MASTER THESIS PROPOSALS

As a master thesis student at Modelon, you will have the chance to work with our software solutions and benefit from industry experience and guidance of our experienced team of experts. Ideas of projects:

1. *Model Reduction for a novel Energy Storage System*
   Use machine learning to derive robust, accurate and deployable dynamic models of an electro-thermal energy storage system. The models are intended to be used for real-time applications or for integration studies. This master thesis is performed in collaboration with MALTA (https://www.maltainc.com/).
2. *Machine Learning for Predictive Maintenance*
   Predictive maintenance is key to ensure reliable and continuous production, and minimize repair time and repair costs. The idea is to use machine learning to find patterns that can help predict and prevent failures of equipment, e.g. by using ANNs as an observer and estimating Remaining Useful Life (RUL).
3. *Reinforcement Learning for Optimal Control of Thermal Systems*
   Implement a workflow to design and deploy reinforcement learning based controllers for thermal systems. The goal is to train the controller using data generated by a physics-based model and import the trained controller into Modelon's simulation platform.

We are also open for other suggestions of master thesis projects where we can utilize Modelon's products for machine learning workflows.

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