

Control OF DC Motor Using Artificial Bee Colony based PID Controller

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Abstract – DC drive systems are often used in many industrial applications such as robotics, actuation and manipulators. In the first two, a wide range of position control is required. Tuning method for PID controller is very important for the process industries. Proportional Integral Derivative controllers have the advantage of simple structure, good stability, and high reliability. Accordingly, PID controllers are widely used to control system outputs, especially for systems with accurate mathematical models. The key issue for PID controllers is the accurate and efficient tuning of parameters. The aim of this paper is to study the Position control of DC motor using Artificial Bee Colony Algorithm. In order to solve this problem a PID controller under Artificial Bee Colony Algorithm with self-tuning is applied, which will perform high efficiency position control. The efficiency of Control Algorithm is presented through a simulation and compared with the quality of PID controller. The proposed method is compared with Ziegler Nichols method. It is found that the proposed PID parameters adjustment by the Artificial Bee Colony Algorithm is better than the Ziegler & Nichols' method.

Keywords – Artificial Bee Colony Algorithm DC drive systems, PID controller, and Ziegler Nichols method.