Improved Direct Torque Control by Active Learning Method for IPMSM

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Abstract—This paper execute trial and error method called Active Learning Method (ALM) in Direct Torque Control (DTC) that is accompanied by some problems such as non accuracy of flux, torque estimator, torque and flux ripple caused by non-optimality of switching and imprecision in motor model which are all the inherent characteristics. To overcome these problems, ALM is applied on DTC for IPMSM. By knowing the flux error and torque error from the previous behavior of the machine, ALM giving reward or punishment to the input of system and with performing this method, ALM improves output of torque and flux of IPMSM. Another concept that used in ALM called Ink Drop Spread (IDS). IDS handles different modeling target to predict on the data consequencing a behavior curve in DTC.