Napatara Yoonyasit 2007: Comparative Study of Parametric, Open-Loop System Identification in Time-Domain (Case Study: DC Motor System).

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From the past till today, the industrial work has being developed and the essential parts of industrial machines are motors. The way that we make machines more efficient is to make some good controller of motor, so the mathematical model of motor will be used. As usually, we found the mathematical model of motor by using knowledge of sciences such as laws of mechanic, laws of electric etc. That could be done if and only if the inside parameters of the model were known.

In practice, the inside parameters of the model may not be constant. Thus, the mathematical model of them could not be easily found. The solution of finding mathematical model with unknown inside parameter is called system identification. This can be done by finding relationship between input and output data of the model, and using them to create the mathematical model. The system identification can be categorized into 2 types called non-parameter and parameter system identification.

This thesis will show the procedure to find the mathematical model of DC motor by using parameter system identification methods. Model structures used in this research are ARX Model, ARMAX Model and OE Model. The result shows that all three model structures have similar values of percent correction, and ARMAX Model is the best model structure in the residual analysis.

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