Abstract

Increasing the methods of order calculus for Fractional Order Proportional Integral Derivative (FOPID) controller leads to a wide applications for this type of controller in control systems. A closed loop speed control for BrushLess Direct Current (BLDC) motor with FOPID controller runs the motor very close to the reference speed, provides a good performance and robustness compared with a corresponding system using conventional PID controller. In this paper, the BLDC motor is modeled and simulated in Matlab/Simulink for speed control strategy. A DC link speed control strategy is proposed and implemented. The FOPID speed controller parameters (Kp, ki, kd, ?, ?) are optimized by genetic evolutionary programming module. The effectiveness of the proposed speed control is verified through simulation. The control system is extra tested under a conditions of some motor parameters perturbations. The simulation results reveal a flexible and stable control strategy.

References

- Viond KvSingh patel, A. K. Pandey, "Modeling and Simulation of Brushless Dc motor using Pwm control Technique"; International Journal of
- Maohua Zhang, Changliang Xia, Yang Tian, Dan Liu, Zhiqiang Li, "Speed Control of Brushless DC Motor Based on Single Neuron PID and Wavelet Neural Network", IEEE International Conference on Control and Automation, Guangzhou, CHINA - May 30 to June 1, 2007.

Index Terms

Computer Science
Circuits And Systems
Keywords
   BLDC motor modeling and simulation fractional order PID controller.