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3rd Workshop on Education for High Performance Computing (EduHiPC - 2021)

held in conjunction with
28th IEEE INTERNATIONAL CONFERENCE ON
HIGH PERFORMANCE COMPUTING, DATA, & ANALYTICS (HiPC 2021)

December 18, 2021

High Performance Computing (HPC) and, in general, Parallel and Distributed Computing (PDC) is ubiquitous. Every computing device, from a smartphone to a supercomputer, relies on parallel processing. Compute clusters of multicore and manycore processors (CPUs and GPUs) are routinely used in many subdomains of computer science, such as data science, parallel machine learning and high performance computing. 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 skills and knowledge at multiple levels within the curriculum of Computer Science (CS), Computer Engineering (CE), and related disciplines such as computational data science. Software industry and research laboratories require people with these skills, more so now. Therefore, they now engage in extensive on-the-job training. Additionally, 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 likely to involve 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The 3rd EduHiPC workshop invited unpublished manuscripts from academia, industry, and research institutes on topics pertaining to the teaching of PDC/HPC topics.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 are of particular interest.

This year, the keynote on Early Parallel and Distributed Computing Education was delivered by Professor Charles Weems, Co-director of the Architecture and Language Implementation laboratory at the University of Massachusetts, USA.

We received 6 regular paper submissions, out of which 3 were selected after careful reviews (each submission received at least three reviews). The selected papers covered topics such as using tools to analyze patterns in student awareness, and usage of Mizzou Cloud and DevOps platform and are presented in this HiPCW 2021 volume of the proceedings.

We had three invited papers as well. These were as follows.

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- Teaching Parallel and Distributed Computing Concepts Using OpenMPI and Java (Joel Adams, Calvin University, USA)
- HPC @ SCALE : A Hands-on Approach for Training Next-Gen HPC Software Architects (Tanzima Z. Islam and Chase Phelps, Texas State University, USA)
- We Need Community Effort to Achieve PDC Adoption! (Erik Saule and Kalpathi Subramanian, UNC Charlotte, USA and Jamie Payton, Temple University, USA)

The effect of pandemic on academic community and adoption of on-line teaching methodologies was evident in this year's submissions. Visit the EduHiPC-21 webpage on the conference website for the complete online proceedings, including the presentation slides of the contributed papers.

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