BGI's second HPC Innovation Excellence Award marks its impetus in biocomputing

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International Data Corporation announced the new winners of the HPC Innovation Excellence Award at the 2012 International Supercomputing Conference in Hamburg, Germany. BGI, for the second time, was honored with the award for their great achievements and strong return on investment by applying high performance computing (HPC) technologies.

HPC Innovation Excellence Award program was initiated in 2011, which recognizes noteworthy achievements made by users using HPC technologies. The main goals are to showcase return on investment of the achievement involving HPC and to help better understand the benefits of adopting HPC and justify HPC investments as well as to expand public support for increased HPC investments.

Lin Fang, Vice President of BGI said, "HPC has shown immense application potentials in scientific advancement, to facilitate the processing of large volumes of genomic data, and to make Omics-related research faster and easier for researchers. We will strengthen HPC's application in our future research to meet the growing need for managing and analyzing the 'Big Genomics Data'."

With the rapid development of next-generation sequencing (NGS), the demand on genomic data storage and computing power increases 10 times per 12-18 months, far exceed the famous Moore's law. The 'Big Genomics Data' produced by NGS has greatly hampered the further development of life science. HPC technologies thus can provide solutions and innovations to solve the bottleneck.

In the past several years, BGI has made many achievements in scientific application by applying the HPC technologies. With several bioinformatics supercomputing centers in China, BGI's total peak performance of the bioinformatics centers could reach to over 200T flops, with 35TB memory and 16PB storage, providing stable and efficient resources for storing, processing and analyzing the massive bioinformatics data. Its supercomputing centers in Shenzhen and Hong Kong rank the largest two bioinformatics centers in China.

In addition, BGI has developed a series of distributed computing software and algorithms based on the MapReduce framework. SOAPgaea is a general flexible framework designed for facilitating the NGS resequencing analysis. It enables scientists from different fields perform individualized analysis by selecting suitable software and parameters. Moreover, GaeaAlignment and GaeaSNP are two of SOAPgaea's new models for large-scale resequencing data analysis, realizing interprocess memory sharing. SOAPhecate is the first cloud-based de novo assembler for mammalian-sized genomes, which contains several modules to extend contigs, linearize scaffolds, close gaps, and construct a linear DNA

sequence.

BGI will continue its effort in new technologies innovation of HPC and apply them in more challenging projects, such as Million Plant and Animal Genomes Project, complex diseases studies, and the others.

The other award winners include GE Global Research (U.S.), Department of Defense High Performance Computing Modernization Program (U.S.), Mary Bird Perkins Cancer Center and Louisiana State University (U.S.), Aon Benfield Securities, Inc. (Canada).

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