بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــق
الاصليـــة تالفـــة

بالرسالة صفحات

لم ترد بالاصل

Ain Shams University
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Master Thesis
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Abstract

Fuzzy logic has rapidly become one of the most successful of today's technologies for developing sophisticated control systems. Fuzzy logic addresses such applications perfectly, as it resembles human decision making with an ability to generate precise solutions from certain or approximate information. It fills an important gap in engineering design methods left vacant by purely mathematical approaches (e.g. linear control design), and purely logic-based approaches (e.g. expert systems) in system design.

The problem of time varying process parameters was always a challenging control problem, evaluating the robustness of a given controller against process parameter variation is very important. The thesis is mainly concerned with analysis, design and evaluation of fuzzy logic control and its adaptation schemes.

A new real time fuzzy toolbox is developed to test different fuzzy logic controllers. The new toolbox is associated with online and offline monitoring tools that allows both novice and expert control engineers to explore fuzzification, rule evaluation and defuzzification processes. A new tuning approach for fuzzy controllers is proposed.

RST controllers are simulated and tested against process variation. Two adaptation techniques are proposed to compensate for process variation. Simulation results show the power of both schemes

The first adaptation scheme is called (AFRST) Adaptive Fuzzy Error Correction RST Digital Controller. It's based on the idea of adding control action proportional to the difference between actual output and required model reference.

The second adaptation scheme is called Adaptation using variation of regulation Dynamics (P Polynomial). This method is implemented with a first order and second order regulation dynamics. Simulation results show the power of the adaptation method. This method simplifies control engineer work and requires less priory information about the process to be controlled.

Key Words:

Fuzzy Logic, Fuzzy Logic Control (FLC), Adaptive Fuzzy Control, Supervisory Fuzzy Control

Table of Contents