# Data Science Seminar Series

## Big Data in Climate and Earth Sciences: Challenges and Opportunities for Data Science



### Vipin Kumar, Ph.D.

**Regents Professor**
**William Norris Chair in Large Scale Computing**
**Department of Computer Science and Engineering**
**University of Minnesota**

**Date**:          Wednesday, March 3rd, 2021
**Time**:          4:00 PM – 5:00 PM EDT
**Location**:      Zoom Virtual Room
**Web Link**:      https://njit-institute-for-data-science.eventbrite.com

The climate and earth sciences have recently undergone a rapid transformation from a data-poor to a data-rich environment. In particular, massive amount of data about Earth and its environment is now continuously being generated by a large number of Earth observing satellites as well as physics-based earth system models running on large-scale computational platforms. These massive and information-rich datasets offer huge potential for understanding how the Earth's climate and ecosystem have been changing and how they are being impacted by human's actions. This talk will discuss various challenges involved in analyzing these massive data sets as well as opportunities they present for both advancing machine learning as well as the science of climate change in the context of monitoring the state of the tropical forests and surface water on a global scale.

Vipin Kumar is a Regents Professor at the University of Minnesota, where he holds the William Norris Endowed Chair in the Department of Computer Science and Engineering. He also served as the Head of the Computer Science and Engineering Department from 2005 to 2015 and the Director of Army High Performance Computing Research Center (AHPCRC) from 1998 to 2005. Kumar's research spans data mining, high-performance computing, and their applications in Climate/Ecosystems and health care. His research has resulted in the development of the concept of isoefficiency metric for evaluating the scalability of parallel algorithms, as well as highly efficient parallel algorithms and software for sparse matrix factorization (PSPASES) and graph partitioning (METIS, ParMetis, hMetis). Kumar's current major research focus is on bringing the power of big data and machine learning to understand the impact of human induced changes on the Earth and its environment.