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high tech systems Drachten

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MATCHMAKING

GRADUATION ASSIGNMENT

ASSESSMENT

Shaping an Input Waveform for Characterizing Drive Train Dynamics

Introduction

Philips develops numerous innovative products at the Drachten site, such as shavers, beard trimmers, hairdryers, epilators, vacuum cleaners, SENSEO® coffee machines, and Wake-up Lights. Philips Drachten has been the development and production center of the advanced electronic Philips Shavers since 1950, having one of the biggest developments and production centers in Europe. Philips Drachten has 2,000 employees, including 600 developers drawn from among 35 nationalities.

Problem Statement:

Philips develops all-in-one shavers, which have several attachments such as a beard trimmer, a nose trimmer, facial cleansing brush, etc. This enables users to do all grooming activities with one device. In order to achieve the best performance, the shaver must be adjusted depending on the attachment.

The goal of this assignment is to develop or shape an input waveform to the motor, in order to excite the system dynamics effectively and identify the accessory attached to the shaver handle. This would help to automatically adjust the shaver to achieve optimal performance of the shaving system.

PHILIPS

TASK DESCRIPTION/ FUNCTION WISHES:

We are looking for a student with a background in Mechatronics or Systems and Control or similar, an interest in machine dynamics, and an affinity for electronics. Knowledge of MATLAB is a plus. The first part of the assignment will focus on modeling the system, after which there is a possibility to verify the model with experiments.

- Develop a generalized mass spring damper model of the drive train
- Develop or shape a unique input waveform which can effectively excite the dynamics of all relevant attachments
- Verify the model with measurements
- Analyze the detection accuracy

The exact assignment can be defined together with the student.

PERIOD: 4-6 months

NUMBER OF PERSONS: 1 Person

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