



Distinguished Lecture Series

Compressive Sensing and Beyond



Monday, March 25th, 2013 10:00am
Auditorium 106 at New IIS Building

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Abstract

Compressive sensing is a new sampling / data acquisition theory based on the discovery that one can exploit sparsity or compressibility when acquiring signals of general interest, and that one can design nonadaptive sampling techniques that condense the information in a compressible signal into a small amount of data. Interestingly, this may be changing the way engineers think about signal acquisition in areas ranging from analog-to-digital conversion, digital optics, magnetic resonance imaging, and seismics. In the first part of the lecture, we will introduce fundamental conceptual ideas underlying this new sampling or sensing theory as well as discuss recent progress on building a new generation of sensing devices based on this paradigm. The possibility of recovering sparse structures from what appear to be incomplete data sets is not an isolated success story. In the second part of the lecture, we will explain how we can recover other types of objects from 'too few equations'. In particular, we shall show how to correctly guess all the entries of a low-rank matrix from just a tiny subset by solving a convenient convex program. This equally surprising phenomenon has many practical implications as well in fields as diverse as recommender's systems, control and X-ray crystallography.

For more information: <http://www.iis.sinica.edu.tw/>

