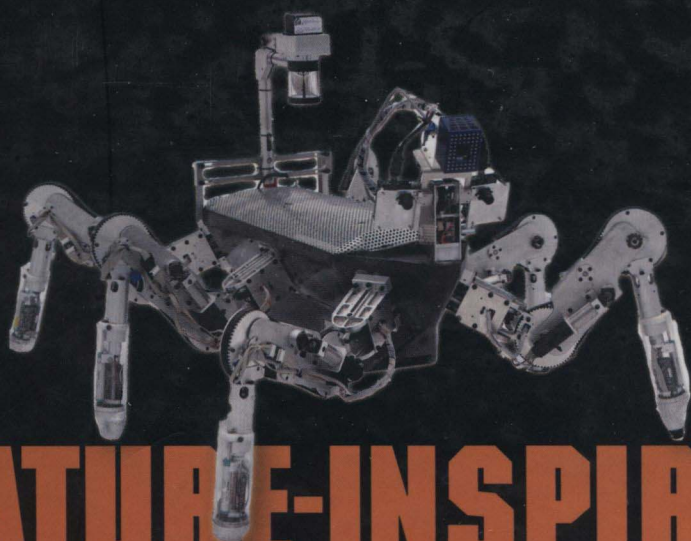
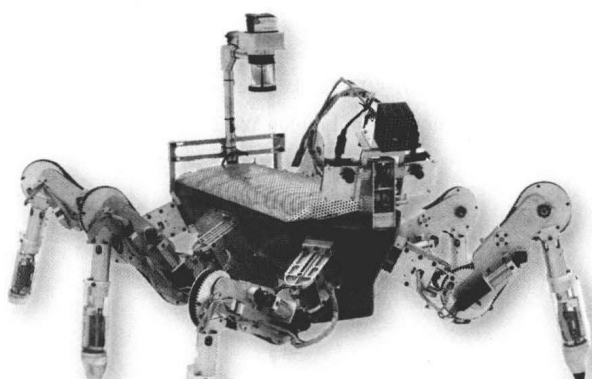




NATURE-INSPIRED MOBILE ROBOTICS

Kenneth J Waldron | Mohammad O Tokhi | Gurvinder S Virk
editors



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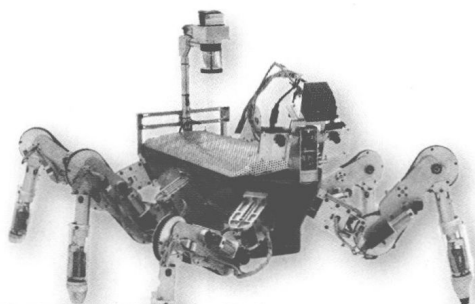
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PREFACE

It is a pleasure to be in and to welcome everybody to beautiful Sydney, Australia for the 2013 CLAWAR (Climbing and Walking Robots) conference, the 16th in the series. It is the first time the conference has been held in Oceania. In fact, it is the very first time it has been held in the Southern Hemisphere.

As with many technical fields, robotics in Australia has its own distinctive character, to match the unique flora and fauna of the country. As befits an economy built on mining and agriculture, field robotics is very strong here, with a consequent emphasis on mobile systems. That has led to developments that have had impacts throughout the world, notably SLAM. It has also led to spectacular successes in infrastructure like the complete automation of the Port of Brisbane, and a series of infrastructure maintenance projects, papers on some of which are featured in the conference proceedings.

The CLAWAR 2013 proceedings present state of the art research findings around the theme of biologically-inspired robotics in 104 technical articles by authors from 29 countries from throughout the five continents and nearly all of robotics R&D is based on nature in some way. This is particularly true of systems that walk, run, climb, or crawl. As is usual at a CLAWAR conference there is a strong stream of papers on legged locomotion with numbers of legs from two on up. There is also a strong collection of papers on systems that climb walls, poles, or more complex structures continuing the distinctive CLAWAR themes.

Another particularly strong theme of this year's conference is robot-human interaction. This includes "natural" methods for programming humanoid robots. It also includes a very strong stream of papers on human assist devices, notably exoskeletal and prosthetic devices, but also personal care robots and mobility assistance devices designed to meet the growing challenges due to the global ageing society. There are also several papers on motion capture of humans, or animals, and on musculo-skeletal biomechanics.

Finally, but very importantly, there are papers on various aspects of the societal impact of robotics. These are issues of creating standards to create and strengthen emerging markets, and ethical considerations. It is time to move beyond Asimov's Laws of Robotics. Armed UAV's are in use every day and

armed autonomous machines for use on land, in the air, and under the sea are just around the corner. This all creates enormous ethical issues and we, who understand the technology must step forward and lead the way in creating not only the new robot technologies but have a strong say in its market developments and the urgently needed new societal rules to govern their capabilities.

The editors would like to thank members of the International Program Committee, International Advisory Committee and National Organising Committee for their efforts in reviewing the submitted articles, and the authors in addressing the comments and suggestions of the reviewers in their final submissions. It is intended that the CLAWAR 2013 proceedings will be a valuable source of reference for research and development in rapidly growing area of mobile service robotics.

K. J. Waldron, M. O. Tokhi, G. S. Virk

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community
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