

Indo-US Workshop on Time Series Analysis

May 25-30, 2015

Indian Institute of Science Education and Research (IISER) Pune
Organized jointly by IISER, Pune and SAMSI-SAVI, USA

Overview Lectures: on May 25-The goal is to introduce theory/methods/setting to all participants.

1. Time Domain Methods: Kathy Ensor, Rice University
2. Frequency Domain Methods: SuhashiniSubbaRao , Texas A&M University
3. Bayesian Dynamic Modeling: NaliniRavishanker, University of Connecticut
4. Nonlinear time series analysis: R E Amritkar, IITRAM, Ahmedabad

Lectures: 16 one hour lectures by each speaker on topics as given below at research level

1. Richard Davis, Columbia University - Structural Breaks in Time Series
2. Scott Holan, University of Missouri-Time-frequency Estimation and Time-frequency Functional Data Models
3. R E Amritkar ,IITRAM, Ahmedabad – Multifractality in Time series
4. Bonnie Ray, IBM Thomas J. Watson Research Center, NY - Clustering Linear and Nonlinear Time Series
5. T V Ramanathan, S.P. Univ of Pune - High Frequency Data Analysis in Finance with Duration Models.
6. VladasPipiras, University of North Carolina, Chapel Hill-Multivariate Long-range Dependence for Real-valued & Count Series
7. T. N. Sriram, University of Georgia -Dimension Reduction in Time Series
8. Arup Bose, ISI Kolkata - High dimensional time series.
9. Kathy Ensor, Rice University -Dynamic Factor Models for Asynchronously Observed Time Series
10. Nalini Ravishanker, University of Connecticut- Hierarchical Bayesian Dynamic Models for Count Time Series
11. M S Santhanam-IISER, Pune-Random matrix theory and time series
12. G. Rangarajan, IISc, Bangalore - Granger causality & Multivariate analysis
13. Prasanta K. Panigrahi, IISER, Kolkata- Multi-Scale Dynamics, Causality and Network Structure in Time Series

14. G Ambika, IISER, Pune -Complex recurrence networks and time series
15. Suhasini Subba Rao, Texas A&M University -Proxy Time Series
16. SomakRaychaudhury, Presidency Univ, Kolkata-Advanced statistical methods on astronomical time series

Breakout Research Sessions:(5 hours): 1 hour on each of the 5 days. Speakers and participants may self-select into each of the 6 research groups and discuss literature, potential research topics for collaborations, theses, joint publications, etc.

1. Long-range Dependence & Multifractal Analysis

Vladas Pipliras, R. E. Amritkar, G Ambika, R Misra, K P Harikrishnan

2. Multivariate Time Series, Spatio-temporal Methods: High dimensional processes, Random Matrices

T. N. Sriram, Suhasini Subba Rao, Arup Bose, M S Santhanam, G Rangarajan

3. State Space Models & Dynamic Bayesian Methods

Kathy Ensor, Nalini Ravishanker, Uttara Naik-Nimbalkar, Anindya Gosawmi

4. Time-Frequency Analysis

Scott Holan, Kathy Ensor, Prasanta K. Panigrahi

5. Change Point Problems & Sequential Methods

Richard Davis, Bonnie Ray, T. V. Ramanathan

6. Complex Dynamic Networks

Nalini Ravishanker, G Ambika, M. S. Santhanam, R Misra, K P Harikrishnan

Lab sessions/tutorials: (9.0 hours) 1.5 hours on each of the 6 days meant for participants to learn/practice/develop code related to theme topics, supervised by selected resource persons. Participants are encouraged to bring the data sets that they are working on so that they can use the same and get guidance or clarifications from experts.

1. Uttara Naik Nimbalkar, & Anindya Goswami: Introduction to Time Series using R
2. Bonnie Ray : Time Series Clustering Analysis
3. Richard Davis : Change-point data analysis
4. T N Sriram : Modeling Time series using Dimension Reduction Methods

5. M S Santhanam, Ranjeev Misra & K P Harikrishnan: Nonlinear Time Series analysis, multifractal measures
6. M S Santhanam, Ranjeev Misra & K P Harikrishnan : Random matrix analysis, Complex networks from Time series

Panel discussions: on May 28: Informal Panel Discussion on “How to prepare/submit articles to peer-reviewed international journals to get successful Publications”.

Panelists : Richard Davis, Kathy Ensor, Nalini Ravishankar, T. N. Sriram, Prasanta K. Panigrahi and G. Rangarajan.

Posters by Participants on their current research: Posters will stay on all the days of the workshop in the lunch area for participants to seek input from participants and invited speakers