Animating Formal Models in a Communicating Sequential Process Platform

Ilias Sakellariou[1], George Eleftherakis[2], Ioannis Vlahavas[1], and Petros Kefalas[2]

[1] Department of Informatics, Aristotle University of Thessaloniki,
54124 Thessaloniki Greece
{iliass,vlahavas}@csd.auth.gr
[2] Computer Science Department, City Liberal Studies,
Affiliated College of the University of Sheffield,
13 Tsimiski Str., 54624, Thessaloniki, Greece.
{eleftherakis,kefalas}@city.academic.gr

Research Track.

Abstract. The X-machine formal method forms the basis for a specification/modeling language with a substantial potential value to software engineers. An X-machine is a more expressive and flexible state machine, capable of modeling both the dynamic and the static aspect of a system. Communicating X-machines provide a methodology for building communicating systems out of existing stand-alone X-machines. However, for practically using the model in an real-world system development process, a tool for demonstrating and informally verifying the properties of the modeled system is required. An ideal platform for efficiently implementing such a tool, should support, process oriented programming, efficient communication primitives and declarativeness. CSPCONS is a distributed CLP platform that supports program execution over multiple independent sequential CLP processes that synchronize though message and event passing. The present paper demonstrates the applicability of the CSPCONS programming model to the implementation of a communicating X-machine animator tool that will act as the basis for an extended set of tools that will support the formal mathematical analysis of the specified X-machine models.

Keywords: Formal Methods, Logic Programming

1 Introduction

The extensive use of computers in all aspects of every day life and industry has brought up two important issues: safety and reliability. The continuous increase of the use of computers in almost any engineered product and the fact that the required control functions increasingly demand more complex software, necessitate the need for research towards the improvement of the computerised systems development process. International organisations and governments are currently