The Oakforest-PACS supercomputer, designed and operated by collaborators at the University of Tsukuba and the University of Tokyo, has overtaken the K computer as the fastest supercomputer in Japan.

EXPANDING RESEARCH NETWORKS BEYOND BORDERS

The University of Tsukuba embraces borderless collaboration to efficiently deliver **HIGH-QUALITY RESEARCH** outcomes.

Located northeast of Tokyo, the University of Tsukuba is a comprehensive university at the core of the city of Tsukuba, the largest-scale "science city" in Japan. Encompassing 29 national and more than 200 private-sector research institutions, the university operates on the principle of being open to all.

Borderless networks

Through its research programmes, the University of Tsukuba aims to transcend borders that separate nations, research institutions, and fields of study. It plans to do this through proactively building partnerships with industry and universities outside Japan.

The university first began to engage in projects that accelerated joint research with private businesses in 2016, and in the following year saw a 35.2% increase in the funding of its private joint research endeavours within Japan.

Proactive support for venture corporations has also been an important strategy for the university. To date, a total of 118 companies have originated from the University of Tsukuba, and they all give back to society through their research outcomes. This includes the robotics company Cyberdyne, Inc., whose Hybrid Assistive Limb (HAL) robotic suit helps provide mobility to people with reduced joint and limb function. In 2016, the University of Tsukuba was ranked in the top three national universities that have the highest rates of expansion among their venture companies.

The university's network is also expanding globally. It has entered into seven 'campus-in-campus' arrangements—where partner universities share research and educational resources—with institutions in six countries and regions, thereby promoting close cooperative relationships between education and research. At present, the university hosts more than 3,000 study abroad students from more than 100 countries and regions. It holds the highest percentage of international students among Japanese universities.

Superior outcomes via joint research

Collaboration is essential to achieve high-quality outcomes with limited resources. The university is actively engaged in the exchange of talent and collaborative research, going beyond the conventional university framework to focus on nationwide joint-use institutes that encompass the four fields of computational science, marine science, plant science, and plasma research.

For example, the Center for Computational Sciences developed and operates the Oakforest-PACS massively parallel cluster-type supercomputer with the Information Technology Center of the University of Tokyo, a collaboration known as the Joint Center for Advanced High Performance Computing. In 2017, the Oakforest-PACS was certified as having the highest storage performance of any system in the world.

Joint research conducted by the university at facilities in Tsukuba Science City is also rapidly expanding in the areas of drug development, robotics engineering, space medicine, plant breeding, astrophysics, and sleep science, as well as a wide variety of interdisciplinary areas. In this way, the university can deliver a greater number of superior research outcomes that cannot be achieved on a university scale alone.

The University of Tsukuba continues in its dedication to meet these challenges head-on, and through its collaborative approach will succeed in its efforts to build science quality through its networks that transcend borders. ■

筑波大学
University of Tsukuba

1-1-1 Tennodai, Tsukuba,
Ibaraki, 305-8577, Japan

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