UW CENTRE FOR PATTERN ANALYSIS AND MACHINE INTELLIGENCE

CPAMI Seminar

Title: Skyrocket Matrix Operations Using Randomization: A Hands-On Tutorial

Speaker: Dr. Ahmed K. Farahat, Centre for Pattern Analysis and Machine Intelligence (CPAMI) University of Waterloo

Date & Time: Friday February 28, 2014, 2:00 – 4:00 pm

Place: University of Waterloo, EIT-3142

Abstract:

Matrix operations are the basic elements of many algorithms for scientific computing. In today's systems, the availability of massive amounts of data increases the computational and memory requirements of matrix operations and hinders their application in real life domains. This problem is usually alleviated by either working on a small sample of the data, or distributing the computations across different machines. While the first solution sacrifices the accuracy of calculations, the second requires the availability of specific hardware infrastructure. In recent years, much research has been conducted on utilizing randomization to speed up a variety of matrix operations while preserving their accuracy. In this talk, I will give a hands-on tutorial on some of the recent advances in this research. I will start by introducing randomization techniques such as random projection and subset selection, and then I will present algorithms for speeding up a variety of matrix operations such as multiplication, decomposition, and low-rank approximation. The tutorial will focus on practical rather than theoretical aspects and will demonstrate the application of the presented methods using MATLAB.

*** Refreshments will be served. To help us plan for the refreshments, please register by sending your name and department to yqmiao@uwaterloo.ca **by Wednesday February 26 at 10 am. Thank you for your cooperation!**

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