

MESSAGES



Hiroshi Tanaka

General Chair

**Professor Emeritus, Tokyo Medical and Dental University
Specially appointed professor, Tohoku University**

A handwritten signature in black ink that reads "Hiroshi Tanaka". The signature is fluid and cursive, with a long horizontal stroke at the end.

It is my great pleasure and honor to welcome you all to the Twenty-sixth International Symposium on Artificial Life and Robotics (AROB 26th 2021). This year we have also organized a sister symposium on bio-complex systems study, named “The Sixth International Symposium on BioComplexity, (ISBC6)”. By organizing the joint symposium of AROB and ISBC, we could broaden the scope of this symposium to cover the all fields of complex systems dealing with anything, related to and inspired by life.

As is needless to say, Alife together with bio-complex systems and biologically-inspired Robotics now attracts wide interests as a new paradigm of science and engineering. For example, the bio-complex systems theory and methodology is now increasing its importance in entering upon the healthcare in “Big Data Era”, as a promising approach to promote “cutting-edge medicine”, such as to reveal and conquer the cancer progression mechanism or to explore the efficient reprogramming method of cells/tissues in regeneration medicine (iPS cells). Furthermore, in the era of Big Data in medicine and healthcare, artificial intelligence (AI) is expected to play an important role to analyze and interpret the meaning that the medical big data contains. In recent years, especially Artificial Intelligence (AI) has attracted an enthusiastic interests again from all branches of society, due to the extraordinary capability of “Deep Learning”, from the very high performance of image understanding to time series analysis of continuous signals and powerful supports in drug discovery. In our fields of AROB, the impact of AI is outstanding and would revolutionize the total landscape of our discipline.

Also in the biologically-inspired robotics field, rapid progresses in various types of robot systems have been remarkable such as bipedal humanoid, multi-agent robots and so forth. Also in the real world, nursing care robot is gradually being in practice. Furthermore, in wider sense, “molecular robots”, small DNA-based devices which identify receptors in cell surface and targets the cells causing diseases is expected to achieve drug-like function within human body. These examples show the Alife and biologically-inspired Robotics approach are exerting a wide influence on the development of a new paradigm for next generation of science and engineering

These trends could be seen already in this year’s symposium

In organizing this year AROB symposium, we are in debt to many Japanese academic associations such as SICE, RSJ, IEEJ, IEICE, ISCIE, JSST and JSOM. I would like to express my sincere thanks to all of those who make this symposium possible.

We hope this symposium becomes a forum for exchange of the ideas of the attendants from various fields, who are interested in the future possibility of Alife, biocomplexity and biologically-inspired Robotics approach. I am looking forward to meeting you.



Hee-hyol Lee

Program Chair

Professor, Waseda University

A handwritten signature in cursive script that reads "Heehyol Lee".

On behalf of the program committee, it is my great pleasure and honor to invite all of you to the Twenty-Sixth International Symposium on Artificial Life and Robotics (ISAROB 26th 2021) and the Sixth International Symposium on Bio-Complexity (ISBC 6th 2021). The AROB was started on 1996 at B-Con Plaza, Beppu, Japan, to develop new frontier of artificial life, robotics, bio-complexity, bio-medicine, and their related fields. The ISBC was also started five years ago to find new science and technologies concerning biomedicine and biophysics based on theories, computer simulations, wetware and hardware designs.

The AROB 26th and ISBC 6th 2021 consist of 3 plenary speeches, 13 organizing sessions, 19 general sessions, and then the total of 160 papers are published. The brilliant papers presented in these symposiums are able to submit to the international journal – Artificial Life and Robotics. All papers submitted to the journal go through a double-blind peer-review process. In addition, the quality of our journal depends heavily on support from referees. Thanks for all of referees of our journal.

The new coronavirus COVID-19 has stagnated economic activity, greatly restricted the movement of people, and caused a lot of people to die on a global scale. On the one hand, the movement of people was strongly restricted, we were able to hold an unprecedented online conference without going to Beppu. According to one view, since the Industrial Revolution of the 18th century, human beings have abnormal breeding on this earth and have a great influence on the survival of other organisms, so the coronavirus SARS-CoV, MERS-CoV, and COVID-19 can also be seen as a warning to our humankind.

The main themes of our symposium are artificial life, robotics, and bio-complexity, but artificial intelligence is currently a very powerful method as a base method for analyzing those objects and creating some kind of functional mechanism in these themes. The artificial intelligence, which is a science and technology for creating intelligent computer programs, has largely the functions of identification, prediction, and execution. Our symposiums are also a good forum for discussion on the themes of identifying the source of infection, predicting its spread, and seeking measures to converge the infection. We expect lively discussions.

We are wishing continued outstanding success of our symposiums.

I am going to look forward to our meeting with all of you again.