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University researchers on cloud nine after international win

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A team from the Melbourne School of Engineering and the Faculty of Science has won the Institute of Electrical and Electronics Engineers' (IEEE) SCALE 2011 international award with a cloud computing platform that will help map unexplored frontiers of the cosmos.



Rajkumar Buyya, Andrew Melatos, and Suraj Pandey. Absent, Letizia Sammut

The winning team, from the CLOUDS Lab at the Department of Computer Science and Software Engineering and the Astrophysics Group at the School of Physics, developed the Cloudbus Workflow Engine to analyse data for the Laser Interferometer Gravitational-Wave Observatory (LIGO), one of the world's largest physics projects.

Team members Suraj Pandey, Letizia Sammut, Andrew Melatos and Rajkumar Buyya gave a live demonstration of how their solution would work to a judging panel at the 11th IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid 2011) conference in California.

They were named one of two final winners based on the originality, innovation, applicability and scalability of their work and its potential to benefit the scientific community.

Professor Rajkumar Buyya said, "Our cloud technology helps LIGO scientists accelerate and manage data-analysis applications with greater flexibility and in a cost-efficient manner, while meeting service quality requirements".

Dr. Suraj Pandey said the system design allowed the Cloudbus Workflow Engine to allocate as many as 400 virtual machines to start and run data analysis as required at any point in time.

"As the tasks are completed, some machines remain idle, and these idle machines are shut down. This reduces the cost of computing resources significantly," he said.

The LIGO project will usher in a new era in astronomy by detecting elusive gravitational waves, one of nature's enduring mysteries. The University is a partner in a US-led proposal to build LIGO Australia, one of three networked LIGO detectors.

Associate Professor Andrew Melatos said the LIGO Project results would lead to a discovery of a major new component of the Universe, which would revolutionise cosmology and solve a range of pressing problems in fundamental physics, like dense nuclear matter.

“We are thrilled our Cloudbus Workflow Engine will be instrumental to the success of this exciting initiative,” he said.

Dr Pandey said he expected the project to produce many benefits to society by creating a range of new technologies in the fields as diverse as optics, lasers, digital signal processing, cloud computing, and data visualisation.

“These technologies will have important uses and have the potential to revolutionise many industry practices. The benefits will be more efficient and inexpensive processes that ultimately lead to better and cheaper products and services for consumers,” he said.

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