

Foreword to the Special Issue of International Journal of Supercomputing Frontiers and Innovations

The first, inaugural conference “Supercomputing Frontiers 2015” took place in Singapore on March 17–20, 2015. The objective was to celebrate our soon to be launched Singapore National Supercomputing Centre, which will, for the first time, deliver Petascale computational resources to Singaporean scientists, academics, students and industrial researchers.

Additionally, we wished to bring some of the most highly recognised Supercomputing authorities to our community of users — to expose our community to the past achievements and to the visionary ideas of those exceptional trendsetters. The conference was designed to explore global trends and innovations in high performance computing in convolution of the following important areas:

1. Supercomputing applications in domains of critical impact and especially those requiring computer resources approaching Exascale;
2. Big Data science merging with Supercomputing with associated issues of I/O, high bandwidth of networking, storage, workflows and real time processing;
3. Architectural complexity of Exascale systems with special focus on supercomputing interconnects, interconnect topologies and routing, and interplay of interconnect topologies with algorithmic communication patterns for both numerically intensive computations and Big Data; and
4. Any other topics that push the boundaries of Supercomputing to Exascale and beyond.

The conference has gathered more than 390 attendees. There were 50 speakers from around the globe including Australia, Brazil, Canada, China, France, Germany, Japan, Korea, Poland, Russia, Switzerland, Singapore and the United States. The conference featured outstanding keynote speakers including J. Dongarra, A. Gara, J. Gustafson, R. Harrison, S. Klasky, S. Matsuoka, T. Sterling, and R. Stevens.

All conference speakers were invited to submit their work to be considered for publication in the International Journal of Supercomputing Frontiers and Innovation (IJSFI). Fifteen papers were pre-selected by the Conference organisers, and submitted to the IJSFI editors for the final round of rigorous peer review by the independent journal referees. Eventually, out of all submitted papers, seven best papers are included in this special issue of the journal. We hope you enjoy it.

“Supercomputing Frontiers 2015” was a very succesful event, and subsequently, encouraged by a positive feedback and favourable recommendations, we decided to turn it into an annual event.

“Supercomputing Frontiers 2016” will be held on March 14–18, 2016, in Singapore again. We promise a very interesting program with many outstanding speakers. We welcome your participation.

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