



PIMS / AMI Seminar

Friday, October 26, 2012
3:00 p.m.
CAB 657



“A stochastic conjugate gradient method for the approximation of functions”

**Hong Jiang
Bell Labs**

Abstract

We consider the best approximation of a function by a linear combination of a set of linearly independent basis functions, for example, by a polynomial of a certain degree. The function to be approximated is not known explicitly, but the input and output of the function can be observed with samples. The input samples are from a random process with a certain probability density function, and its distribution can be observed, but cannot be controlled or altered. Furthermore, there is an unlimited supply of input and output samples for observations, but there may be a limit on how many samples one can observe at one time. Such functions arise, for example, in linearization of high power amplifiers in wireless communications.

In this talk, we present a stochastic conjugate gradient method for this approximation problem. The method avoids computing and storing the covariance matrix in the normal equations for the least squares solution. In addition, the method performs the conjugate gradient steps by using an inner product that is based on stochastic sampling. Theoretical analysis shows that the method is convergent in probability.

Refreshments will be served in CAB 649 at 2:30 p.m.