

WAY KUO

DISTINGUISHED LECTURE SERIES

An Overview of High Performance Computing and Future Requirements

Date: 5 December 2023 (Tuesday)

Time: 4:30pm

Venue: Wong Cheung Lo Hui Yuet Hall
5/F, Lau Ming Wai Academic Building
City University of Hong Kong



Registration:

<https://go.cityu.hk/se7ph8>



Professor Jack Dongarra

*The University of Tennessee
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2021 Turing Award

Foreign member, Royal Society, UK

Member, US National Academy of Sciences

Member, US National Academy of Engineering


Abstract

In this talk, we examine how high performance computing has changed over the last ten years and look toward the future in terms of trends. These changes have had and will continue to impact our numerical scientific software significantly. A new generation of software libraries and algorithms are needed for the effective and reliable use of (wide area) dynamic, distributed, and parallel environments. Some of the software and algorithm challenges have already been encountered, such as the management of communication and memory hierarchies through a combination of compile-time and run-time techniques, but the increased scale of computation, depth of memory hierarchies, range of latencies, and increased run-time environment variability will make these problems much harder.

Biography

Jack Dongarra specializes in numerical algorithms in linear algebra, parallel computing, the use of advanced computer architectures, programming methodology, and tools for parallel computers. He holds appointments at the University of Manchester, Oak Ridge National Laboratory, and the University of Tennessee, where he founded the Innovative Computing Laboratory. In 2019 he received the ACM/SIAM Computational Science and Engineering Prize. In 2020 he received the IEEE-CS Computer Pioneer Award. He is a Fellow of the AAAS, ACM, IEEE, and SIAM; a foreign member of the British Royal Society and a member of the U.S. National Academy of Sciences and the National Academy of Engineering. Most recently, he received the 2021 ACM A.M. Turing Award for his pioneering contributions to numerical algorithms and software that have driven decades of extraordinary progress in computing performance and applications.

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