Title: Speeding up Machine Learning Using Graphs and Codes

Speaker: Dimitris Papailiopoulos
Assistant Professor
Electrical & Computer Engineering Department
University of Wisconsin - Madison

Time & Place: Wednesday, April 26, 2017
4pm, Room 331 SMI
Cookies & Coffee @ 3:30, Rm 1210

Abstract: I will talk about some simple combinatorial ideas to speed up parallel and distributed learning algorithms. We will start off with serial equivalence in asynchronous parallel ML, its significance, and how we can guarantee it using a recent phase transition result on graphs. We continue on the issue of stragglers (i.e., slow nodes) in distributed systems, where we will use erasure codes to robustify gradient based algorithms against delays. In our third example, we will reduce the high communication cost of data-shuffling in distributed learning, using the seemingly unrelated notion of coded caching. For all the above, we will see real world experiments that indicate how these simple ideas can significantly improve the speed and accuracy of large-scale learning.