University of Huddersfield Repository

Jimoh, F. and McCluskey, T.L.

Using automated planning to enable autonomic properties in computer systems

Original Citation


This version is available at http://eprints.hud.ac.uk/13486/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/
USING AUTOMATED PLANNING TO ENABLE AUTONOMIC PROPERTIES IN COMPUTER SYSTEMS

F. O. Jimoh and T. L. McCluskey.
AI/KEII Research Group, Department of Informatics, Computing and Engineering

RESEARCH QUESTION

- In today’s complex heterogeneous systems, autonomic properties (self-management, self-maintenance, self-protection) are very desirable.
- Typically, such autonomic properties implemented in systems tend to exhibit “reactive” rather than “deliberative” behaviour.
- In many applications (For example - AUVs, Traffic Control) there is a need for systems that can sense, interpret and **deliberate** with knowledge of their actions, goals and environment in order to produce plans to meet their service level requirements.

AIM

- This project aims to perform ground-breaking research in order to show the potential of Automated Planning technology in embodying systems with self-management.
- We aim to take traditional control system architecture, situated in the area of traffic control, and embed it with deliberative planning components.

METHODOLOGY

- We will evaluate it by comparing its behaviour to a traditional control system, and assessing the effort and challenges required to embody such symbolic reasoning within a real time environment.
- We explore the use and potential exploitation of deliberative AI techniques, in particular recent advances in Automated Planning.

RESEARCH SIGNIFICANCE

- Autonomic control systems are an important class of control systems, because of the desirable properties that they offer: self-manage, self-configure, self-protect and self-optimise.
- Creating generic technology that enables control systems to automatically reason with knowledge of their controls, in order to generate plans and schedules to manage themselves, would be a major breakthrough in the realisation of autonomic properties in such systems.

Keywords autonomic systems, automated planning and scheduling, control systems