

The Colorado State University Computer Science Department presents:

Dynamically Adaptive Systems and the DIVA System

Benoit Baudry, INRIA, Rennes

Monday, April 6, 2009, 11:00, Computer Science Building 130

Abstract

Software is expected to do more for us today in more situations than we ever expected in the past. Nowadays, there exist more users, interacting systems, resources and goals than before. That is translated into systems operating non-stop on complex, rapidly changing, and possibly hostile environments that must adapt to the ongoing circumstances and find the way to continue accomplishing their functionalities. Such systems, called dynamically adaptive systems (DAS), play increasingly vital roles in society's infrastructures. The unpredictability of adaptive systems makes existing software engineering techniques difficult to apply. In a traditional software development cycle all the behaviours of the system must be captured at design-time but for an adaptive system the behaviour of the system has to be dynamically adapted to an evolving environment. There is a need of being able to handle the variability all along the life-cycle of an adaptive system: from the early requirements to design, test and maintenance. The variability especially needs to be carefully modelled and validated. For these kinds of systems trustworthiness is a major concern. The DiVA project addresses three issues in the modelling of an adaptive system: 1. Manage the explosion in variants modeling 2. Modelling the rules that supervise the choice of evolving behaviour according to the environment; 3. Dealing with co-existing, co-dependent configurations.