

HiPC 2019 CALL FOR PAPERS

26th IEEE International Conference on High Performance Computing, Data, and Analytics

December 17-20, 2019 - HiPC Conference in Hyderabad, India

<https://hipc.org/>

PROGRAM CHAIRS

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HPC Tracks:

Algorithms: Bora Uçar, CNRS and École normale supérieure de Lyon, France

Applications: Alba Cristina M.A. de Melo, University of Brasilia, Brazil

Architecture: Smruti Ranjan Sarangi, Indian Institute of Technology Delhi, India

System Software: Sriram Krishnamoorthy, Pacific Northwest National Laboratory, USA

Data Science Tracks:

Scalable Algorithms and Analytics: Srinivasan Parthasarathy, Ohio State University, USA

Scalable Systems and Software: Gagan Agrawal, Ohio State University, USA

HiPC 2019 Call For Papers

HiPC 2019 will be the 26th edition of the IEEE International Conference on High Performance Computing, Data, Analytics and Data Science. HiPC serves as a forum to present current work by researchers from around the world as well as highlight activities in Asia in the areas of high performance computing and data science. The meeting focuses on all aspects of high performance computing systems, and data science and analytics, and their scientific, engineering, and commercial applications.

Authors are invited to submit original unpublished research manuscripts that demonstrate current research in all areas of high performance computing, and data science and analytics, covering all traditional areas *and* emerging topics including from machine learning, big data analytics and blockchain. Each submission should be submitted to one of the tracks listed under the two broad themes of High Performance Computing and Data Science.

High Performance Computing tracks:

Algorithms: This track invites papers that describe original research on developing new parallel and distributed computing algorithms, and related advances. Examples of topics that are of interest include (but not limited to):

- New parallel and distributed algorithms and design techniques;

- Advances in enhancing algorithmic properties or providing guarantees (e.g., fault tolerance, resilience, concurrency, data locality, communication-avoiding);
- Classical and emerging computation models (e.g., parallel/distributed models, quantum computing, neuromorphic and other bioinspired models);
- Provably efficient parallel and distributed algorithms for advanced scientific computing and irregular applications (e.g., numerical linear algebra, graph algorithms, computational biology); and
- Algorithmic techniques for resource allocation and optimization (e.g., scheduling, load balancing, resource management);

Architectures: This track invites papers that describe original research on the design and evaluation of high performance computing architectures, and related advances. Examples of topics of interest include (but not limited to):

- Design and evaluation of high performance processing architectures (e.g., reconfigurable, system-on-chip, manycores, vector processors);
- Design and evaluation of networks for high performance computing platforms (e.g., interconnect topologies, network-on-chip);
- Design and evaluation of memory, cache and storage architectures (e.g., 3D, photonic, Processing-In-Memory, NVRAM, burst buffers, parallel I/O);
- Approaches to improve architectural properties (e.g., energy/power efficiency, reconfigurable, resilience/fault tolerance, security/privacy); and
- Emerging computational architectures (e.g., quantum computing, neuromorphic and other bioinspired architectures).

Applications: This track invites papers that describe original research on the design and implementation of scalable applications for execution on parallel and distributed platforms, and related advances. Examples of topics of interest include (but not limited to):

- Design and implementation of shared and distributed memory parallel applications (e.g., scientific computing and industry applications, emerging applications in IoT and life sciences - biology, medicine, chemistry, etc.);
- Design and simulation methodologies for scaling applications on peta- and exascale platforms (e.g., co-design approaches, hardware/software co-design, heterogeneous and hybrid programming);
- Hardware acceleration of parallel applications (e.g., CPU/GPUs, multi-GPU clusters, FPGA, vector processors, manycore); and
- Design of application benchmarks for parallel and distributed platforms.

Systems Software: This track invites papers that describe original research on the design, implementation and evaluation of systems software for high performance computing platforms, and related advances. Examples of topics of interest include (but not limited to):

- Scalable systems and software architectures for high performance computing (e.g., middleware, operating systems, I/O services);

- Techniques to enhance parallel performance (e.g., compiler/runtime optimization, learning from application traces, profiling);
- Techniques to enhance parallel application development and productivity (e.g., Domain-Specific Languages, programming environments, performance/correctness checking and debugging);
- Techniques to deal with uncertainties, hardware/software resilience, and fault tolerance;
- Software for cloud, data center, and exascale platforms (e.g., middleware tools, schedulers, resource allocation, data migration, load balancing); and
- Software and programming paradigms for heterogeneous platforms (e.g., libraries for CPU/GPU, multi-GPU clusters, and other accelerator platforms);

Data Science tracks:

Scalable Algorithms and Analytics: This track invites papers that describe original research on developing scalable algorithms for data analysis at scale, and related advances. Examples of topics of interest include (but not limited to):

- New scalable algorithms for fundamental data analysis tasks (supervised, unsupervised learning, and pattern discovery);
- Scalable algorithms that are designed to address the characteristics of different data sources and settings (e.g., graphs, social networks, sequences, data streams);
- Scalable algorithms and techniques to reduce complexity of large-scale data (e.g., streaming, sublinear data structures, summarization, compressive analytics);
- Scalable algorithms that are designed to address requirements in different data-driven application domains (e.g., life sciences, business, agriculture); and
- Scalable algorithms that ensure the transparency and fairness of the analysis.

Scalable Systems and Software: This track invites papers that describe original research on developing scalable systems and software for handling data at scale, and related advances. Examples of topics of interest include (but not limited to):

- Design of scalable system software to support various applications (e.g., recommendation systems, web search, crowdsourcing applications, streaming applications)
- Design of scalable system software for various architectures (e.g., OpenPower, GPUs, FPGAs).
- Architectures and systems software to support various operations in large data frameworks (e.g., storage, retrieval, automated workflows, data organization, visualization, visual analytics, human-in-the-loop);
- Design and implementation of systems software for distributed data frameworks (e.g., distributed file system, virtualization, cloud services, resource optimization, scheduling); and
- Standards and protocols for enhancing various aspects of data analytics (e.g., open data standards, privacy preserving and secure schemes).

One or more best paper awards will be given for outstanding contributed papers.

IMPORTANT DATES

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| Abstract Submission: | Friday, June 7, 2019 Friday, June 21, 2019 *firm* |
| Paper Submission: | Friday, June 14, 2019 Friday, June 28, 2019 *firm* |
| Initial Submission Decision: | Monday, August 25, 2019 |
| Revisions Due: | Friday, September 20, 2019 |
| Author Notification: | Monday, September 30, 2019 |
| Camera Ready: | Monday, October 14, 2019 |

Manuscript Guidelines

Submitted manuscripts should be structured as technical papers and may not exceed ten (10) single-spaced double-column pages using 10-point size font on 8.5x11 inch pages (IEEE conference style), including figures, tables, and references. See [IEEE style templates at this page](#) for details.

Electronic submissions must be in the form of a readable PDF file. Manuscripts must be received by the published paper submission deadline. All manuscripts will be reviewed by the Program Committee and evaluated on originality, relevance of the problem to the conference theme, technical strength, rigor in analysis, quality of results, and organization and clarity of presentation of the paper. Authors are highly encouraged to list the key contributions of their paper. This should be in a separate paragraph in the introduction to the paper. Please note that the review process is “single-blind” (i.e., authors can list their names on the paper). This year we are introducing a two-phase review process, by which the first round of reviews along with an initial decision will be made available to the authors by August 25th. As part of this initial decision, papers will be either accepted or rejected or recommended for a second round. Authors of papers recommended for a second round will be given a little over 3 weeks to revise and resubmit the paper, in order to address the comments and suggestions made by the program committee. The revisions will undergo a second round of review before the final notification on those papers by the end of September.

Submitted papers must represent original unpublished research that is not currently under review for any other conference or journal. Papers not following these guidelines will be rejected without review and further action may be taken, including (but not limited to) notifications sent to the heads of the institutions of the authors and sponsors of the conference. Submissions received after the due date, exceeding length limit, or not appropriately structured may also not be considered. Authors may contact the Program Chairs of the respective tracks at their contact email addresses below for further information or clarification. Notification of review decisions will be emailed by September 30, 2019. Camera-ready papers are due by October 14, 2019. A published proceedings will be available at the conference.

At least one author of each paper must be registered for the conference in order for the paper to be published in the proceedings. Presentation of an accepted paper at the conference is a requirement of publication. Any paper that is not presented at the conference will not be included in IEEE Xplore.

EasyChair Submission link: <https://easychair.org/conferences/?conf=hipc2019>

Journal Special Issue: Authors of selected high quality papers in HiPC 2019 will be invited to submit extended version of their papers for possible publication in a special issue of Journal of Parallel and Distributed Computing.

PLEASE NOTE:

- Authors must register their paper and **submit an abstract**, typically a paragraph or two, by **June 7, 2019 June 21, 2019**
- Authors must then **submit full versions of registered papers** by **June 14, 2019 June 28, 2019**
- All deadlines are end of day ANYWHERE ON EARTH.
- Links to EasyChair submissions: <https://easychair.org/conferences/?conf=hipc2019>

Contact Information

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HiPC 2019 is co-sponsored by

- IEEE Computer Society Technical Committee on Parallel Processing (TCPP)
- HiPC Education Trust, India

In cooperation with

- ACM Special Interest Group on Algorithms and Computation Theory (SIGACT)
- ACM Special Interest Group on Computer Architecture (SIGARCH)
- IFIP Working Group on Concurrent Systems
- Manufacturers' Association for Information Technology (MAIT)
- National Association of Software and Service Companies (NASSCOM)