Symposium on Trends in Control and Computing

Department of Electrical Engineering, IIT Bombay

Schedule

(Please revisit this page, to be sure you are not missing out on a talk of your interest)

Venue details of the talks can also be found at:

https://www.ee.iitb.ac.in/~belur/ioe25/

(EEG301, Seminar Room, Gaitonde building,
Department of Electrical Engineering)

Day 1: 16 April 2025 (Wednesday)		
Time	**Speaker**	**Title**
10:00-10:20	Chayan Bhawal IIT Guwahati	Energy optimal quadrotor flight: unified path planning and controller tuning
10:25-10:45	Chinmay Gharanyak IIT Bombay	Elevation angle based coordinate free bearing only formation control
10:50-11:10	Apurva Joshi: Co-founder, Indrones Solutions	There and Back Again: Hardware and algorithmic aspects of drones
11:15-11:35	Coffee/Tea Break	
11:35-11:55	Swanand Khare IIT Kharagpur	Computation of an exact and approximate GCRD of several polynomial matrices using generalized Sylvester matrices
12:00-12:20	Ashish Kothyari IIT Roorkee	Robust stabilization using null controllable sets
12:45-14:15	Lunch Break	
14:30-15:25	**Plenary: Kanat Çamlibel: University of Groningen**	Linear system identification: necessary and sufficient conditions
15:30-16:25	**Plenary: Henk van Waarde: University of Groningen**	Linear system identification: new results regarding experimental design
16:30-16:50	Rachel Kalpana IIT Madras	Distributed alternating direction method of multipliers (ADMM) over directed networks
16:55-17:15	Srinivasan Krishnaswami IIT Guwahati	Homomorphic encryption for machine learning and control systems
17:15-17:30	High Tea Break	

Abstracts of the plenary talks are available later in this document (and also clickable directly from the talk's title/speaker name.

Day 2: 17 April 2025 (Thursday)		
Time	**Speaker**	**Title**
10:00-10:20	Mousumi Mukherjee: IIEST, Shibpur	Algorithms for for specifying initial data for discrete autonomous nD systems
10:25-10:45	Ameer Mulla: IIT Dharwad	Development of fire rescue assistant drone
10:50-11:10	Deepak Patil: IIT Delhi	Minimum time consensus with fuel budget constraint
11:35-12:00	Coffee/Tea Break	
12:00-12:30	Arti Yardi, IIIT Hyderabad	Constrained Gradient Descent Method
12:40-13:10	Bhooshan Rajpathak: VNIT, Nagpur	Demonstration of chaos in power electronic circuits
13:10-14:15	Lunch Break	
15:30-15:50	Mayuresh Bakshi	System theoretic approach for solving stabilization problem in active networks
15:55-16:15	Ramchandran C. Anantharaman: Technical Univ. Eindhoven	Koopman based interpolation and data-driven models for nonlinear dynamics with non-uniform state measurements
16:20-16:40	Shana Moothedath: Iowa State University	Distributed Multi-Task Constrained Bandit Learning
16:40-17:30	High Tea Break	

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Next page: title/abstract of the two plenary talks (of Day-1).

Abstracts of the plenary talks

Kanat Camlibel:

Title: Linear system identification: necessary and sufficient conditions

Abstract: In this talk, we state necessary and sufficient conditions for a single finite length input-output trajectory to determine uniquely (modulo isomorphism of the state-space) a minimal linear time-invariant input-state-output system with given upper bounds on its lag and state dimension. These conditions are in terms of the ranks of a sequence Hankel matrices obtained from the given finite input-output data.

Henk van Waarde:

Title: Linear system identification: new results regarding experimental design

Abstract: In this talk, we study the problem of experiment design for linear time-invariant systems. Specifically, given an upper bound on the state-space dimension and lag of the system, we aim to design a sequence of inputs so that the system dynamics can be uniquely recovered from the resulting input-output data. As our main result, we propose a new online experiment design method, meaning that the selection of the inputs is iterative and guided by past data samples. We show that this approach leads to the shortest possible experiments for linear system identification. In terms of sample complexity, the proposed method outperforms offline methods based on persistency of excitation as well as existing online experiment design methods.