



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering
Seminar

**Data derived consistency framework
for problems in statistics**

by

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Date : 26 Oct., 2017 (Thur.)
Time : 1:30pm – 2:30pm
Venue : Room 121, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

With the glut of data comes a tremendous need for novel learning algorithms that translate raw data into knowledge. As is becoming increasingly clear, “big data has arrived but big insights have not” (T. Hartford, Financial Times). This effort of turning data into insight hinges on our ability to frame problems on sound theoretical foundations, sometimes altering current methods fundamentally. To enable handling rich probabilistic model classes in line with our expectations of what data must achieve, we build the data-driven consistency framework, an innovation that also challenges the long-standing uniform/pointwise consistency dichotomy of statistical analysis.

This new framework allows us the ability to tell from the data how well we are doing reminiscent of the uniform consistency framework. At the same time, we want to enjoy the ability to handle very rich classes as with the pointwise consistency framework. We show how our approach shifts the focus away from global complexity of model classes, and towards how local topology allows us to draw inferences. We demonstrate our framework in multiple scenarios, as well as highlight connections with well known problems, including the brittleness of priors in the Bayesian setup, the MDL and (time permitting) the luckiness approach to structural risk minimization.

Biography

Narayana Prasad Santhanam is an Associate Professor at the University of Hawaii, Manoa (UHM), and has been faculty with UHM since 2009. He obtained his B.Tech from the Indian Institute of Technology, Chennai in 2000; MS and PhD from the University of California, San Diego in 2003 and 2006 respectively, and spent 2007-08 in UC Berkeley in a postdoctoral position. His research interests lie in the intersection of information theory and statistics with an emphasis on source coding and machine learning, and involves applications in finance, biology, communication and estimation theory. He is an Associate Editor of the IEEE Transactions of Information Theory, a recipient of the 2006 Information Theory Best Paper award; as well as the organizer of several workshops on high dimensional statistical problems over the last few years.

**** ALL ARE WELCOME ****