March 2018 Newsletter

Highlights

Optimization Techniques	[Benefits of using Multiple Endpoints for Improving MPI Performance]: Applied to Lattice QCD code to allow more than one MPI thread per rank, saturates fabric with fewer ranks, provide application more layout choices, enable MPI in OpenMP regions, reducing fork-join and improving cache locality. [Optimizing a Particle-in-Cell code]: Optimization methods for two-electron repulsion integral calculation. Comparing two different methods for calculating lower incomplete gamma function. [Threading Building Blocks (TBB) Flow Graph]**:** Expressing and analyzing dependencies in your C++ application. Focusing on Flow Graphs, an extension to TBB interface, by addressing complex synchronization and communication patterns, while balancing load between CPUs, GPUs and FPGAs. [Parallel Performance Evaluation Using TAU]: Portable performance evaluation tool available on HPC platforms that supports profiling, tracing for C++, C, Fortran, Python*, and Java* using MPI, OpenMP, Apache Spark*, pthread, and OpenCL™ code.
Case Studies	[Embracing Highly Efficient and Productive Quantum Monte Carlo Simulations]: Systematic approach to transforming QMCPACK to better exploit the new hardware features of modern CPUs in portable and maintainable ways. [The Benefits of Intel® Memory Drive Technology for Scientific Applications]: The best practices for usage in a diverse set of HPC codes. Demonstrating strong and weak points of hybrid memory approach using DRAM and 3D XPoint™ Memory Media based on Intel Optane™ technology.

	Scaling Collectives on Large Clusters using Intel® architecture: The effects of OS and platform noise on the performance, providing ways to minimize the noise by isolating to specific cores. **NERSC offering variations of TENSORFLOW**: supporting compute performance levels, CPU architecture, MKL Convolution filter to avoid recomputation in the backward pass, element-wise optimization to avoid conversions by using Eigen ops and AddN implemented using MKL-ML.
 **Science Breakthrough**	**Latest Supercomputer Simulation of Sumatra-Andaman Earthquake**: LMU and TUM investigated the 2004 Sumatra-Andaman earthquake to help better understand the dynamics of megathrust earthquakes and tsunamis, ultimately winning the **Best Paper** award at SC17. **Artificial Intelligence Taking Action – Emergence of Decision Making & Generative Capabilities**: a rapidly growing presence and impact of systems that provide Predictive, Prescriptive (recommendations), and Generative (autonomous actions) capabilities. **Toward truly intelligent Artificial Intelligence: From 'Recognition' to 'Understanding'**: A program expected to truly comprehend at a level of intelligence, approaching humanism, the slight difference in grammar brings with it challenging difference in semantics & implications. The vast difference between 'Recognition' & 'Understanding', two distinct states within a continuum of capabilities.

Testing your code on Intel® Xeon Phi (SkyLake)

Testing your code using multi-node: click **HERE** to test your optimized application using TACC, Stampede II system. Upon requesting access, create a new account (do not click on PI-eligible) and follow the email instructions. Then email the **ipcc.program.office@intel.com** account and include your username in the communication.

Speaker & Program Opportunities

Share your learnings, best practices and techniques around the benefits you've received in leveraging Intel® architecture, by participating in speaking opportunities. Also, submit abstracts for funding opportunities by the deadline.

Submission Deadline	Event
March 9, 2018	ISC18 Research Posters

March 13, 2018	O'REILLY Artificial Intelligence Conference
March 16, 2018	ISC18 Project Posters
March 19, 2018	PEARC18 Papers
March 21, 2018	IEEE Visualization Conference 2018 Papers
April 1, 2018	SEG18 Call for Abstracts
April 8, 2018	ALCF Aurora 2021 Early Science Program: Data and Learning
April 15, 2018	ACM Gordon Bell
April16, 2018	SC18 Tutorials
April 30, 2018	IEEE Visualization Conference 2018 Tutorials
March 19, 2018	SC18 Papers
March 23, 2018	Advanced Scientific Computing Research (ASCR) Funding Opportunities
March 31, 2018	Amazon Research Program Grants
April 17, 2018	O'REILLY Artificial Intelligence Conference
June 1, 2018	James H. Wilkinson Prize for Numerical Software
June 5, 2018	SIGGRAPH ASIA 18 Papers
June 16, 2018	IEEE Visualization Conference 2018 Short Paper
June 16, 2018	IEEE Visualization Conference 2018 Posters
June 28, 2018	ISC18 IXPUG Workshop
June 30, 2018	Amazon Web Services Grants
July 31, 2018	SC18 Poster
July 31, 2018	SC18 BoF

Global Training Opportunities

Join us at any of these upcoming educational workshops and conferences and learn about new Parallel Programming concepts, Intel® Libraries, Software Development tools and Artificial Intelligence frameworks. They are open to the public and free to attend.

Date	Location	Event
March 18-22,2018	New Orleans, LA	American Chemical Society National Meeting
March 21, 2018	Shanghai, PRC	SJTU HPC Training
April 4-6, 2018	Helsinki, Finland	Advanced threading and optimization
April 10-11, 2018	Hyderabad, India	Intel India Devcon 2018
April 10-13, 2018	Beijing, PRC	O'REILLY Artificial Intelligence Conference
April 22-25, 2018	Thuwal, Saudi Arabia	IXPUG KAUST Spring Conference 2018
April 29-May 2, 2018	New York, New York	O'REILLY Artificial Intelligence Conference
May 10, 2018	Virtual	High Productivity Languages
May 23, 2018	San Francisco, California	Intel® AI DevCon
May 28-June 1, 2018	Ljubljana, Slovenia	European HPC Summit Week 2018
June 1, 2018	SIAM	James H. Wilkinson Prize for Numerical Software

August 19-23, 2018	Boston, MA	ACS Chemistry for life
September 4-7, 2018	San Francisco, California	O'REILLY Artificial Intelligence Conference
September 25-28, 2018	Hillsboro, OR	IXPUG Annual Fall Conference 2018
Oct. 8-11, 2018	London, UK	O'REILLY Artificial Intelligence Conference

More News...

Check out these latest news stories:

- Teaching Machines to do Image Classification in Health and Life Sciences
- Do Cryptocurrencies have a part to play in HPC
- Alibaba Cloud and Intel Make Cities Smarter with Technologies from Cloud to Edge