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From the Editor-in-Chief: A New Research Community, a New Journal

WELCOME to the first issue of the Journal of Software Engineering for Robotics (JOSER)!

JOSER is an online, international, peer-reviewed journal, which aims at disseminating high quality scientific and technological research results in the area of robot software development.

Software development plays a central role in the construction of robot systems. Robotics is a challenging application field where computational performance, resource usage optimization, and system dependability are major requirements. This is especially true for autonomous robots, which process large volumes of sensory information and have to react in a timely fashion to events occurring in their operational environment. Software development, as with every other engineering endeavor, requires the application of scientific principles to the orderly transformation of a problem into a working solution[1]. Thus, the synergy between robotics and software engineering is strategic. Software Engineering for Robotics represents a confluence between two disciplines, where the specific requirements of robot control applications meet the conceptual tools of software engineering to analyse, design, and build complex software systems and to enhance their maintainability, interoperability, and reusability.

Somewhat surprisingly, for many years software development has been considered a sort of by-product of robot system construction. Generally, there has been no sustained push to document robot software requirements, architectures, benchmarks and metrics, and development tools. Such an effort takes time, and most projects are funded for scientific results, not for software development. As a result, a large body of knowledge in robot software development has never been documented, resulting in an unjustified waste of time and resources, where the same software development problems must be repeatedly solved from scratch.

Thanks to a few successful editorial projects (a book, three journal special issues, and a workshop series)[2], I became convinced that the time is right to start this new journal. Large companies and institutions like Microsoft, Kuka, NASA/JPL, the Object Management Group (OMG), and the European Commission are now investing human and financial resources in the research and development of robot software applications, tools, architectures, and middleware. We are at the beginning of a new age, where robotics experts are becoming aware of the importance that software development principles have in building advanced robot systems.

The aim of this new journal is to provide a home for this new community of experts in robot software development and to disseminate scientific and technical articles relating to their research results. There are no other journals, magazines, conferences or even regular tracks at main robotics or software-related conferences specifically focused on robot software development. So far, papers that document new findings in software development for robotics have been presented mostly at dedicated workshops organized in conjunction with major robotics conferences. Typically they are not included in proceedings and are not indexed by major publishers. This situation makes the dissemination and retrieval of valuable results very difficult.

For this reasons, it was felt that an online and Open Access journal with ISSN registration and lawful free access for any reader without the requirement of a subscription or other fee would have the widest possible readership and authorship. A questionnaire filled by robotics experts actively involved in robot software development projects reveals that a majority prefers an open access journal and thinks that the quality of such a journal will build more on the prestige and expertise of the editorial board and article authors than on the name of the publisher.

THE INAUGURAL ISSUE

This issue was something of a learning process for the editors, the reviewers, and even the authors. As editor I did not put too much pressure to the reviewers as they were faced with new author and reviewer guidelines. Now I have learned how to streamline the review process for quicker manuscript turnaround in the future. Authors of submitted manuscript are mostly robotics experts and software practitioners. They did a great job in revising they papers taking into account comments from software engineering experts.

1. Alan M. Davis, "A comparison of techniques for the specification of external system behavior", CACM 31(9), September 1988

2. http://robotics.unibg.it/tcsoft/activities.htm

For those of you interested in statistics, we have received 14 manuscripts by June 1^{st} 2009. All of them have been reviewed by three reviewers, including at least one expert in robotics and one in software engineering. All the submitted manuscripts were recommended for resubmission. Half of them have been then resubmitted by September 1^{st} and reviewed again by the same reviewers. We are now publishing the first two of them in this inaugural issue.

I am not worried by the limited number of articles published in the inaugural issue, because I am and will remain committed to publishing quality manuscripts as judged by a quality review board.

FUTURE ISSUES

I hope that, in future issues of JOSER, contributions will explore new research directions that strengthen the synergy between software engineering and robotics, such as the:

- analysis of issues and challenges in the development of robot software systems, that make the robotics domain similar/different to other application domains (e.g. automotive, factory automation)
- identification of recurrent concepts, aspects, and requirements in robot software systems, that may lead to the definition of standard / common / unified specifications, design models, interfaces, protocols, and software libraries
- documentation of measures and procedures to evaluate software quality factors
- description of conceptual tools as well as software environments that simplify the design, implementation, and reuse of robot software systems.
- exploitation of software engineering conceptual tools (e.g. formal specification and verification methods) to cope with specific robotic requirements (e.g. fault tolerance, robustness, autonomy, real-time guarantee)

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I would like to thank all those who have contributed to establishing this journal, including the Associate Editors, the Editorial Board members, and the research community as a whole. I want to thank the authors for entrusting their quality submissions to JOSER and the reviewers, who invested a considerable amount of time and energy in reviewing a brand new type of paper.

In closing, as JOSER Editor-in-Chief, I welcome feedback and suggestions as to how this new journal may be more useful as a resource for the new community of robot software researchers and practitioners.

Please enjoy this first issue, and feel free to distribute its contents as far and widely as possible.

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