APPLY ESTIMATED MODEL BASED VARIABLE STRUCTURE CONTROL
TO BRUSHLESS DC MOTOR CONTROL

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ABSTRACT—The variable structure control theory based on estimated model is proposed in this paper. The ARX theory is applied to figure out the parameters of estimated model of unknown system on-line. According to the estimated, the variable structure control can be developed and implemented to this unknown system like known system. The equivalent controller of variable structure control rule will work to drive the response to follow the desired response. The switching controller will correct the estimated error to increase accuracy. Furthermore, the existing condition of discrete sliding mode is discussed in this paper. The modified existing condition is introduced for implementing the proposed rule by digital signal processor. Finally, this paper applies the proposed rule to brushless DC motor control. A DSP based full digital controller is implemented. The simulation and experimental results will demonstrate the potential of proposed rule.

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