



Distinguished Lecture Series

Sparse coding and dictionary learning for image understanding



Monday, January 24th, 2011 10:00am
Auditorium 106 at New IIS Building

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Abstract

Sparse coding---that is, modeling data vectors as sparse linear combinations of dictionary elements---is widely used in machine learning, neuroscience, signal processing, and statistics. This talk addresses the problem of learning the dictionary, adapting it to specific data and image understanding tasks. In particular, I will present a fast on-line approach to unsupervised dictionary learning and more generally sparse matrix factorization, and demonstrate its applications in image restoration tasks such as denoising, demosaicking, and inpainting. I will also present a general formulation of supervised dictionary learning adapted to tasks such as classification and regression. We have developed an efficient algorithm for solving the corresponding optimization problem, and I will demonstrate its application to handwritten digit classification, image deblurring and digital zooming, inverse half toning, and the detection of fake artworks.

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

