VCU Discrete Mathematics Seminar
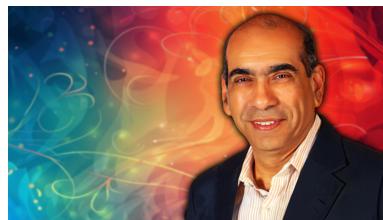
On the symbiosis between Machine Learning and Optimization

Prof Suvrajeet Sen
(University of Southern California)

Wednesday, Nov. 12
1:00-1:50 EST

In person in 4145 Harris Hall. And a Zoom option:
`https://vcu.zoom.us/j/81475528886`
`password=graphs2357`

It is well known that Optimization algorithms constitute a fundamental building block for designing ML systems. In fact, Stochastic Gradient Descent (SGD) provides the basic algorithmic structure for many ML systems. However, there can be far greater symbiosis between ML and Optimization. Starting out from a basic methodology called LEO (Learning Enabled Optimization), we will discuss extensions of LEO to non-convex optimization models which arise from more general couplings (known as Coupled LEO) as well as non-parametric learning methods within optimization algorithms. Moreover, we will also present a reverse process by which better optimization algorithms can help speed-up ML systems by using more powerful optimization than SGD. The goal of this talk is to encourage greater symbiosis between ML and Optimization.

Suvrajeet Sen is Professor Emeritus at University of Southern California and the University of Arizona. His research interests are in stochastic optimization and its applications. This talk draws upon research funded by sources including NSF, AFOSR, ONR and DOE. (This talk is dedicated to my Virginia family which started more than 50 years ago in the "Fan," and has since spread across the state of VA. There are several in our family who have spent significant time at VCU.)

For the DM seminar schedule, see:

`https://go.vcu.edu/discrete`