INTRODUCTION TO OPTIMAL CONTROL

(KON428E)

PROJECT

1. Hooke and Jeeves Search Algorithm will be programmed and tested for the example given during the presentation.

2. The coefficients of apropriate PI or PD that controls own system will be specified a means of Hooke and Jeeves Search Algorithm and Genetic Algorithm or Big Bang Big Crunch Algorithm using following objective functions:

$J_1 = \int e^2 dt$

$J_2 = \int te^2 dt$

$J_3 = overshoot, rise\ time, settling\ time, delay\ time$

$or\ a\ function\ including\ combination\ of\ these\ criteria$

3. The coefficients of controller, system response and control signal obtained for each objective functions will be compared each other, the result obtained will be commented.

4. Question 2 and 3 will be repeated by adding apropriate saturation block to the system input.

5. For the controller obtained in Question 4, the robustness of system will be tested and commented by adding dead time to the system

6. For J_1 the coefficients of controller will be found using parameter optimization method and will be compared with those of controller obtained Question 2.

NOTE: It is necessary to prepare a detailed report for the project. There is no need to prepare PowerPoint presentation.