

Software Synthesis from Hybrid Automata

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Abstract:

Benefits of high-level modeling and analysis can be significantly enhanced if the code is generated automatically from the model such that the relationship between the two is rigorously understood. For embedded control software, hybrid systems is an appropriate modeling paradigm due to the ability to specify continuous dynamics as well as discrete switching. In this talk, we will discuss the challenges involved in code generation from hybrid models. In particular, we argue that, for portability and modularity, the traditionally separate steps of discretizing the continuous controllers, determining the sampling frequencies, and scheduling of periodic tasks, should be integrated. We will describe some of the ongoing work to achieve this goal.