



Hybrid Intelligent Method of Identifying Stator Resistance of Motorized Spindle

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Abstract- Aiming at the problem that changes of nonlinear dynamic resistance of stator affect the performance of speed sensorless vector control system, a hybrid computing intelligence approach is used in the identification of stator resistance of motorized spindle. The partial least squares (PLS) regression is combined with neural network to solve the problem of few samples and multi-correlation of variables in complicated data modeling. The PLS method is used to extract variable components from sample data and then reduced the dimension of input variables. Moreover, neural network is used to fit the non-linearity between input and output variables. The model based on partial least squares regression and neural network can identify stator resistance under different conditions of the motorized spindle. The results show that the method has high identification precision and is helpful to improve the performance of vector control system.

Index terms: vector control, stator resistance, neural network, PLS, identification, Motorized Spindle