Chapter 4 Software

4.1 Overview

4.2 Optimization

4.2.1Introduction

4.2.2 Implementation of optimization

4.2.1 Overview

As discussed in the literature study, the optimization would have to be solved for discrete value system. Two package provided immediate solutions to this problem: Matlab, via the Global Optimization Toolbox, the patternsearch function. Python, with the ? function in the numpy package.

4.2.2 Matlab

Matlab pattersearch: patternsearch (cost\_func, X0, LB, UB, A, b, Aeq, beq, options)

The vector that will be optimized will be referred to as x. The initial value of x is X0.

Where X0 is the initial conditions

LB is element-wise the lower boundaries, UB is element-wise the upper boundaries

A and b holds the inequalities such that

Ax <= b

Aeq and beq hold the equality constraints such that

Aeqx = beq

4.2.3 Python

The python optimization package suited to our needs is the COBYLA package, which is the only one that allows for non-linear constraints in a discrete cost function.

COBYLA(