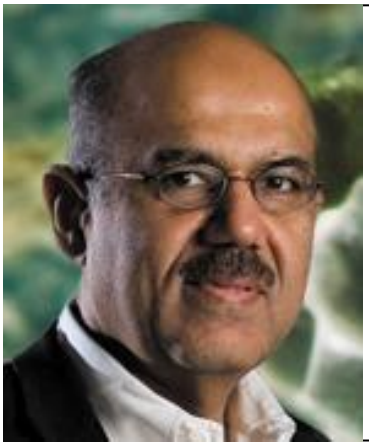
NJIT | INSTITUTE FOR DATA SCIENCE

Data Science Seminar Series

Learning to Correct Form and Function with Reinforcement



Chandrajit Bajaj, Ph.D.
Professor
Department of Computer Science
Oden Institute of Engineering and Sciences
University of Texas at Austin

Date: Wednesday, December 9th, 2020
Time: 4:00 PM – 5:00 PM EST
Location: Zoom Virtual Room
Web Link: https://njit-institute-for-data-science.eventbrite.com

All biological functions of life are determined by molecular forms. These dynamical events are sensed, directed and modulated by small and large molecules, often in clusters, reconfiguring to assume optimized form for targeted function. In this talk I shall explain how we mathematically interpret such lessons from nature, and adaptively train deep generative networks, to stably learn to correct form for optimized function, in a number of dynamical scenarios. We exploit the tight connections between discrete and continuous controllable dynamical systems and reinforcement learning. These characterizations are crucial for deriving feasibility and guaranteed convergence (stability), while accelerating the reinforcement learning process.

Chandrajit L. Bajaj is the Director of the Computational Visualization Center at the Oden Institute for Computational Engineering & Sciences at UT Austin, professor of computer sciences and holds the Computational Applied Mathematics Chair in Visualization. He is also an affiliate faculty member of the departments of mathematics, electrical and computer engineering, biomedical engineering, the Center for Perceptual Systems, the Institute for Cellular and Molecular Biology, and the Center for Learning and Memory. His research interests span the algorithmic and computational mathematics underpinnings of image processing, geometric modeling, computer graphics, visualization, structural biology and bioinformatics. For his research and academic contributions, he was elected a fellow of the Association for Computing Machinery, and the American Association for the Advancement of Sciences.