ADDRESS

Takayuki Hirai

President, Nippon Bunri University

It is a great pleasure to have the Seventeenth International Symposium on Artificial Life and Robotics. It is highly evaluated that many researchers known internationally have attended this event and presented the results of advanced valuable research since the first symposium in 1996. The research made public in each symposium has been the great moving force to develop the technologies of Artificial Life and Robotics. The researchers all over the world pay attention to the presentations of research and make good use of them to promote their own academic research. We have a lot of the presentations of research this time as well, and their academic contribution is remarkable. I would like to show honor to all of you in the committee who have such a valuable international symposium.

MESSAGES

Fumio Harashima

Advisory Committee Chair of AROB

Professor, Tokyo Metropolitan University

The science and technology (S&T) on Artificial Life and Robotics was born in 1996, and it's been providing human being with happiness. This S & T is not only important but also necessary for people living in the world to maintain high quality of life. Research is heart and desire of human being and the S&T is going toward clarifying tool to achieve our objective.

I would like to congratulate researchers who work in the fields on Artificial Life and Robotics.

Masanori Sugisaka

General Chair of AROB

Professor, Nippon Bunri University and President,
ALife Robotics Corporation, Ltd. , Japan

It is my great pleasure to invite you all to the Seventeenth International Symposium on Artificial Life and Robotics (AROB 17th '12).

The symposium from the first (1996) to the Thirteenth (2008) were organized by Oita University and Nippon Bunri University (NBU) and the Symposium from the Fourteenth (2009) to the Sixteenth (2011) were organized by Nippon Bunri University (NBU) and ALife Robotics Corporation Ltd. under the sponsorship of the Science and Technology Policy Bureau, the Ministry of Education, Science, Sports, and Culture (Monbusho), presently, the Ministry of Education, Culture, Sports, Science, and Technology (Monkasho), Japanese Government, Japan Society for the Promotion of Science (JSPS), The Commemorative Organization for the Japan World Exposition ('70), Air Force Office of Scientific Research, Asian Office of Aerospace Research and Development (AFOSR/AOARD), USA. I would like to express my sincere thanks to not only Monkasho, JSPS, the Commemorative Organization for the Japan World Exposition ('70), AFOSR/AOARD but also Japanese companies (Mitsubishi Electric Corporation, Advanced Technology R&D Center, Oita Gas Co., Ltd., ME System Co. LTD, and Sanwa Shurui Co., LTD.) for their repeated supports.

This symposium is organized by International Organizing Committee of AROB and is sponsored by ALife Robotics Co., Ltd., and technically co-sponsored by IEEE Robotics and Automation Society Japan Chapter, JARA, SICE, ISCIE, IEICE and CAAI (P.R. China).

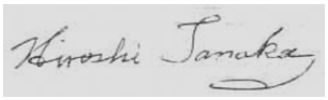
I hope that the new technologies presented in this symposium bring happiness to human society and will facilitate the establishment of an international research Institute of Artificial Life and Robotics.

Welcome and enjoy your stay in Beppu.

Hiroshi Tanaka

Program Chair and Vice-Chair of AROB

Professor, Tokyo Medical and Dental University



On behalf of the program committee, it is my great pleasure and honor to invite you all to the Seventeenth International Symposium on Artificial Life and Robotics (AROB 17th 2012). This symposium is made possible owing to the cooperation of Nippon Bunri University and Santa Fe Institute. We are also debt to Japanese academic associations such as SICE, RSJ, and several private companies. I would like to express my sincere thanks to all of those who make this symposium possible.

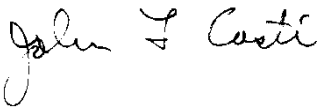
As is needless to say, the Alife or biologically-inspired Robotics approach now attracts wide interests as a new paradigm of science and engineering. Taking an example in the field of bioscience, the accomplishment of HGP (Human Genome Project) and subsequent post-genomic comprehensive "Omics data" such as transcriptome, proteome and metabolome, bring about vast amount of bio-information. However, as a plenty of omics data becomes available, it becomes sincerely recognized that the framework by which these omics data can be understood to make a whole picture of life is critically necessary. Thus, in the omics era, biologically-inspired systems approach like Alife is expected to give one of new alternative ideas to integrate this vast amount of bio-data.

This example shows the Alife and biologically-inspired approach is very promising and may exert a wide influence on the effort to develop a new paradigm for next generation of life science. We hope this symposium becomes a forum for exchange of the ideas of the attendants from various fields, including the life science field, who are interested in the future possibility of biologically-inspired computation and systems approach. I am looking forward to meeting you in Beppu, Oita.

John L. Casti

Vice-Chair of AROB

Professor, International Institute for Applied Systems Analysis, Vienna, Austria



As a member of the AROB committee since the first AROB in 1994, it's always a pleasure for me to begin the year with this event. So once again I'm very pleased to invite you all to the Seventeenth International Symposium on Artificial Life and Robotics (AROB 17th '12). The program for this year's meeting contains the customary wide variety of themes, ranging from robotics and human-machine interfaces to mathematical and computer modeling of human systems. I think I can fairly say that the AROB has now taken its place as the premier event in Asia each year for researchers in these areas.

Over the coming days, I anticipate many productive exchanges of idea and feel that the AROB symposium will give rise to many fruitful ways for international cooperation in the areas of simulation of human systems. In these very difficult times, the world must find new tools for solving the pressing problems of climate change, energy and food supply, economic growth and many other domains of modern life. Hopefully, the work presented at the AROB will contribute to finding effective solutions to these growing threats.

Yingmin Jia

Vice-Chair of AROB

Professor, Beihang University

The 17th International Symposium on Artificial Life and Robotics (AROB) will be held in Beppu, Oita, Japan from Jan. 19th to 21th, 2012. As a vice-chairman, I am honored and privileged to invite you all to this fruitful 3-day event, which provides an excellent opportunity for the formal exchange of information, ideas, and research results between leading scientists and engineers in the areas of artificial life and robotics.

In 1996, the first Symposium was created and organized by Prof. Masanori Sugisaka, the general chairman of AROB. Since then, the symposium has attracted an impressive range of researchers from all around the world, and distinguished achievements have been obtained that shows his foresight in merging two disciplines of artificial life and robotics. Moreover, it is gratifying to see that there are more and more young colleagues, researchers and engineers from the universities, research institutions and industries interested in the field. I believe there is a rapid and better development in the near future.

Finally, I would like to acknowledge the contributions of operating and programming committee members for their great efforts to make this symposium successful. Also, I would like to express my sincere appreciation to the plenary speakers and invited speakers for their willingness to give us their excellent lectures.

Looking forward to meeting you at the 17th AROB, and wishing you all have fruitful technical discussions and enjoy the symposium.

Ju-Jang Lee

Vice-Chair of AROB

Professor, KAIST

The Seventeenth International Symposium on Artificial Life and Robotics (AROB) will be held in Beppu, Oita, Japan from Jan. 19th to 21th, 2012. This year's Symposium will be held amidst the high expectation of the increasingly important role of the new interdisciplinary paradigm of science and engineering represented by the field of artificial life and robotics that continuously attracts wide interests among scientist, researchers, and engineers around the globe.

Since the time of the very first AROB meeting in 1996, each year, distinguished researchers and technologists from around the world are looking forward to attending and meeting at AROB. AROB is becoming the annual excellent forum that represents a unique opportunity for the academic and industrial communities to meet and assess the latest developments in this fast growing artificial life and robotics field. AROB enables them to address new challenges, share solutions, discuss research directions for the future, exchange views and ideas, view the results of applied research, present and discuss the latest development of new technologies and relevant applications.

In addition, AROB offers the opportunity of hearing the opinions of well-known leading experts in the field through the keynote sessions, provides the bases for regional and international collaborative research, and enables to foresee the future evolution of new scientific paradigms and theories contributed by the field of artificial life and robotics and associated research area. The twenty-first century will become the century of artificial life and intelligent machines in support of humankind and AROB is contributing through wide technical topics of interest that support this direction. It is a great for me as the Vice Chairman of the 17th AROB 2012 to welcome everyone to this important event. Also, I would like to extend my special thanks to all authors and speakers for contributing their research works, the participants, and the organizing team of the 17th AROB.

Looking forward to meet you at the 17th AROB in Beppu-Oita and wishing you all the best.

Henrik Hautop Lund

Vice-Chair of AROB

Professor, Center for Playware, Technical University of Denmark

I am much honored to invite you to the Seventeenth International Symposium on Artificial Life and Robotics (AROB 17th '12). The international symposium has been held each year since 1996, initially organized by Oita University and now being organized by Nippon Bunri University, and supported by Ministry of Education, Culture, Sports, Science and Technology, the Japanese Government.

The symposium attracts an impressive range of researchers from all continents, who all share the vision of merging research based upon artificial life and robotics. The symposium is visionary in merging these two, science and engineering disciplines, and has become the most important forum for research into merging artificial life and robotics.

The research in artificial life and robotics is very important since it both brings us insight into ourselves as human beings and natural systems, and brings us new engineering solutions that may influence our lives. It is my hope that you will use this insight and opportunity to develop systems that help humankind in socially responsible ways. Indeed, the symposium puts high emphasis on the social impact of interdisciplinary (based on artificial life and robotics combined with other fields, e.g. social science, art) developments, and has become an important forum for the discussion of global developments of socially responsible technology.

I would like to take this opportunity to thank the general chairman of AROB, Prof. Masanori Sugisaka, for being so visionary 17 years ago to engage in creating and organizing this important annual event for our research community. It takes a lot of courage to be the first to create a novel interdisciplinary research field such as the one that comes from the merge between artificial life and robotics. Prof. Sugisaka has shown how being courageous enough to engage in the adventurous activities of merging two fields may lead to very fruitful research and to the lively research community that you are now part of with your participation in this international symposium.

I would also take this opportunity to thank Springer-Verlag for supporting this research community, and remind all participants of the Springer-Verlag Artificial Life and Robotics Journal. Hopefully, we will see numerous, high quality contributions to the journal as the outcome of this symposium and the research collaboration that may entail the symposium. Indeed, it is my hope that you will all engage in open and fruitful scientific discussions with your colleague researchers during the symposium, and that these discussions may open up for future research collaborations in order to bring new insight into artificial life and robotics to the community.

Ken Naitoh

Vice-Chair of AROB

Professor, Waseda University, Faculty of Science and Engineering

What is the essential difference between living beings and machines? This may be the mystery which cannot be solved forever. However, deep thought experiments on the mystery will bring new technologies: quantum leaps of biological, medical, and mechanical technologies. The International Symposium on Artificial Life and Robotics related to the mystery and wonderful hot springs in Oita, Beppu, are wellsprings for inducing wonderful idea, concepts, scenario, and concrete systems. It is a great pleasure for us to discuss on the future with a lot of researchers in the world and also to encourage the next generations here.

Takao Ito

Assistant General Chair of AROB

Professor, Ube National College of Technology

Since our first symposium was held in Beppu Oita in 1996, we have met every year. We are now about to begin our 17th symposium. As one of the program committee, I am delighted to invite you all to the Seventh International Symposium on Artificial Life and Robotics which will be held in Beppu Oita next year.

Given the intense competition in the field of artificial life and robotics, the effective coordination and efficient maintenance of information exchange take on increased importance. The AROB international symposium provides us a unique opportunity to enjoy the discussion of all new issues, and to share experiences related to the advanced technologies and management skills. I am pleased to put together this excellent program that represents submissions from many countries around the world. I sincerely hope that those participating in this symposium as delegates from their various countries will have something to offer regarding our study of the present situation of the artificial intelligence and its management and will contribute to its future development.

I end these words of welcome with an earnest prayer for the great success of this symposium.