PID OFFLINE TUNING USING GRAVITATIONAL SEARCH ALGORITHM

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A project report submitted in partial fulfilment of the
requirements for the award of the degree of
Master of Engineering (Electrical - Mechatronics & Automatic Control)

Faculty of Electrical Engineering
Universiti Teknologi Malaysia

JUNE 2013

Thanks to ALLAH S.W.T and his Prophet Muhammad S.A.W.

Especially dedicated to my beloved mother, father, wife, daughter and friends who
have encouraged, guided and inspired me throughout my journey of education.

ACKNOWLEDGEMENT

ABSTRACT

PID controller is a common controller which is applied for many applications around the world. The simple structure and less effort of tuning make this controller being chosen in industrial and many research areas. The PID controller parameters usually tune heuristically to obtain the required output performance. This method has no systematic way of tuning procedure thus make the controller parameters tuning consuming a lot of time and effort. This problem will be more complicated when the system is dynamic and the performance of output response is the priority. With motivation of this problem, the Gravitational Search Algorithm (GSA) can be developed to make the process of PID controller tuning can be more easily and has systematic procedure of tuning method.

ABSTRAK

Pengawal PID banyak digunakan untuk aplikasi di seluruh dunia. Strukturnya yang mudah dan kurang usaha penalaan membuatkan pengawal ini banyak dipilih dalam bidang penyelidikan dan perindustrian. Parameter pengawal PID biasanya ditala secara heuristic untuk mendapatkan prestasi keluaran yang dikehendaki. Kaedah ini tidak mempunyai cara prosedur penalaan yang sistematik, membuatkan penalaan parameter pengawal mengambil banyak masa dan usaha. Masalah ini akan menjadi lebih rumit apabila sistem dinamik dan prestasi sambutan output menjadi keutamaan. Sehubungan dengan masalah ini, Algoritma Pencarian Graviti (GSA) boleh dibangunkan untuk membuatkan proses penalaan pengawal PID menjadi lebih mudah dan mempunyai prosedur kaedah penalaan yang lebih sistematik.