Study of SI Engine System Dynamic Response Identification

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ABSTRACT

This study used different system identification approach to establish the dynamic model for SI engine system response. The input signals are the throttle position opening in percentage and engine torque, and output signal are the engine speed and MAP. Different system identification methods were applied including ARX(Auto-Regressive Xogeneous), ARMAX(Auto- Regressive Moving Average Xogeneous), BJ(Box and Jenkins), OE(Output Error) and NN(Neural Network). The different model order and parameters for each method were used to compare the experimental data to find out the best engine dynamic model. From the system identification result, engine system dynamic model can be resolved quickly and it can provide helpful information for engineers. Research and development time and expense can be saved by this approach in developing future engine system controller.

Keywords : MIMO System Identification, Neural Network System Identification, Engine System Dynamic Model

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