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FOREWORD

In this issue, we present papers from the SC22 Ninth Workshop on Best Practices for HPC Education and Training, and two additional papers.

Horn and colleagues put forth an innovative pedagogical strategy that enhances the teaching of network security within the realm of computer engineering. They have developed a unique curricular approach that focuses on protocol behavior and trust point observations, creating a novel path towards understanding and learning secure design of networks.

In their paper, Lu and Lampert emphasize the significant role Python can play in environmental modeling. They showcase how Python can be used to simulate the movement of substances within porous media, with examples of how this can be used for student engagement.

Barker and colleagues address the challenge of expanding the HPC workforce, emphasizing the role of hybrid and virtual hackathons in bridging the gap between traditional programming and necessary hands-on skills. They provide an overview of current programs, insights from past hackathons, and offer implementation recommendations.

Gyires-Tóth et. al. discuss the importance of accelerated computing and deep learning, acknowledging the unique expertise needed in these fields. They explore the teaching methodology of the NVIDIA Deep Learning Institute, present post-workshop survey results, and provide a case study on teaching heterogeneous parallel computing.

Lee, a student researcher, introduces a novel approach to genetic sequencing and bioinformatics using quantum annealers. The paper presents a modified MSA algorithm that leverages the properties of quantum mechanics to overcome the computational challenges of aligning extensive sets of genetic sequences. While traditional algorithms rely on brute force or heuristic methods, this new approach uses progressive alignment techniques to optimize quantum annealing algorithms.

Mensa et al. focus on training users in hybrid technologies integrated with high-performance computing (HPC). They propose a three-stage education plan, which involves foundational HPC training, digital innovation awareness, and specialized training tailored to business needs. The approach aims to enhance productivity and encourage the adoption of innovative practices.

Ngo and Bui address the difficulties inherent in big data education and propose a comprehensive solution. Their paper suggests a dual approach that leverages both personal computers and public cloud resources to provide meaningful, hands-on learning experiences, helping students gain practical expertise in big data analysis.

Parete-Koon and colleagues offer an overview of the U.S. Department of Energy's Exascale Computing Project's initiative to diversify the HPC workforce. Their work highlights efforts to create a sustainable and inclusive culture within the computing sciences, with the goal of attracting and retaining a diverse group of professionals.

Lastly, Biggerstaff et al. provide a compelling demonstration of how computational tools can be applied to tackle a global health crisis. Their research focuses on identifying potential inhibitors for the SARS-CoV-2 virus, showcasing the critical role of computational analysis in advancing antiviral drug discovery.

As I embark on my journey as the new editor of JOCSE, I'd like to express my deep appreciation for the formidable legacy left by our founding editor, Steve Gordon. His relentless commitment to cultivating and elevating this journal has set a high bar for those who follow. I also owe a significant debt of gratitude to Aaron Weeden, whose technical acumen has shaped the face of JOCSE in the past years. His invaluable work on consolidating past issues and enhancing our back-end infrastructure over the past year has left an indelible mark. Lastly, but by no means least, my heartfelt thanks to Holly Hirst for adeptly stepping into Aaron's role in assembling and circulating this issue. I look forward to seeing the contributions we will make together to JOCSE in the years to come.