MasterWorks
Lecture Series

CASC

Wednesday, June 4, 2025

9:00AM PST

White Room B451 R1025 (Hybrid)

Dan Reed

University of Utah

HPC: Learn from the Past, Build the Future

Abstract

The philosopher, George Santayana, famously said, “Those who cannot remember the past are condemned to repeat it.” It is a wise observation, one whose truth has been repeatedly demonstrated. It is no less true in computing. If there is any enduring lesson in computing, it is the constancy of change, some predictable and some unexpected, that repeatedly disrupts the status quo. The era of bespoke supercomputers, whose development shaped the entire computing industry, gave way to the commodity PC ecosystem, where the “attack of the killer micros” birthed large-scale HPC clusters, which were later augmented with GPU accelerators. Although we rode the PC wave for over twenty years, radical change is again afoot.

Today’s computing innovation is increasingly dictated by the demands of the hyperscaler cloud and AI markets, tempered by the technical and financial challenges of a post-Moore semiconductor environment, all within a shifting geopolitical landscape. The message is clear – we must again adapt, while recognizing that our direct market influence has waned. Make no mistake, there are promising ways forward, though they likely require different technical approaches and different mindsets. This talk will draw some perspectives from the history of computing and offer some thoughts on possible futures shaped by technology – semiconductors, AI, biology, mathematics, and software – and shaped by geopolitical policy and economics.

Biography

Daniel A. Reed is the Presidential Professor in Computational Science (emeritus) at the University of Utah, where he previously served as Senior Vice President for Academic Affairs (aka Provost). He has served in a variety of senior academic and industry roles, including as Vice President for Research and Economic Development at the University of Iowa. As Microsoft’s Corporate Vice President for Technology Policy and Extreme Computing, he helped shape Microsoft's long-term vision for technology innovations in cloud computing and the company's policy engagement with governments and institutions worldwide. Before joining Microsoft, he was the founding director of the Renaissance Computing Institute (RENCI) at the University of North Carolina at Chapel Hill and Vice-Chancellor for Information Technology. As the University of Illinois, he was the Director of the National Center for Supercomputing Applications (NCSA) and Head of the Department of Computer Science.

Dr. Reed just completed a term of service as chair of the U.S. National Science Board (NSB), which provides oversight for the U.S. National Science Foundation. For a decade, he chaired the Department of Energy’s Advanced Scientific Computing Advisory Committee (ASCAC). He current serves as a member of the Scientific Advisory Committee for Argonne National Laboratory and as a member of the Internet2 Board of Trustees.Dr. Reed has served as a member of the U.S. President’s Council of Advisors on Science and Technology (PCAST) and the U.S. President’s Information Technology Advisory Committee (PITAC). He is the past chair of the Board of Directors of the Computing Research Association (CRA), which represents PhD-granting computer science departments in North America.Dr. Reed is a Fellow of the ACM, the IEEE, and the AAAS. He received his B.S. from Missouri University of Science and Technology and his M.S. and Ph.D. from Purdue University, all in computer science. When not working, he is an amateur astronomer and ham radio operator, callsign KK7EUJ. He also writes extensively on his blog about science policy and childhood experiences in the Arkansas Ozarks: www.hpcdan.org

Technical Contact: Ming Jiang | 925.424.4361

Administrative Contact: Esmeralda Gonzalez | 925.424.3745