



# C R Rao Advanced Institute of Mathematics, Statistics & Computer Science (AIMSCS)

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## Seminar

on

## Shape Constrained Regression

by

**Bodhisattva Sen,**

Columbia University, New York, USA

**Date and time : 07 December 2016, Wednesday at 03:00 pm**

**Venue: Ramanujan Building, C R Rao AIMSCS**

**Abstract:** In statistical modeling, a regression function captures the relationship between a response variable and a collection of predictors. In the talk I will introduce and describe, with applications, the field of nonparametric 'shape constrained' regression where the goal is to estimate a regression function (possibly multivariate) nonparametrically when knowledge on the 'shape' of the function (e.g., monotonicity, convexity/concavity) is available a priori. I will describe the least squares estimator (LSE) in this problem and study the characterization, computation and theoretical properties of the estimator. A special feature of the LSE is that it is tuning parameter free (thus completely automated and easily implementable) and exhibits 'adaptive' risk properties.

### **Brief Biodata of Prof. Bodhisattva Sen:**



Bodhisattva Sen is an Associate Professor of Statistics at Columbia University, New York. His core statistical research centers around nonparametrics and large sample theory --- nonparametric function estimation (with special emphasis on shape constrained estimation), likelihood and bootstrap based inference in (non-standard) parametric and nonparametric models. He was awarded the National Science Foundation (NSF) CAREER award in 2012. He has held a Lectureship position at the University of Cambridge (UK) between 2011-2012 and is presently a visiting scholar at the University of California, Berkeley.