

VINCENT MEYER COLLOQUIUM

Prof. Ronald R. Coifman



Phillips Professor of Mathematics at Yale University

Throughout his career, Prof. Coifman has been a leader in showing how modern mathematics can be effectively applied to solve engineering problems. He currently leads a research program to develop new mathematical tools for efficient transcription and organization of data, with applications to feature and knowledge extraction, learning classification and denoising.

Prof. Coifman is a member of the National Academy of Sciences, American Academy of Arts and Sciences, and the Connecticut Academy of Sciences and Engineering. He received the DARPA Sustained Excellence Award in 1996, the 1996 Connecticut Science Medal, the 1999 Pioneer award from the International Society for Industrial and Applied Mathematics, the National Science Medal in 1999, and the Wavelet Pioneer award in 2009.

Learning contextual/conceptual geometries of databases or matrices

Wednesday, November 20, 2013 ■ 12:30 ■ Meyer Bldg., Auditorium 1003
[Refreshments at 12:30, the lecture will start at 12:45]

Abstract: We provide an overview of recent developments in methodologies for empirical organization of stochastic data. We present a geometric/analytic mathematical framework for learning, which revolves around building a network or a graph whose nodes are observations.

In our framework, connections between observations are constantly reconfigured in order to achieve learning for specific tasks. In particular when the data is provided as an array or matrix, we view the rows and columns of the matrix as being in duality, generating joint row/column organizational geometries, and opening the door to automated analytic organizations of Matrices or Databases.

We will show that the various metrics generated can be viewed as generalizing Earth mover metrics, in which geometry and statistics are mutually supportive. In particular we introduce methodologies that resemble "signal processing" on data matrices, enabling functional regression, prediction, denoising, compression, fast numerics, and so on. We illustrate these ideas to organize and map out in an automatic and purely data driven fashion, text documents, psychological questionnaires, medical profiles, physical sensor data, financial data.

Professor Coifman will also deliver an additional lecture

Pixel Club Colloquium, Empirical intrinsic geometries of stochastic datasets

Tuesday, November 19, 2013 ■ 11:15 ■ Meyer Bldg. Auditorium 1003

[Refreshments at 11:15, the lecture will start at 11:30]

For further information see:

<http://webee.technion.ac.il/Vincent-Meyer-Colloquium>



Technion