M.Sc. thesis project

Evaluate AI methods to better understand the cutting in wood

Husqvarna Group is a world leading producer of outdoor power products including chainsaws, trimmers, robotic lawn mowers and garden tractors. The Group is also the European leader in garden watering products and a world leader in cutting equipment and diamond tools for the construction and stone industries.

Saw chains are a well-established product. Nevertheless, far from all details have been fully understood. One main challenge is the complex and dynamic interaction between the chain, the chainsaw and the wood.

The components of a saw chain go through a large series of tests which have been optimized to improve the product quality. In one important test, the energy consumption for cutting in wood under well-defined laboratory conditions is measured. The wood itself, however, is an inhomogeneous material. Therefore, energy consumption varies as the chain cuts through the wood.

In this thesis, we intend to explore if AI methods can describe how the energy consumption varies as the cut progresses through the wood.

The thesis will start with a thorough introduction into how saw chains work and how they are characterized and tested in our laboratory. You shall then investigate different types of existing and potential input data and compile a first list of possible numerical methods that could be used to describe the cut progression from the input data; we do not rule out empirical approaches, either. From this preliminary analysis, you derive a strategy for acquisition of more data. Our colleagues in the laboratory will support you in data acquisition, but you are expected to also spend your own time. In the final part, you evaluate the most promising approach on the collected data.

During the thesis work, you will spend substantial time at Husqvarna AB in Huskvarna.

For more information and to apply for this thesis, you are welcome to contact one of us:

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