DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF HOUSTON

FACULTY CANDIDATE SEMINAR 2012

WHEN: **FRIDAY, APRIL 27, 2012**
WHERE: **PGH 232**

TIME: **10:00 AM** -----NOTE TIME CHANGE

SPEAKER: Dr. Homin K. Lee, University of Texas at Austin

Host: Dr. Carlos Ordonez

TITLE: Learning Functions from Correlations

ABSTRACT: Massive data storage and fast processors have taken artificial intelligence from being limited to specialized applications to every-day practical use, but current systems are still rather blunt tools. In the realm of machine learning, many systems rely on gathering massive amounts of data and then simply calculating correlations. We show that there are very simple classification concepts that are impossible to learn using correlations alone.

Furthermore, we show that there are simple concepts that are not learnable even when the learner has access to the raw examples themselves. As a counterpoint, we show that correlations are sufficient to learn a subclass of polynomial-size DNF formulas, a concept class that has long been studied without much success. Finally, we end by showing that correlations are sufficient to learn the class of submodular functions.

BIO: Homin K. Lee is an NSF Computing Innovation Fellow at the University of Texas at Austin. He received his Ph.D. from Columbia University where he also received his M.S. and B.A. The focus of his research is computational learning theory, which lies in the intersection between the theory of computation and machine learning. His research interests also include algorithms, computational complexity, and analysis over the discrete cube.