MasterWorks
Lecture Series

CASC

Thursday, August 1, 2024
10:00AM PST
LVOC B6575 R100 (Hybrid)

Ewa Deelman
University of Southern California

How Is Artificial Intelligence Changing the Scientific Lifecycle?

Abstract

In addition to revolutionizing our personal lives, artificial intelligence (AI) has entered the science arena where it is used to classify celestial galaxies, predict the weather, detect cancer cells, and design new materials among many other applications. Although AI has shown incredible results, it raises technological issues and challenges traditional scientific methods. This talk will explore how the scientific lifecycle that moves from research question generation to result dissemination is changing due to the growing capabilities of AI.

Broadly, this talk will identify challenges that exist in adopting novel AI-based approaches for the scientific lifecycle at the technological and social levels. It will detail how AI is being integrated into the scientific lifecycle stages, focusing in depth on the computation automation stage. This stage often relies on workflow management systems, such as Pegasus, to automate the execution of application workflows on modern cyberinfrastructure. Recent advances in AI provide opportunities to improve workflow performance and resilience. In this context, the talk will explore the following questions: How can computation automation be enhanced with AI technologies? How is the broader scientific lifecycle changing and what are the impacts of AI on the way we will do science in the future?

Biography

Ewa Deelman received her Ph.D. in Computer Science from the Rensselaer Polytechnic Institute. Following a postdoc at the UCLA she joined the University of Southern California's Information Sciences Institute (ISI) in 2000, where she serves as a Research Director and leads the Science Automation Technologies Center. She is also a Research Professor in the USC Computer Science department and a Fellow of AAAS, IEEE, and USC/ISI. Her team explores the interplay between automation and the management of scientific workflows, including performance modeling, scheduling, resource provisioning, provenance tracking, and data management. Dr. Deelman pioneered workflow planning for computations executing in distributed environments, leading to the design and development of the Pegasus Workflow Management software used today in numerous science applications. In 2015, Dr. Deelman received the HPDC Achievement Award for her contributions to the area of scientific workflows and in 2022 she received the Euro-Par Achievement Award for her outstanding contributions to parallel computing.

Technical Contact: Ming Jiang | 925.424.4361
Administrative Contact: Haley Shuey | 925.961.7686