Article

Decomposing the model-checking of mobile robotics actions on a grid

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References to your research (1)

This publication is referenced:

Application of the Cell-DEVS Paradigm for Cell Spaces Modelling and Simulation

Article Full-text available Jan 2001 · SIMULATION: Transactions of The Society for Modeling and Simulation International

56 Reads · 90 Citations

References (16)

Dynamic Modeling and Identification of an Agriculture Autonomous Vehicle

Article Jun 2016 · IEEE Latin America Transactions

Daniel Herrera · Santiago Tosetti · Ricardo Carelli

In the present article, it is presented the modeling and identification of an autonomous vehicle that has been designed for agricultural tasks. With the purpose of defining the best model structure, different models have been presented. Particularly, it is assumed that the lateral and longitudinal dynamics are decoupled dynamics, and based on this assumption these are modeled…

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Building a Prototype for Power-Aware Automatic Parking System

Conference Paper | Full-text available | Dec 2015

Mohammad Al-A 'abed · Talal Majali · Shadi Abu Omar · [...] · Yaser Jararweh

Autonomous systems are an integral part of our present and future. One such example is autonomous or self-driving cars, which, as their name suggests, are capable of sensing their environment and navigating towards their destinations without human intervention. Such vehicles are already roaming the streets with pioneering and ambitious projects like Google's Self-Driving Car.…

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Effective Approximations for Planning with Spatially Distributed Tasks

Conference Paper | Full-text available | Nov 2013

Daniel Claes · Philipp Robbel · Frans A. Oliehoek · [...] · Karl Tuyls

Planning in cooperative multiagent systems can be neatly formalized using Multi-Agent MDPs, but solving these models is computationally costly. This paper introduces a sub-class of problems called spatial task allocation problems (SPATAPS) that model problems in which a team of agents has to service a dynamically changing set of tasks that is spatially distributed in the…

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Simulation of long-term soil redistribution by tillage using a cellular automata model

Article | Jun 2010 · Earth Surface Processes and Landforms

T. Vanwalleghem · F. J. Jiménez-Hornero · Juan Giraldez · Ana Laguna

The process of tillage translocation is well studied and can be described adequately by different existing models. Nevertheless, in complex environments with numerous obstacles, such as olive orchards, the application of conventional tillage erosion models is not straightforward. However, such obstacles have important effects on the spatial pattern of soil redistribution and on resultin…

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Using timed automata and model-checking to simulate material flow in agricultural production systems—Application to animal waste management

Article | Oct 2008 · Computers and Electronics in Agriculture

Arnaud Hélias · François Guerrin · J-P Steyer

Due to intensification and specialisation of animal production and the increasing pressure of environmental regulations, the careful management of animal wastes becomes a key point for the sustainability of livestock farming. This paper addresses the dynamic representation of a network composed by a set of production units (i.e., livestock farms) that need to transfer their…

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Conference Paper | Full-text available | Aug 2004 · Lecture Notes in Computer Science

Edmund M. Clarke · Muralidhar Talupur · Tayssir Touili · Helmut Veith

We describe a new method to verify networks of homoge- neous processes which communicate by token passing. Given an arbitrary network graph and an indexed LT L n X property, we show how to de- compose the network graph into multiple constant size networks, thereby reducing one model checking call on a large network to several calls on small networks. We thus obtain…

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Uppaal in a Nutshell

Article Dec 1997 · International Journal on Software Tools for Technology Transfer

Kim Guldstrand Larsen · Paul Pettersson · Wang yi

This paper presents the overal structure, the design criteria, and the main features of the tool box Uppaal. It gives a detailed user guide which describes how to use the various tools of Uppaal version 2.02 to construct abstract models of a real-time system, to simulate its dynamical behavior, to specify and verify its safety and bounded liveness properties in terms of its model. In additio…

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Compact Data Structures and State-Space Reduction for Model-Checking Real-Time Systems

Article Sep 2003 · Real-Time Systems

Kim Guldstrand Larsen · Fredrik Larsson · Paul Pettersson · Wang yi

During the past few years, a number of verification tools have been developed for real-time systems in the framework of timed automata. One of the major problems in applying these tools to industrial-sized systems is the huge memory-usage for the exploration of the state-space of a network (or product) of timed automata, as the model-checkers must keep information abou…

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Application of the Cell-DEVS Paradigm for Cell Spaces Modelling and Simulation

Article | Full-text available | Jan 2001 · SIMULATION: Transactions of The Society for Modeling and Simulation International

G. A. Wainer · Norbert Giambiasi

We present the results obtained when using the Cell-DEVS paradigm for cell spaces modelling and simulation. This formalism allows one to model and simulate cell spaces, including delay functions, to specify their timing behavior. Cell spaces can be defined in an automated fashion, simplifying the construction of new models, and easing the verification of the structural model…

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Controller Synthesis For Timed Automata

Article Dec 1999

Eugene Asarin · Oded Maler · Amir Pnueli · Joseph Sifakis

: In this work we tackle the following problem: given a timed automaton, restrict its transition relation in a systematic way so that all the remaining behaviors satisfy certain properties. This is an extension of the problem of controller synthesis for discrete event dynamical systems, where in addition to choosing among actions, the controller have the option of doing nothing and let the tim…

Automating Modular Verification

Conference Paper Jun 2001

Rajeev Alur · Thomas A. Henzinger · Freddy Y. C. Mang

Modular techniques for automatic verification attempt to overcome the state-explosion problem by exploiting the modular structure naturally present in many system designs. Unlike other tasks in the verification of finite-state systems, current modular techniques rely heavily on user guidance. In particular, the user is typically required to construct module abstractions that are…

Alur, R. and Dill, D.L. (1994). A theory of timed automata. Theoretical Computer Science, 126, 183-235.

Caceres-Cruz, J., Arias, P., Guimarans, D., Riera, D., and Juan, A.A. (2015). Rich vehicle routing problem: Survey. ACM Computing Surveys (CSUR), 47(2), 32.

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Largouët, C., Cordier, M.O., Bozec, Y.M., Zhao, Y., and Fontenelle, G. (2012). Use of timed automata and model-checking to explore scenarios on ecosystem models. Environmental Modelling & Software, 30, 123138.

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