Preface

Recently, engineers and computer scientists have been paying close attention to the emergence of new computational paradigms, such as neural and fuzzy information processing, evolutionary computation, artificial life, etc., which are referred to here collectively as computational intelligence. The field of computational intelligence has been growing and maturing in the 90's. It has become an essential 'component' of many intelligent devices and systems, particularly in the field of robotics and automation.

Striving to build intelligent robots and systems connecting sensing and actions in real-time, we have begun to realize that the conventional approaches to robotics and automation, based on analytic mechanics and systems theory as well as crisp search logics, may not suffice. These thoughts lead the Presidents, Dr. G. Bekey of the IEEE Robotics and Automation Society and Dr. W. Karplus of the IEEE Neural Network Council, to the idea to have a common meeting, the (first) 1997 International Symposium on Computational Intelligence in Robotics and Automation (CIRA'97), which is realized by this meeting. It is organized in co-sponsorship by the IEEE Neural Network Council and the IEEE Robotics and Automation Society. The theme of CIRA'97 is “Toward New Computational Principles for Robotics and Automation,” to focus on the role of computational intelligence for building intelligent robots and systems.

Papers were solicited for all aspects of theories, applications, and case studies related to computational intelligence in robotics and automation. Seventy-five papers were submitted from all over the world, covering such topics as sensor-based manipulation, visual tracking, robot control, navigation, locomotion, motion and path planning, sensor fusion, visual recognition, behavioral synthesis, and robot skills. At least three reviews were obtained for each paper for evaluation. The papers were generally of high quality in terms of their novelty and depth. However, we had to reject some 20 papers either due to the lack of space or due to the weak connection to the theme of the symposium. One thing to note from the submitted papers is that learning and intelligent control are seen as important common features in applying computational intelligence to robotics and automation. In addition to regular papers, CIRA'97 offers an invited session entitled “Biologically Inspired Robotics,” a keynote speech, four plenary talks, two special lectures, and a panel discussion.

We, the organizers, welcome the attendees to the first International Symposium on Computational Intelligence in Robotics and Automation. We hope to provide a forum for you to meet other participants, and to exchange and generate ideas on research and development on this interdisciplinary field. The Symposium gives us also an opportunity to make life-long friends. We hope that you will enjoy the Symposium and the wonderful environment of Monterey. Hopefully, we are starting a Symposium that will become an annual event.

Antti J. Koivo
General Chair

Sukhan Lee
Program Chair