Forschungspraxis/Research Internship

Wavelet based sensorless control of PMSM

The sensorless control of PMSM refers to a control system without an encoder or resolver, which is equipped with the machine shaft and used to measure the rotor position and speed. The control scheme without the encoder can not only reduce the system cost but also increase the system robustness. Therefore, it is popular in many industrial areas.

Wavelet is a powerful tool for signal processing. It acts as a filter to denoise the signals. In this internship, a new saliency tacking based sensorless method adopting random-signal injection and wavelet denoising will be implemented. The basic control algorithm has been already developed.

This internship contains three parts.

1. Simulation of the senseless control of PMSM based on wavelet
2. Implementation through C code generation
3. Experimental verification

Requirements:
- Literature review on the sensorless control of PMSM
- Study of the C code generation function provided by Matlab/Simulink
- Simulation of the sensorless control of PMSM

Prerequisites:
- Knowledge of control and electrical drive systems
- Design and simulation with Matlab/Simulink
- Knowledge of C code

Main References:

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