

COMPUTING COLLOQUIUM

THURSDAY, DECEMBER 7

10:30 am

CITY CENTER PLAZA 259

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Prasanna Balaprakash is the Director of AI Programs and Distinguished R&D Scientist at Oak Ridge National Laboratory, where he directs laboratory research, development and application of artificial intelligence and machine learning (AI/ML) to solve problems of national importance. His research interests span artificial intelligence, machine learning, optimization, and high-performance computing. He is a recipient of the U.S. Department of Energy's 2018 Early Career Award. Prior to joining Oak Ridge, He was a R&D lead and computer scientist at Argonne National Laboratory. He earned his Ph.D. from CoDE-IRIDIA at the Université Libre de Bruxelles in Brussels, Belgium, where he was a recipient of the European Commission's Marie Curie and Belgian F.R.S-FNRS Aspirant fellowships.

Overview of ORNL AI's Initiative: Advancing Secure, Trustworthy, and Energy-Efficient AI at Scale for Science, Energy, and Technology

We will present an overview of the Artificial Intelligence Initiative at Oak Ridge National Laboratory (ORNL), which seeks to advance science, energy, and national security. The initiative is underpinned by two cornerstone elements: application-centric endeavors and cross-disciplinary foundational frameworks. The application-centric component is designed to leverage AI in three domains: Scientific Discovery, Experimental Facilities, and National Security. Conversely, the cross-disciplinary foundational framework seeks to ensure that AI systems are secure, trustworthy, and energy-efficient. The security dimension covers aspects such as alignment with scientific goals, cybersecurity measures, and robustness against failures. Trustworthiness is ensured through rigorous validation and verification processes, uncertainty quantification, and causal reasoning methodologies. Energy efficiency is achieved through scalable solutions, edge computing, and a co-design approach that optimizes both software and hardware resources. By delving into both the application-centric and foundational dimensions, we will elucidate how the synergy of these elements can drive transformative impacts across AI-driven applications in the scientific community.

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 In-person, CCP 259

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