Abstract

To provide some levels of dependency in software systems, self-adaptive systems have been proposed as a principled approach to engineering software systems to adapt systems to meet requirements even in the face of changes and uncertainty in the environment. But how can we show that changing a system at run time will make systems more dependable?

In this keynote, I will outline a set of challenges for providing assurances for self-adaptive systems, and describe work that our group has been doing that can provide evidence for assurances in a number of contexts, including collaborative self-adaptation with humans-in-the-loop. I will discuss how probabilistic model checking can be used to explore the state space of self-adaptive systems, and how they can provide more realistic models of the impacts that adapting a system may have on the system.

Bio

Bradley Schmerl is a Senior Systems Scientist in the Institute for Software Research, School of Computer Science, Carnegie Mellon University. He received a Ph.D. in Computer Science from Flinders University in South Australia. His work is primarily in the areas of software architecture and self-adaptive systems, and he leads the development of the Rainbow framework for exploring research into architecture-based self-adaptation.