Translation of SpaceEx models into CORA models

Background

Many real-world applications, such as robots or autonomous vehicles, have to be modeled as hybrid systems, which means that their behavior is a mixture of continuous evolution and discrete events. At our chair, we are developing the software tool CORA (http://www6.in.tum.de/Main/SoftwareCORA). This is a MATLAB toolbox which allows the user to perform reachability analysis of linear, nonlinear as well as hybrid systems. When it comes to the specification of a hybrid system model, the SpaceEx XML-format (http://spaceex.imag.fr/) is currently one of the most popular modeling languages. Therefore, in order to assure the compatibility of CORA with other available tools, we are currently working on an interface that automatically translates the SpaceEx-format into a CORA model.

Tasks

In this context, we are looking for a student assistant to support us in the development of this SpaceEx-to-CORA interface. Tasks will include the extension of the existing code with new functionality as well as tests of the final version on several benchmark models. Programming skills in MATLAB are required since all programming tasks will be done in this language. Knowledge about hybrid systems is advantageous, but not necessarily required.