Morden Control Theory

learning note For reading translation

我真的不懂忧郁

Delft University of Technology

TU Delft

Morden Control Theory

learning note For reading translation

by

我真的不懂忧郁

Student Name	Student Number
First Surname	1234567

Instructor:	I. Surname
Teaching Assistant:	I. Surname
Project Duration:	Month, Year - Month, Year
Faculty:	Faculty of Aerospace Engineering, Delft

TU Delft

Preface

A preface...

我真的不懂忧郁

Delft, November 2024

Summary

A summary...

目录

Nomenclature

If a nomenclature is required, a simple template can be found below for convenience. Feel free to use, adapt or completely remove.

Abbreviations

Abbreviation	Definition
ISA	International Standard Atmosphere
...	

Symbols

Symbol	Definition	Unit
V	Velocity	[m/s]
...		
ρ	Density	[kg/m^3]
...		

Chapter 1

Morden Control. Exerscise

现代控制理论，高立群，清华大学出版社，第 2 版

Question 1 (p60,2.1)**:**

***proof*:** 令 C_1, C_2 两端电压为 u_{c_1}, u_{c_2} 为状态变量 x_1, x_2

$$u_{c_1} + C_1 \frac{du_{c_1}}{dt} \cdot R_2 + u_{c_2} = u_1 \tag{1.1}$$

$$C_1 \frac{du_{c_1}}{dt} + \frac{u_{c_1}}{R_1} = C_2 \frac{du_{c_2}}{dt} \tag{1.2}$$

整理

$$\frac{du_{c_1}}{dt} = -\frac{R_1 + R_2 C_1}{R_2 C_2} u_{c_1} + \frac{1}{R_2 C_1} u_{c_2} + \frac{1}{R_2 C_1} u_1 \tag{1.3}$$

$$\frac{du_{c_2}}{dt} = -\frac{1}{R_2 C_2} u_{c_1} - \frac{1}{R_2 C_2} u_{c_2} + \frac{1}{R_2 C_2} u_1 \tag{1.4}$$

写成状态方程的形式

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -\frac{R_1+R_2C_1}{R_2C_2} & \frac{1}{R_2C_1} \\ -\frac{1}{R_2C_2} & -\frac{1}{R_2C_2} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} \frac{1}{R_2C_1} \\ \frac{1}{R_2C_2} \end{bmatrix} u_1 \tag{1.5}$$

输入与输出的关系

$$y = u_1 - u_{c_1} = [-1, 0] \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + u_1 \tag{1.6}$$

References

[1] I. Surname, I. Surname, and I. Surname. “The Title of the Article”. In: *The Title of the Journal* 1.2 (2000), pp. 123–456.

Chapter A

Source Code Example

Adding source code to your report/thesis is supported with the package `listings`. *An example can be found below. Files can be added using* `\lstinputlisting[language=<language>]{<filename>}`.

```
"""
ISA Calculator: import the function, specify the height and it will return a
list in the following format: [Temperature,Density,Pressure,Speed of Sound].
Note that there is no check to see if the maximum altitude is reached.
"""

import math
g0 = 9.80665
R = 287.0
layer1 = [0, 288.15, 101325.0]
alt = [0,11000,20000,32000,47000,51000,71000,86000]
a = [-.0065,0,.0010,.0028,0,-.0028,-.0020]

def atmosphere(h):
    for i in range(0,len(alt)-1):
        if h >= alt[i]:
            layer0 = layer1[:]
            layer1[0] = min(h,alt[i+1])
            if a[i] != 0:
                layer1[1] = layer0[1] + a[i]*(layer1[0]-layer0[0])
                layer1[2] = layer0[2] * (layer1[1]/layer0[1])**(-g0/(a[i]*R))
            else:
                layer1[2] = layer0[2]*math.exp((-g0/(R*layer1[1]))*(layer1[0]-layer0[0]))
    return [layer1[1],layer1[2]/(R*layer1[1]),layer1[2],math.sqrt(1.4*R*layer1[1])]
```

Chapter B

Task Division Example

If a task division is required, a simple template can be found below for convenience. Feel free to use, adapt or completely remove.

表 B.1: Distribution of the workload

	Task	Student Name(s)
	Summary	
Chapter 1	Introduction	
Chapter 2		
Chapter 3		
Chapter *		
Chapter *	Conclusion	
	Editors	
	CAD and Figures	
	Document Design and Layout	