

Press release

World Health Summit: HPI Presents Instantaneous Genome Analysis

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Potsdam/Berlin. A new database technology from Hasso Plattner Institute (HPI) holds the promise of utilizing personalized medicine on a comprehensive scale. This technology is to be presented at the World Health Summit on October 24th in Berlin. Originally developed for corporate software and honored with the 2012 German Innovation prize, In-Memory Technology will also help in the future to analyze and evaluate huge amounts of medical data in real-time. Complicated and expensive treatments, such as those for cancer patients, could then be carried out faster and better tailored to fit each patient.

“Personalized medicine aims to base treatment decisions on all patient-specific information. To be able to do this in the future increasingly more data must be processed during the treatment and, for instance, the “construction plan” of every single person - the DNA, must be examined for genetic changes,” said the director of HPI Prof. Christoph Meinel. According to the computer scientist, this entails huge amounts of data since every human being carries around approximately 3.2 billion pieces of genetic information.

Researchers led by Dr. Matthieu-Patrick Schapranow, from the chair of HPI founder Prof. Hasso Plattner, tackle the huge mountain of data with a 1,000 core high-performance computer cluster - one of the three of this kind worldwide. “To analyze genetic changes in real-time, we combine the research results of global medical research databases into a knowledge base at HPI. High-performance computing combined with huge main-memory capacities help us to identify genetic dispositions and treatment-relevant supplementary information interactively within seconds, instead of determining it manually over a period of days,” said Schapranow, who works closely with the Charité university hospital. The result: the instantaneous analysis of genome data via a cloud application.

Until now, physicians and researcher had to spend weeks of their valuable time researching medical literature and latest medical research results on the Internet. Thanks to the HPI technology, genome data analysis now takes only a few seconds. If mutations are discovered with relevance to the illness, the technology saves the oncologist many laborious individual queries in scientific databases. Instead, the results are sorted automatically according to their relevance and in comparison to all internationally-known research results. In

this way, the most current knowledge about an illness can always be incorporated into its treatment.

Additionally, doctors get decisive supplementary information in the genome browser of HPI about every mutation displayed in terms of its frequency, related diseases, pharmacological relationships, possible active substances, as well as clinical studies that allow a more specific treatment.

Profile of the Hasso-Plattner-Institute

The Hasso Plattner Institute for Software Systems Engineering GmbH (HPI) in Potsdam is Germany's university excellence center for IT Systems Engineering. It is the only university institution in Germany offering bachelor and master programs in "IT Systems Engineering" – a practical and engineering-oriented course of studies in computer science, in which currently 460 students are enrolled. The HPI School of Design Thinking is Europe's first innovation school and is based on the Stanford d.school model. It offers 120 places for a supplementary study. There are a total of ten HPI professors and a further 50 guest professors, lecturers and contract teachers at the Institute. HPI carries out research noted for its standard of excellence in its nine topic areas, as well as in the HPI Research School for PhD candidates, with its further research branches in Cape Town, Haifa and Nanjing. HPI teaching and research focuses on the foundation and application of large-scale, highly complex and interconnected IT systems. The development and exploration of user-driven innovations for every part of life is an additional area of emphasis. HPI always earns the highest positions in the CHE university ranking. Since the beginning of September the Institute has offered openHPI, an interactive Internet educational network that is open to everyone.

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