



Modeling Hybrid Systems

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Motivation

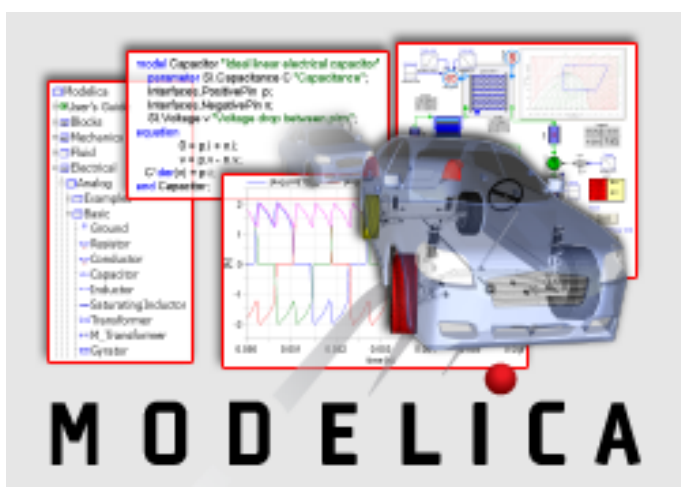
Hybrid systems combine discrete and continuous dynamic behavior. Such systems are often encountered in home automation, automotive applications, avionics, and the internet of things.

To verify and test these systems they are often modeled in Matlab/Simulink. An alternative is the standardized Modelica language. It is used by many large companies in the automotive and power plant sectors. There is also an open source implementation called OpenModelica.

In this project we want to explore how OpenModelica can be accessed from other programs. The goal is to run our existing verification tools and test case generators on Modelica models.

Goals and Tasks

- > Get familiar with Modelica
- > Adapt or implement a case study
- > Integrate it with an existing verification tool



Literature

- > S. E. Mattsson, H. Elmqvist, and M. Otter
Physical system modeling with Modelica
Control Engineering Practice 1998
- > *Modelica Association*
<https://www.modelica.org/>

Courses & Deliverables

- Introduction to Scientific Working**
Short report on background
Short presentation
- Bachelor Project**
Project code and documentation
- Bachelor's Thesis**
Project code
Thesis
Final presentation

Recommended if you're studying

- CS
- ICE
- SEM

Prerequisites

- > Knowledge of continuous dynamical systems is advantageous.

Advisor / Contact

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