Title: Current R&D and New Directions for Data Science and Machine Learning at ORNL

Abstract:
The challenges of extracting useful knowledge from "big data" sources continue to grow as the number of data sources increases exponentially. At ORNL, we employ a variety of data science tools such as machine learning to tackle such big data challenges across multiple scientific domains and applications. This presentation will highlight some of the machine learning techniques and their application areas including geographic information science, health, and cyber security. The presentation will also attempt to look to the future and identify some scientific and application areas where machine learning has not yet been effectively leveraged, but has the potential to advance our ability to solve new and challenging problems of national and global significance.

BIO:
Dr. Shaun S. Gleason received his B.S., M.S. and Ph.D. degrees in Electrical Engineering from The University of Tennessee, Knoxville, with a thesis research focus on x-ray computed tomography and 2D and 3D model-based medical image segmentation. He is currently the Director of the Computational Sciences and Engineering Division at the Oak Ridge National Laboratory (ORNL). Previously he was the Director of the Office of Institutional Planning at ORNL and was responsible for ORNL’s strategic planning process and discretionary R&D investment. Prior to that, he was the Group Leader of the Imaging, Signals, and Machine Learning (ISML) Group at ORNL. He has 24 years of experience in applied image processing and machine learning for industrial, security, and medical imaging applications, including real-time implementations of compute-intensive algorithms (e.g. tomographic reconstruction) on parallel computing systems. After ImTek, Inc. was acquired by CTI and then merged with Siemens Medical, he became the Director of the Preclinical Research Division of Siemens Medical until 2008, when he returned to ORNL to lead the ISML group. He has authored and coauthored over 100 publications, three book chapters, and has been issued 8 patents in the field of electrical engineering and computer vision. He is a Senior Member of the IEEE, was chair of the East TN Chapter of the IEEE Engineering in Medicine and Biology Society (2008-2013), and has been an associate editor of the SPIE Journal of Electronic Imaging since 2008.