



NEWSLETTER

Tsukuba Digital-Bio International center Newsletter

2022.03.02

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Salutation

Professor Tetsuya Sakurai

- **University of Tsukuba Institute of Systems and Information Engineering**
Director, Center for Artificial Intelligence Research
- **JST COI-NEXT "Tsukuba Digital-Bio International Center Project" Deputy Project Leader**

Today, artificial intelligence (AI) is required for various fields and industries. Data is critical for AI learning but, due to the confidentiality and privacy that data contains, there are still limited examples of AI applications using data distributed across multiple organizations. Our research

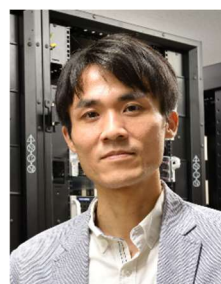


group is developing techniques to analyze distributed data without directly sharing the original data. The center is expected to realize new value co-creation through the use of distributed data analysis technology in data collaboration among companies and organizations at the center, where many research institutes and companies are gathered with digital biotechnology as a cross-spot. We intend to utilize the research capabilities and network in the digital field of the Artificial Intelligence Science Center at the University of Tsukuba to support data analysis and AI applications for research institutions and companies clustered at this center. The Tsukuba Digital Bio Consortium is scheduled to be established in the future to further strengthen cooperation and collaboration within and outside the center.

Participating Researchers

Assistant Professor Yasunori Futamura

- **University of Tsukuba Institute of Systems and Information Engineering**
Center for Artificial Intelligence Research



It has been a long time since the era of big data acquired its moniker and there is a demand for the utilization of vast amounts of data in all fields. AI is rapidly gaining attention, and knowledge discovery plus automatic, autonomous control at an unprecedented level is being

implemented in society in the form of advanced machine learning technologies and applications. However, it is not possible to simply throw the data at hand into machine learning, and the knowledge of experts in each field (domain knowledge) is essential for its effective use. Recent advances in machine learning technology are driven by large volumes of data from the Web, sensor networks, etc. However, a supercomputer-class computing environment is required to handle such a large amount of data. So far, my collaborators and I have been working with supercomputers to develop algorithms to accelerate simulation and machine learning. We will contribute the power of information engineering to the interdisciplinary digital development of the medical, food, and environment-related fields at this center through the domain knowledge of everyone in these fields.

center to contribute to the realization of drug discovery based on data obtained from clinical practice.

Assistant Professor Anna Bogdanova

- **University of Tsukuba Institute of Systems and Information Engineering Center for Artificial Intelligence Research**



I have been working on developing collaborative machine learning techniques on data distributed across organizations. This technology enables advanced analysis of large volumes of data while ensuring the security of highly confidential data, and aims to contribute to data

analysis in the medical field and to improved productivity in inter-company collaboration and multi-organization within a company. Analysis of distributed data shared by various research institutes is important for this center, and we would like to make use of our past research experience in this kind of data analysis. Furthermore, up to now, we have collaborated with several U.S. universities to conduct research and engage in joint research with overseas researchers. I would like to use this experience to contribute to the formation of an international network and industry-academia collaboration at this center.

Introduction of Participating Companies

MITSUBISHI SPACE SOFTWARE CO.,LTD.

Kansai Office

Bioinformatics Development Department

Department Head Shigeki Tanishima

We are specialized in clinical genome data analysis, and have commercialized genome data analysis for the Tsukuba Preventive Medical Research Center's "Genome Doc" and "Cancer Exome Test Plessision" based on the iLac Hygienic Laboratory Dry Lab in the University of Tsukuba's Precision Medicine Center (PMC). We are also accelerating the accumulation of our own cancer genome database, including clinical progress, and will work with the Tsukuba Digital-Bio International

TOPICS

Professor Isoda of the University of Tsukuba, Project Representative, received the 17th JICA President's Award.

Principal Investigator and Project 5 Leader, Professor Hiroko Isoda (University of Tsukuba Institute of Faculty of Life and Environmental Sciences, Mediterranean and North Africa Research Center), received the 17th JICA President's Award for her longstanding scientific and technological contributions to Tunisia, Morocco, and other North African countries.

For more information, click here. →

<https://www.tsukuba.ac.jp/journal/awards/20211217104122.html>

The research results of Associate Professor Mizuno of the University of Tsukuba and Dr. Ayabe, Senior Research Scientist (RIKEN BioResource Center) have been published in PLOS Biology.

A research group led by Associate Professor Seiya Mizuno of the University of Tsukuba Institute of Medicine and Shinya Ayabe, Senior Research Scientist in the Experimental Animal Division (RIKEN BioResource Center) have published their findings in the journal PLOS Biology.

For more information, click here. →

<https://www.tsukuba.ac.jp/journal/medicine-health/20220119040000.html>

Project Leader Nishiyama gave a lecture at the 41st General Meeting of the Tsukuba Life Science Promotion Council.

On December 24, 2021, Project Leader Hiroyuki Nishiyama gave an online lecture titled "The State of Digital Biotechnology" at the 41st General Meeting of the Tsukuba Life Science Promotion Council (TLSC).

COI-NEXT Support Program for the Formation of a Place for Co-Creation has decided to make a tentative transition to full-fledged support for this center.

In the Support Program for the Formation of Places for Co-Creation Policy Focus Area/Biotechnology, the review for transition to full-fledged support is being conducted from December 2021 to May 2022. On January 13, 2022, the JST (Japan Science and Technology Agency) conducted a hearing review, the first stage of evaluation, and officially notified the Center of its tentative transition to full-scale support.

The 1st Tsukuba Digital Bio International Center Vision Committee meeting was held

The first Tsukuba Digital Bio International Center Vision Committee meeting was held on Thursday, January 27, 2022, to receive various opinions on the vision and management of the Center from professors affiliated with companies, universities, and national institutes.

(Members of the Vision Committee, without titles)

Kazumasa Yoshida: Mynavi Corporation (Board Director)

Nobuyuki Chosokabe: Hitachi, Ltd. (CSO and General Manager, Planning Division, Life Business Headquarters)

Yoshihiro Ohishi: Mitsubishi Research Institute, Inc. (Executive Research Councilor)

Shunichi Amemiya: NTT DATA, Inc. Technology Innovation Management Division, General Manager, Technology Development Division

Yoshiaki Satake: S&B FOODS INC (Executive Officer, General Manager, Central Research Laboratory)

Katsuhira Tsukahara: Eisai Pharmaceutical Co. (Executive Officer, Chief Data Officer and General Manager, Tsukuba Research Laboratory)

Hiroyuki Nishiyama: University of Tsukuba Institute of Medicine Professor Tsukuba Digital-Bio International Center Project leader

Tetsuya Sakurai: University of Tsukuba Institute of Systems and Information Engineering Professor Tsukuba Digital-Bio International Center Deputy Project leader

Hiroko Isoda: University of Tsukuba Institute of Faculty of Life and Environmental Sciences Professor Principal Investigator of the Research and Development Center

Hiroshi Wada: Vice President and Director, University of Tsukuba (Research Director)

Yasunori Kanaho: Vice President and Director, University of Tsukuba (In charge of Industry-Academia Collaboration)

Toshihiko Shiroishi (observer) : RIKEN BioResource Center Center director

Yasuhiro Yasutomi (observer) : National Institutes of Biomedical Innovation, Health and Nutrition Tsukuba Promote Research Center Center director

Mari Yamamoto (observer) : Research Center for Agricultural Information Technology, NARO Division of Food Research Executive Scientist

The 20th Anniversary Symposium of the Center for Life Science and Animal Resources was held

The symposium was held to celebrate the 20th anniversary of the University of Tsukuba's Animal Resource Center for Life Science, which is directed by Professor Satoshi Takahashi, the leader of the Center's Research and Development Project 3. More than 220 people attended the event, which featured lectures by four professors with close ties to the center.



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Tsukuba Digital-Bio International Center Website
<https://tsukubadigitalbio.jp/>