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ORGANISED BY: SHAHEED SUKHDEV COLLEGE OF BUSINESS STUDIES, UNIVERSITY OF DELHI, NEW DELHI IN ASSOCIATION WITH UNIVERSITY OF VALLADOLID SPAIN

On

14-15 FEBRUARY 2025.

************* CALL FOR PAPERS ***************

SPECIAL SESSION ON

Next-Generation Networks for High-Performance Computing: Advanced Communication Technologies

SESSION ORGANIZERS:

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SESSION DESCRIPTION:

The realm of High-Performance Computing (HPC) is an ever-evolving landscape, where complex simulations, vast datasets, and cutting-edge artificial intelligence demand a robust communication infrastructure to thrive. Next-Generation Networks (NGNs) step into this arena, offering advanced communication technologies that revolutionize how HPC systems operate. Traditional networking technologies often struggle to keep pace with the escalating demands of HPC, resulting in data transfer bottlenecks, latency issues, and scalability limitations that can impede the performance of these powerful computing systems. NGNs address these challenges by employing innovative approaches that unlock a new level of communication efficiency. They leverage high-bandwidth technologies such as InfiniBand and Ethernet variants to ensure smooth and rapid transfer of information between compute nodes, storage systems, and other HPC components. Moreover, NGNs minimize latency through specialized protocols and hardware optimizations, enabling near-instantaneous communication and significantly improving performance. These networks are designed to scale seamlessly, accommodating the addition or removal of nodes without compromising performance, thus ensuring flexibility and adaptability as HPC needs evolve. Furthermore, NGNs prioritize data integrity and minimize the risk of errors through techniques like error correction and redundancy, ensuring accurate and reliable communication within the HPC environment. Key technologies powering NGNs for HPC include InfiniBand, RDMA (Remote Direct Memory Access), Software-Defined Networking (SDN), and Network Function Virtualization (NFV). The implementation of NGNs with advanced communication technologies brings forth a range of benefits for HPC, including faster time to results, improved scalability, enhanced collaboration, and cost efficiency. Looking toward the future, the ongoing development of NGNs sees researchers exploring new communication technologies such as optical networking and neuromorphic computing fabrics, promising to unlock even more powerful and efficient HPC systems capable of tackling the grand challenges of tomorrow.

RECOMMENDED TOPICS:

Topics to be discussed in this special session include (but are not limited to) the following:

- **Network Security in 6G**
- **Network Slicing for High-Performance Systems**
- **Network Artificial Intelligence (AI) and Machine Learning (ML)**
- **Edge Computing and Fog Computing**
- **The Internet of Things (IoT) and 6G**
- **Smart Cities and 6G Applications**
- **Autonomous Vehicles and Connected Transportation**
- **Immersive Technologies and 6G**
- **Remote Surgery and Telemedicine Applications**
- **Industrial Automation and 6G**
- **Next-Generation Mobile Broadband Services**
- **Energy Efficiency in 6G Networks**

- **The Socioeconomic Impact of 6G**
- **Ethical Considerations in 6G Deployment**
- **The Future of Communication Beyond 6G**

SUBMISSION PROCEDURE:

Researchers and practitioners are invited to submit papers for this special theme session on **Next-Generation Networks Advanced Communication Technologies for High-Performance Systems** *on or before* [**30ᵗʰ November 2024**]. All submissions must be original and may not be under review by another publication. INTERESTED AUTHORS SHOULD CONSULT THE CONFERENCE'S GUIDELINES FOR MANUSCRIPT SUBMISSIONS at https://icicc-conf.com/paper_submission. All submitted papers will be reviewed on a double-blind, peer review basis.

NOTE: While submitting paper in this special session, please specify [**Session Name**] at the top (above paper title) of the first page of your paper.

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