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Haptics meter

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Introduction

This is the second company-oriented development project done to Polar Electro Oy. The goal of the first project was to plan and develop a measuring system that can measure smart watch haptics. At first the goals of the second project was to build the measuring system so it is ready to use. Later the goal changed to researching optic measuring and testing DRV2625 haptics driver.

Objectives

The aim of researching optical measuring was to find out what measuring technology is best for our use in the measuring system.

The aims for the DRV2625 haptic driver was to test different functions of the driver and how they affect different vibration motors. Main functions to research were overdrive and braking.

Methods

The microcontroller used with the DRV2625 haptic driver was Arduino Pro Micro, which is programmed in C-language. The haptic driver also needs a python script to read an Excel file that includes the register locations to drive the vibration motor. The whole system is shown in figure 1.

Optical measuring was researched by gathering information from different sources. Important factors in choosing the right measurement technology was to know that every axis of the vibration could be measured and that the measuring system could measure small movement.

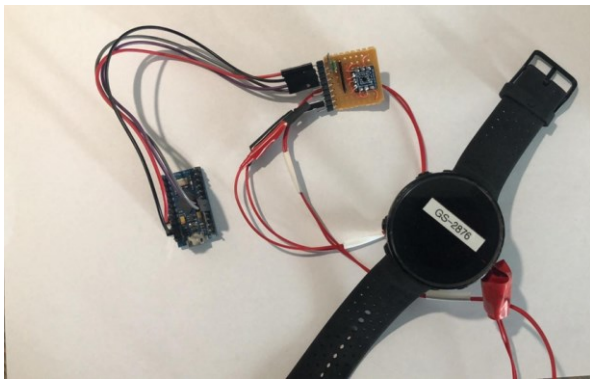

FIGURE 1. The system to use DRV2625 to control vibration motors.

Results

The DRV2625 haptic driver automatically uses the overdrive and braking functions when operated. After testing the haptic driver with a vibration motor, a conclusion can be made that the vibration motor does feel better when operated with the overdrive and braking functions.

Optical measurement that was chosen to be possibly used and tested in the measuring system was optic triangle measurement since it is able to measure small movement on every needed axis.(Figure 2)

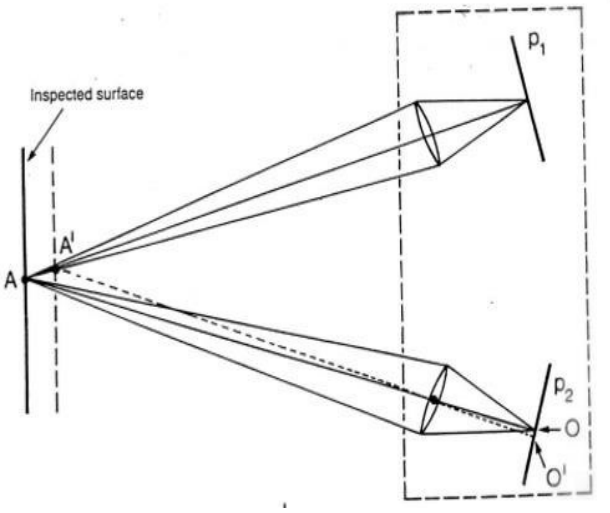

FIGURE 2. Optical triangle measurement

Conclusions

The project was successful even though the original plan was changed.

References

1. DRV2625 datasheet: https://www.ti.com/lit/ds/symlink/drv2625.pdf?ts=1588170376708
2. DRV2625evm-mini datasheet: http://www.ti.com/lit/ml/slou434/slou434.pdf?ts=1588177277836

Company-Oriented Product Development Project 2

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