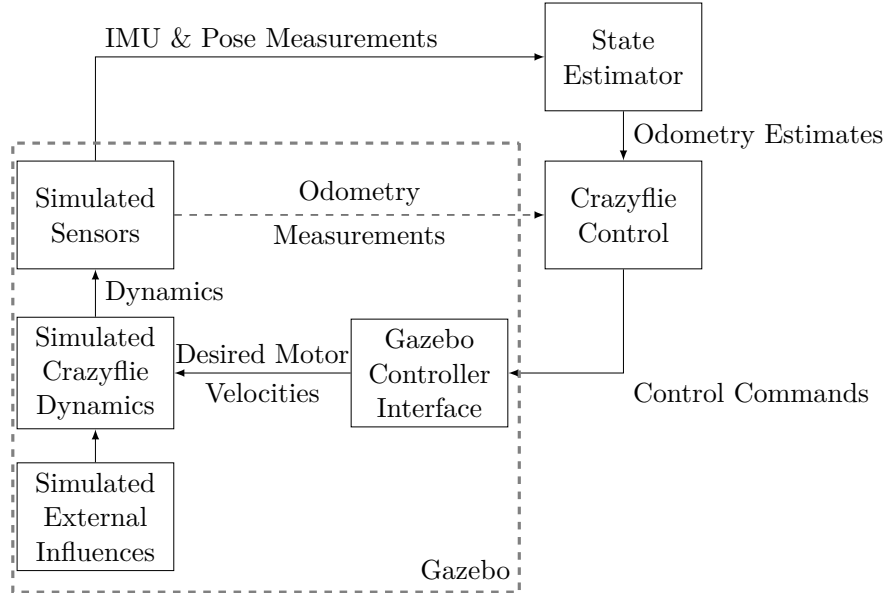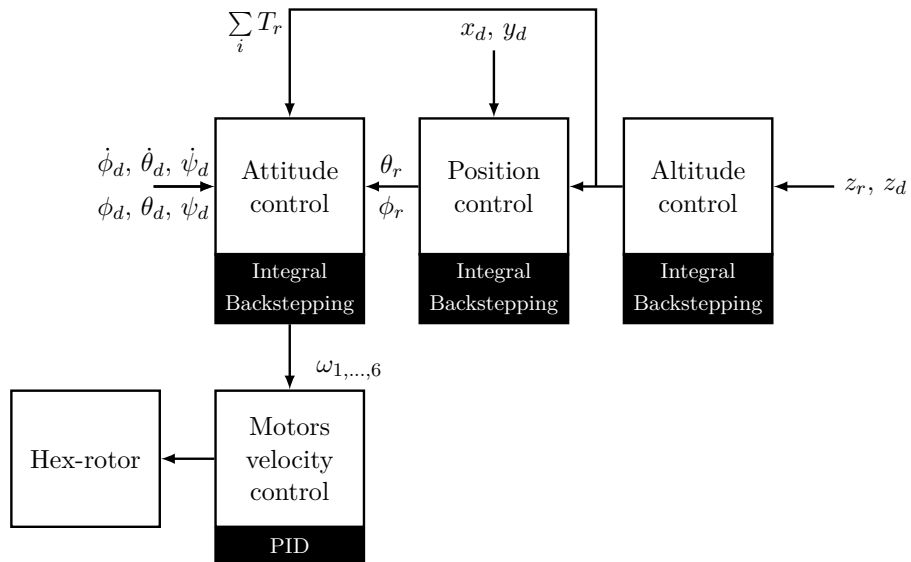## 2.19   Example 19

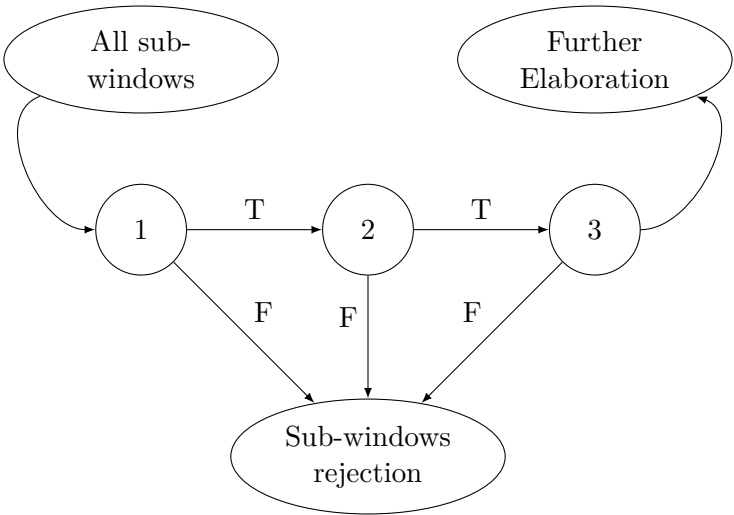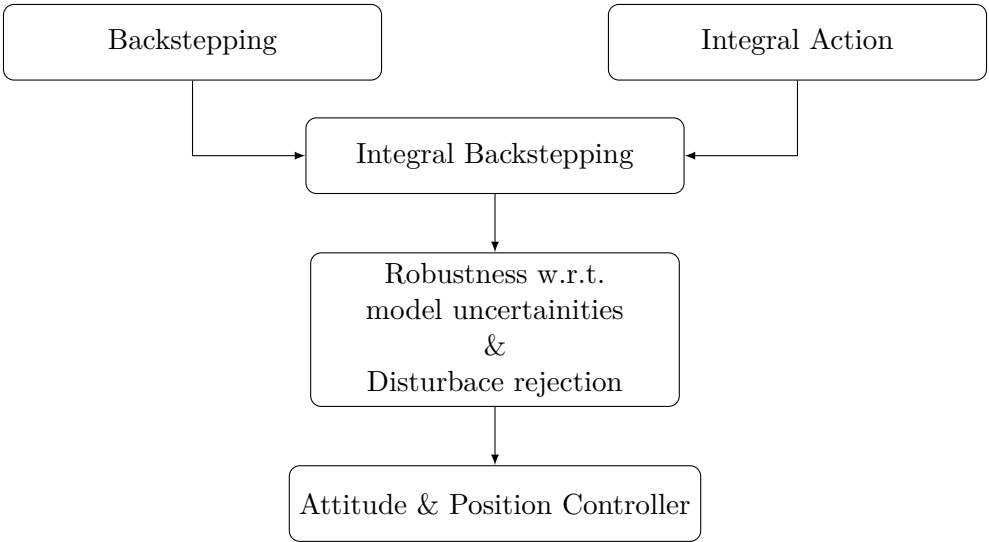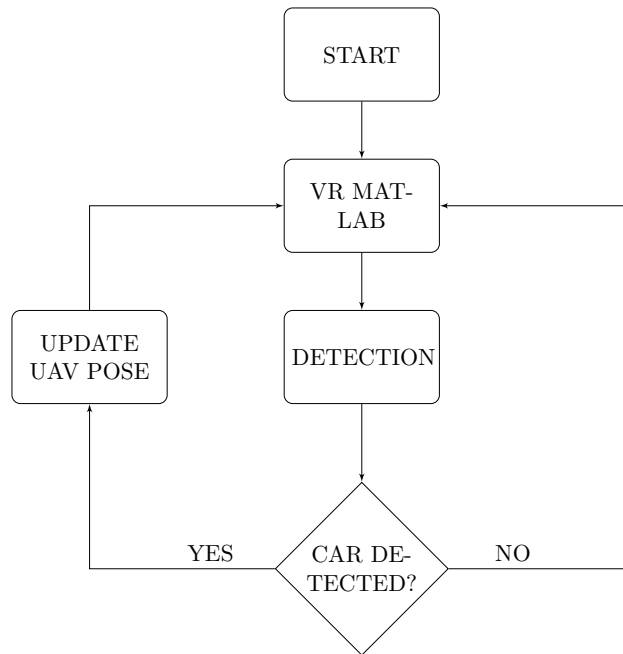## 2.20   Example 20

2.21   Example 21

2.22   Example 22

2.23   Example 23

2.24   Example 24

2.25 Example 25

2.26   Example 26