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NEWS RELEASE

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ACM Gordon Bell Special Prize for HPC-Based COVID-19 Research Awarded to Japanese Team for Novel Aerosolized Droplet Simulation

New York, NY, November 18, 2021 – The 2021 ACM Gordon Bell Special Prize for High Performance Computing-Based COVID-19 Research was presented to a six-member team for their project Digital transformation of droplet/aerosol infection risk assessment realized on "Fugaku" for the fight against COVID-19. The Prize is being awarded in 2020 and 2021 to recognize outstanding research achievement toward the understanding of the COVID-19 pandemic through the use of high performance computing.

The winning team members are: Kazuto Ando, Rahul Bale, and Keiji Onishi, RIKEN Center for Computational Science (Japan); Chung Gang Li and Makoto Tsubokura, RIKEN Center for Computational Science and Kobe University (Japan); and Satoshi Matsuoka, RIKEN Center for Computational Science and Tokyo Institute of Technology.

In April 2020, in response to the worldwide spread of COVID-19, the Japanese government made Fugaku, the world's fastest supercomputer, available to scientists working to combat the epidemic. Building on existing industrial particle modelling software, the Japanese research team employed Fugaku to run a variety of simulations of how COVID-19 might spread from person to person via aerosolized droplets.

The team developed a novel aerosol simulation methodology. Their methodology allowed the simulations to scale massively with the high resolution required for micrometer virus-containing aerosol particles, while also achieving an extremely rapid time-to-solution. These simulations included real-world settings of public areas such as classrooms, concert halls, restaurants, commuter trains, and airports.

These simulations were then used to develop risk assessments, along with counter-measure strategies, that were disseminated to the general public, government agencies, and private businesses. This information helped guide decisions in areas including requirements for face masks and social distancing as well as whether certain public facilities and private businesses should be closed.

The team's methodologies continue to be used to produce simulations on Fugaku, which yield invaluable information to combat the spread of the COVID-19 virus.

The winning team was recognized today at the [International Conference for High Performance Computing, Networking, Storage, and Analysis (SC21)](#), which was held in St. Louis, Missouri, and virtually for those who could not travel. The prize-winning paper will also be published in *The International Journal of High Performance Computing Applications (IJHPCA)*.

A cash prize in the amount of $10,000 accompanies the award, which was conceived and funded by Gordon Bell, a pioneer in high performance computing and researcher emeritus at Microsoft Research.

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