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DEA-Based Variable Structure Position Control of DC Servo Motor

Authors : Ladan Maijama'a, Jibril D. Jiya, Ejike C. Anene

Abstract : This paper presents Differential Evolution Algorithm (DEA) based Variable Structure Position Control (VSPC) of Laboratory DC servomotor (LDCSM). DEA is employed for the optimal tuning of Variable Structure Control (VSC) parameters for position control of a DC servomotor. The VSC combines the techniques of Sliding Mode Control (SMC) that gives the advantages of small overshoot, improved step response characteristics, faster dynamic response and adaptability to plant parameter variations, suppressed influences of disturbances and uncertainties in system behavior. The results of the simulation responses of the VSC parameters adjustment by DEA were performed in Matlab Version 2010a platform and yield better dynamic performance compared with the untuned VSC designed.

Keywords : differential evolution algorithm, laboratory DC servomotor, sliding mode control, variable structure control
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