Continuing Education Program
on

NEW ADVANCEMENTS IN BIOINFORMATICS: A NETWORK THEORY APPROACH

January 4-5, 2014

Organized

by

Indian Institute of Technology Indore

Venue: VCR, M- Block (IET Campus)

Indian Institute of Technology Indore,
M-Block, IET-DAVV Campus,
Khandwa Road, Indore, Madhya Pradesh,
INDIA – 452017.

Course Contents

This Course will specifically address basic fundamentals and overview of ongoing cutting-edge research:

- **Introduction to Network Theory**
- **Complexity and Chaos in Biological Systems**
- **Application of Network Theory to:**
  - **Protein Protein Interaction Networks**
  - **Gene Coexpression Networks**
  - **Neural Networks**
  - **Disease Networks**
- **Prediction of genes/proteins important in specific diseases and Metabolic Pathways**

CEP Coordinator

Dr. Sarika Jalan

Complex Systems Lab

Indian Institute of Technology, Indore

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Introduction

Taking ahead the tradition of the established IIT's, IIT Indore aims to play an active role in the task of mobilizing India on its growth trajectory by focusing on cutting edge research in complex systems. From molecular biology, modeling and drug discovery to bio fluid mechanics and complex networks, research at IIT Indore has witnessed extensive interdisciplinary and collaborative work with leading research institutes and academic organizations.

The field of complex systems cuts across all traditional disciplines of science, as well as engineering, management, and medicine. It focuses on certain questions about parts, wholes and relationships. It is devoted to understanding, at the fundamental level, the dynamics of systems made up of interdependent components where global behavior emerges solely as a result of concurrent local actions.

Course Objectives

The study of networks pervades all branches of science, from neurobiology to statistical physics. Theoretical and experimental studies of complex systems based on high throughput data have resulted in models that accurately represent the behavior of an entire cell, and can predict cell response to stimuli. Systematic comparative mathematical analysis of metabolic networks of several organisms reveal the same topological scaling properties and show similarities to the inherent organization of complex non-biological systems despite significant variation in their individual constituents and pathways. Research in human disease network offers a platform to relate genetic origin of various diseases.

This course is intended to draw researchers from diverse disciplines under a unifying framework. This two-day course will be highly interdisciplinary in nature and no mathematical background is required to understand the techniques involved in this research dimension.

REGISTRATION FORM

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on
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Filled-in registration from should reach the Organizing Committee on or before

Name: _____
Designation: _____
Institution/Organization: _____
_____
Address:_____
_____
_____
_____

E-mail: _____
Phone/Mobile No.: _____ Fax No.: _____

Educational Qualification: _____
_____
Date: _____ Signature: _____

PAYMENT DETAILS:

Demand Draft No.: _____
Dated: _____
Amount in Rs: _____
Drawn at: _____

Name and address of the sponsoring organization:_____
_____
_____
Signature of applicant with date:

_____

(PHOTOCOPY ADDITIONAL COPIES OF THIS FORM, IF NEEDED)

Applications in the prescribed format along with fees (in case of online payment, please enclose the online transfer receipt) and sponsorship certificate should reach the course coordinator by ***November 25, 2013***. Selected participants will be informed through email by ***December 02, 2013***. The fees should be paid by a crossed demand draft drawn in favor of: *The Registrar, IIT Indore*, payable at Indore.

For Online Payment / Bank Transfer:

Bank Name	: State Bank of India
Branch	: Khandwa Road, Indore
Account Number	: 317 02 1515 77
IFS Code	: SBIN0011779

(In case of online transfer, the transaction details along with the name of the participant should be emailed to **cepsb@iiti.ac.in**)

COURSE FEE

For Industry: Rs. 15,000/- *per participant*

For Academic and Govt. Research Organization:
Rs. 9,000/- *per participant*
(Only on production of affiliation certificate)

For Students: Rs. 6,000/- *per participant*
(Only on production of valid student ID proof)

The course fee includes registration fee, lecture handouts, breakfast, lunch, and tea for the entire course duration. A certificate of course completion will be given at the end of the course.

Post/Email registration form to:

Dr. Sarika Jalan (CEP Coordinator)
Complex Systems Lab
Indian Institute of Technology Indore
M-Block, IET-DAVV Campus Khandwa Road, Indore
Madhya Pradesh, INDIA – 452017

Email: **cepsb@iiti.ac.in**
Phone: +91 731-2438758

Students Intake

Only **20 seats** are available for the 2 day program. Selection would mainly be on first registration basis.

Boarding and Lodging

Limited accommodation may be available on campus on payment basis. Working lunch, tea / snacks will be provided during the course.

Speaker Profile

Faculty

Dr. Sarika Jalan

Associate Professor, IIT Indore
Post-doc, Max-Planck-Institute for the Physics in Complex Systems, Dresden
Ph.D., Physics Research Laboratory, Ahmedabad

Expertise

Systems Biology, Disease Networks, Gene Co-expression Networks, Protein-Protein Interaction and other Biological Networks, Social Networks, Nonlinear Dynamics, Coupled Chaotic Systems, Synchronization and Emerging Behavior in Biological System

Target Audience

Academicians, researchers, scientists and technical staff members working in various academic institutions, research and development organizations and laboratories, and industries.