Modeling and Simulation of Climate Control System using DEVSJAVA

Type: Type 1  
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Spring, 2018

Background:

With the advent and continuing development of the Internet of Things, everything becomes smarter, from the small scale like phones and televisions, to a very large scale such as buildings or even a whole city; and homes are no exception. “Smart home technology was used to control environmental systems such as lighting and heating” [1]. A complex smart home includes three levels of control: local, discrete-event control and supervisory control. In this project, we would like to develop a model for discrete event control, that is being “asynchronous events and accordingly issues the corresponding discrete actions, based on the evolution specification.”

Modeling and simulation goals:

In “Modeling, Simulation, and Control of Smart Homes Using Petri Nets,” Nabih, et. al, propose a technique that employs the Petri net tools to model, simulate, analyze, and control at the discrete-event level smart home applications. In this project, we want to explore the conversion of these models into a DEVSJAVA environment in order to prove their effectiveness while also improving upon their model to be more robust. Explicitly, the goals of this project are: to convert the Control Climate System [1] from a Petri Net model to a DEVS model; secondly, to improve on their model by making it more robust, meaning that if one component of the system fails, the system would not completely fail; and thirdly, to generate results from our simulation based on our DEVS model similar to the results given in the paper for a different model.

References: