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Frontiers in Advanced Computing, Mathematics, and Data Lecture Series

The Role of the Cloud and Big Data Analytics in Scientific Research and the Search for Scalable Tools



Dennis Gannon
Director of Cloud Research Strategy
Microsoft Research (*retired*)

Monday, March 23, 2015 ♦ 10 AM
CSF Mural Room (1508A)

Dr. Gannon is a computer scientist currently investigating the application of cloud computing in science. From 2008 until he retired in 2014, he was the Director of Cloud Research Strategy with Microsoft Research, where he provided access to Azure cloud computing resources to more than 300 projects in the research and education communities. Gannon is professor emeritus of Computer Science (CS) at Indiana University and the former CS department head and science director for the Indiana Pervasive Technology Labs. His research interests include cloud computing, large-scale cyber infrastructure, programming systems and tools, distributed computing, parallel programming, data analytics and machine learning, computational science, problem-solving environments, and performance analysis of scalable computer systems. His publications exceed 200 refereed articles and three co-edited books. He earned his Ph.D. in computer science from the University of Illinois at Urbana-Champaign and a Ph.D. in mathematics from the University of California, Davis.

The sciences currently are undergoing a fundamental transition due to the avalanche of data generated by instruments, simulations, online archives, and social media. The impact of the data revolution now is seen in every discipline. Cloud computing and many big data processing techniques originally invented to manage the data challenges faced by Internet companies have had a huge impact on machine learning. These advances have enabled automatic natural language translation, powerful computer image

understanding, and deep semantic analysis of text. These technologies now are critical tools for many research communities. Life science, environmental science, and urban informatics have been early adopters of cloud and machine learning technologies. In his talk, Dr. Gannon will present examples of how science is evolving because of these advances and will discuss some of the challenges that must be addressed to make tools truly available to the broader research community.