

Message from Workshop Chairs

5th Workshop on Education for High Performance Computing (EduHiPC -2023)

held in conjunction with

30th IEEE INTERNATIONAL CONFERENCE ON

HIGH PERFORMANCE COMPUTING, DATA, & ANALYTICS (HiPC 2023)

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High Performance Computing (HPC) and, in general, Parallel and Distributed Computing (PDC) has become pervasive, from supercomputers and server farms containing multicore CPUs and GPUs, to individual PCs, laptops, and mobile devices. Therefore, it is important for every computing professional (and especially every programmer) to understand how parallelism and distributed computing affect problem solving. It is essential for educators to impart a range of PDC and HPC knowledge and skills at multiple levels within the educational fabric woven by Computer Science (CS), Computer Engineering (CE), and related computational curricula including data science. Companies and laboratories need people with these skills, and, as a result, they are finding that they must now engage in extensive on-the-job training. All the while, rapid changes in hardware platforms, languages, and programming environments increasingly challenge educators to decide what to teach and how to teach it in order to prepare students for careers that are increasingly involving PDC and HPC. EduHiPC aims to provide a forum that brings together academia, industry, government, and non-profit organizations - especially from India, its vicinity, and Asia - for exploring and exchanging experiences and ideas about the inclusion of high-performance, parallel, and distributed computing into undergraduate and graduate curriculum of Computer Science, Computer Engineering, Computational Science, Computational Engineering, and computational courses for STEM and business and other non-STEM disciplines.

The 5th EduHiPC workshop invited unpublished manuscripts from academia, industry, and research institutes on topics pertaining to the teaching of PDC/HPC topics. Methods, pedagogical approaches, tools, and techniques, employers' experiences with and expectation of the level of PDC proficiency among new graduates, issues and experiences to address gender gap, teaching of HPC and Big Data Analytics across STEM disciplines that have the potential for adoption across the broader community were of particular interest. The emphasis of the workshop was on undergraduate education.

This year's EduHiPC included keynotes by Laxmikant Kale on "Interdisciplinary Research and its Utility in Teaching Parallel Programming" and by Dhabaleswar K. Panda on "How to Educate HPC-Enabled AI and Data Science to Students and Professionals in a Holistic Manner?" The program also presented the following three invited talks: 1) "ToUCH Virtual Faculty Development Workshops: Going Beyond a Webinar" by David Bunde and Apan Qasem 2) "Traditional and AI Tools for Teaching Concurrency" by Prasun Dewan and 3) "Revelations and Roadmaps: A Chronicle of Success, Insights Gained, and Future Horizons in the landscape of Indian Undergraduate PDC Education" by Neelima Bayyapu.

We received 13 regular paper submissions of which 4 were accepted after careful review. Each submission reviewed received at least four reviews from the international program committee. The accepted papers covered topics ranging from programming frameworks and tools to PDC instruction techniques and experiences through a broad range of courses. In addition to the talks on these papers, 3 invited papers - after review by workshop chairs - were presented by well-known experts in PDC education. These 7 papers are archived in the IEEE Xplore workshop proceedings.

The EduHiPC-23 website at <https://tcpp.cs.gsu.edu/curriculum/?q=eduHiPC23> hosts the complete online proceedings, including the presentation slides of the contributed papers and other relevant materials.

This year also saw an expansion of the EduHiPC instructor training program both in the number of trainees as well as the duration of training. Sponsored by India's National Supercomputing Mission (NSM) and CDAC, 40 instructors - twice as many compared to previous edition - were selected from 60+ applications based on the diversity of institutions with preference for lower tier institutions and demographics encouraging women and underrepresented groups, while prioritizing those instructors teaching introductory undergraduate computing courses. These instructors were trained in PDC and HPC topics for 9 online sessions over a three-week period and a final in-person day concluding right before EduHiPC workshop. The training was jointly conducted by scientists from C-DAC and faculty experts affiliated with CDER center and IIT Goa. The trainees were financially supported partly for their travel and lodging, in addition to their full HiPC conference registration, enabling them to also attend EduHiPC workshop and the entire conference.

This EduHiPC effort is in coordination with the Center for Parallel and Distributed Computing Curriculum Development and Educational Resources (CDER). We thank the CDER center's affiliates for their help with overall steering and reviews.

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Workshop Organization

Organizing Committee

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