

Optimal fork control for electromechanical DCT

Master Thesis at Vicura

Vicura, an engineering company originated from General Motors (GM) Powertrain and Saab Automobile Powertrain AB. Started as an independent company VICURA AB on Jan 4th 2011, majority owned by [Fouriertransform AB](#). Vicura is offering product development with focus in transmission, electric drive and control systems and has a global customer base.

Background

DCT (Dual Clutch Transmission) is a type of automatic transmission for cars that use two separate clutches for odd and even gears. The gearbox can basically be described as two separate manual gearboxes (with their respective clutches) build into one unit, with a mechatronic control.

Thesis goal

Develop optimal fork control for an existing electromechanical DCT.

Method

The work basically consists of four parts:

1. Model identification of the fork actuator system. This means developing a simulation model of the DCT subsystems to be controlled. The aim is to develop a simulation environment in which control algorithms can be developed / evaluated in an efficient manner.
2. Investigation aimed at retrieving an optimal algorithm for fork control. The investigation is done by document search, evaluation and simulation.
3. Implement the control algorithm from the above investigation that is most optimal for controlling the target system.
4. Validation of the algorithms in real DCT. This may also involve upgrading the existing lab systems used to control the gearbox. This part is a continuation / extension of a student project conducted at the University of Linköping where such a lab system was developed to control an electromechanical DCT.

Suitable background

M.Sc. D, Y, E, Z, or equivalent. Appropriate prerequisites: Good theoretical (and preferably practical) knowledge in relevant areas such as control engineering, mechatronics, simulation and modeling. Number of students: 1

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