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COMPUTER AIDED ANALYSIS OF CONTROL SYSTEMS USING MATLAB

BY: EROTOCRITOU EROTOCRITOS

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By

EROTOCRITOU EROTOCRITOS

Supervisor : Dr. Marios Kassinopoullos

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SUMMARY

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COMPUTER AIDED ANALYSIS OF CONTROL SYSTEMS USING **MATLAB**

The main objective of this project was the learning of the computer program MATLAB, to such a level, that would make possible its use in Control Systems Analysis for use in the HTI. The experimental units written, are appropriate for the familiarisation of Matlab at a standard level, whose procedures were carefully designed step-by-step at increasing levels of difficulty.

For the analysis of Control Systems , appropriate programs were written , and are enclosed within this project to ensure the precise study of Control Systems as applied to Matlab. Furthermore, they are also enclosed to demonstrate some of Matlab's plotting abilities as applied to Systems Analysis.

Finally, as it will be seen at the end of this project , Matlab , and generally computer programs can achieve the best analysis of control systems. Moreover, the use of Matlab in Control has proven to be very appropriate and therefore , it is concluded that MATLAB is an ideal tool for use in such areas as well as others.

INTRODUCTION

Every department of engineering is always interested in comprehending and controlling the materials and forces of nature for the benefit of mankind. But more specifically, Control Systems Engineers are interested only in certain segments of the whole environment, which are usually known as ' Systems ' . The systems under control, obviously, must be first studied, modelled and finally understood well, in order to be controlled more efficiently.

Therefore, the systems analysis is very important and taking into consideration the advance in computers nowadays, the study of these systems can be accomplished very easy and efficiently by the use of computers.

This is what this project is generally about. However, this project has a more specific objective which is to study whether or not this certain computer program (MATLAB) can be used to study , model and understand control systems as applied in Electrical Engineering. Therefore, the experimental units constructed should present the program briefly so as to be studied itself and then it should be studied whether or not this program is suitable for the study and analysis of control systems like 1^{st} order systems , 2^{nd} order systems etc.

Hence, appropriate programs for computer control analysis should be written and seen if they can be used for the efficient study and analysis of control systems in Electrical Engineering. The exact programs written for this project are the analysis of First and Second order systems. The analysis of each order control system is done in MATLAB, by writing a specific program to evaluate the systems responses in which we are interested.

Finally, by reaching the end of this project , it will be shown that generally computer programs as professional as Matlab, can achieve the best possible analysis of control systems you can get. Moreover, the use of Matlab in Control Systems has proved to be very appropriate for this kind of study and analysis so MATLAB is ideal for this kind of studies.