

Data Science Seminar Series

AI for Science



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Date: Wednesday, November 4th, 2020

Time: 4:00 PM – 5:00 PM EST

Location: Zoom Virtual Room

Web Link: <https://njit-institute-for-data-science.eventbrite.com>

In this talk, I will describe an emerging DOE initiative to advance the concept of Artificial Intelligence (AI) aimed at addressing challenge problems in science. We call this initiative “AI for Science”. The basic concept is threefold: (1) to identify those scientific problems where existing AI and machine learning methods can have an immediate impact (and organize teams and efforts to realize that impact); (2) identify areas of where new AI methods are needed to meet the unique needs of science research (frame the problems, develop test cases, and outline work needed to make progress); and (3) to develop the means to automate scientific experiments, observations, and data generation to accelerate the overall scientific enterprise. Science offers plenty of hard problems to motivate and drive AI research, from complex multimodal data analysis, to integration of symbolic and data intensive methods, to coupling large-scale simulation and machine learning to drive improved training to control and accelerate simulations. A major sub-theme is the idea of working toward the automation of scientific discovery through integration of machine learning (active learning and reinforcement learning) with simulation and automated high-throughput experimental laboratories. I will provide some examples of projects underway and lay out a set of long-term driver problems.

Rick Stevens is the Associate Laboratory Director of the Computing, Environment and Life Sciences Directorate at Argonne National Laboratory, and a Professor of Computer Science at the University of Chicago, with significant responsibility in delivering on the U.S. national initiative for Exascale computing and developing the DOE initiative in Artificial Intelligence (AI) for Science. His research spans the computational and computer sciences from high-performance computing, to the building of innovative tools and techniques for biological science and infectious disease research as well approaches to advance deep learning to accelerate cancer research.