MF2007 - Workshop A

Adam Lang
861110-3956

Gabriel Andersson Santiago
910706-4538

Andreas Fröderberg
880730-7577

March 5, 2016

Parameter identification

Level 1

The parameters that was modeled originally was not very good and in table 1 both the original and new parameters is given.

Table 1: Parameters for the DC-motor

	Inertia	Coulomb Friction	Viscous Friction
Original	$2.18e^{-6}$	–	$3.8e{-}6$
Adjusted	$2.5e^{-5}$	–	$2e^{-5}$

After adjusting the parameters, the result in figure **??** was obtained. We can tune the model very good when modeling towards one velocity, but when the velocity is changed, the model will differ from reality.

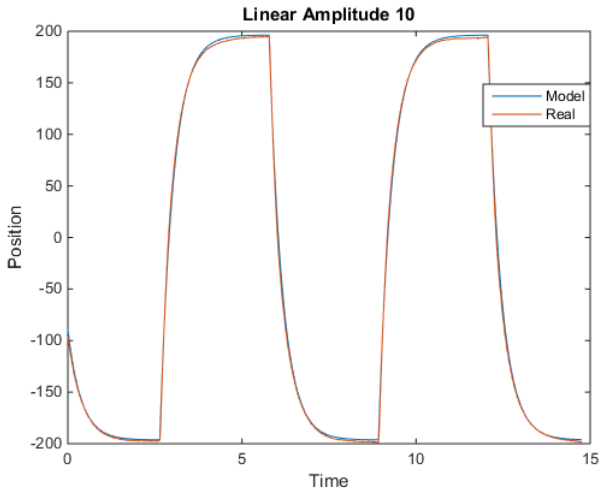

Figure 1: The velocity output for the model and the real motor

Level 2

The parameters from Level 1 and the coulomb friction can be seen in table 2.

Table 2: Complete parameters for the DC-motor

	Inertia	Coulomb Friction	Viscous Friction
Original	$2.18e^{-6}$	$1e^{-3}$	$3.8e{-}6$
Adjusted	$2.22e^{-5}$	$8e^{-4}$	$2e^{-5}$

When the model is changed to include coulomb friction it is still equally easy to model for on single velocity, but it is easier to get good results for different amplitudes. These results can be seen in figure ??.

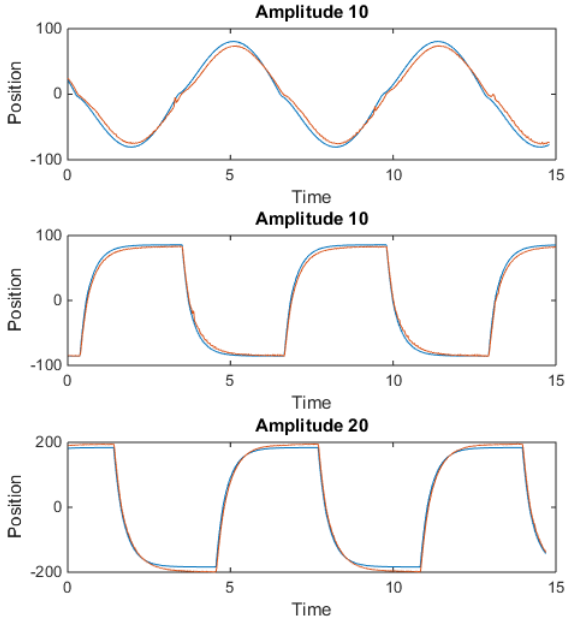

Figure 2: Velocity output for the model when including coulomb friction for sinus- and square wave input