Day 1: August 7th (Sunday)

Time	Type	Title	Place	Chair	Co-Chair	Presentation Mode	Presenter
8:00AM-2:00PM	Workshop 2	Making reinforcement learning a practical technology for industrial control	Big Room		*Lakshminarayanan Samavedham (Online)*		
3:00PM-7:00PM	Workshop 1	Process Data Analytics and Network or Flowsheet Reconstruction	Big Room	*Arun Tangirala (Online)*	*Lakshminarayanan Samavedham (Online)*		
2:00PM-7:30PM	Registration		Foyer				
7:30PM-9:30PM	Reception	Welcome Reception	TBA				

Time	Type	Title	Place	Chair	Co-Chair	Presentation Mode	Presenter
9:00AM-9:30AM		Opening Ceremony	Big Room	*Biao Huang (In-Person) & Bhushan Gopaluni (In-Person)*	*Jie Bao (Online) and Lakshminarayanan Samavedham (Online)*		
9:30AM-10:30AM	Plenary 1	The case for switched control and estimation and its application in the automotive sector by **Sarah Spurgeon**	Big Room	*Biao Huang (In-Person)*		In-Person	Sarah Spurgeon
10:30AM-11:00AM	Tea Break	Tea Break	Foyer				
11:00AM-1:20PM	Parallel Sessions	Three Parallel Presentation Sessions					
11:00AM-11:20AM	Agriculture & Food Systems	A Two-Layer NN Framework for Modeling Agro-Hydrological Systems	Room A	*van Heusden, Klaske (In-person)*		In-Person	Zhiyinan Huang
11:20AM-11:40AM	Agriculture & Food Systems	Investigation of Inoculation Effect on Cream Cheese Fermentation through Models	Room A	*van Heusden, Klaske (In-person)*		In-Person	Brent Young
11:40AM-12:00NN	Agriculture & Food Systems	Simultaneous Estimation of Soil Moisture and Hydraulic Parameters for Precision Agriculture. Part A: Methodology	Room A	*van Heusden, Klaske (In-person)*		In-Person	Bernard Agyeman
12:00NN-12:20PM	Agriculture & Food Systems	Simultaneous Estimation of Soil Moisture and Hydraulic Parameters for Precision Agriculture. Part B: Application to a Real Field	Room A	*van Heusden, Klaske (In-person)*		In-Person	Bernard Agyeman
12:20PM-12:40PM	Agriculture & Food Systems	The Factor of Safety-Constrained Model Predictive Controller Design for Closed-Loop Reservoir Management	Room A	*van Heusden, Klaske (In-person)*		In-Person	Ajay Ganesh
12:40PM-1:00PM	Agriculture & Food Systems	Optimizing Semi-Closed Greenhouse Temperature, Humidity, CO2 Concentration, and Light Intensity Using a Nonlinear Model Predictive Control Approach	Room A	*van Heusden, Klaske (In-person)*		Recorded Video	Wei-Han Chen
1:00PM-1:20PM	Agriculture & Food Systems	Model Predictive Control and Machine Learning for Greenhouse Energy and Crop Production Optimization	Room A	*van Heusden, Klaske (In-person)*		Recorded Video	Guoqing Hu
11:00AM-11:20AM	Learning Systems	Fault Detection of Wind Turbine System Based on Deep Learning and System Identification	Room B	*Rohit Patwardhan (Online)*		In-Person	Sam Dehghanbanadaki
11:20AM-11:40AM	Learning Systems	Multi-Agent Reinforcement Learning System for Multiloop Control of Chemical Processes	Room B	*Rohit Patwardhan (Online)*		Recorded Video	Yifei Yue
11:40AM-12:00NN	Learning Systems	Safe, Fast and Explainable Online Reinforcement Learning for Continuous Process Control	Room B	*Rohit Patwardhan (Online)*		In-Person	Kalpesh Patel
12:00NN-12:20PM	Learning Systems	State Estimation Using Physics Constrained Neural Networks	Room B	*Rohit Patwardhan (Online)*		Recorded Video	Rahul Patel
12:20PM-12:40PM	Learning Systems	Optimal Control for an Active PCM System Using Reinforcement Learning	Room B	*Rohit Patwardhan (Online)*		In-Person	Yifei Yue
12:40PM-1:00PM	Learning Systems	Data-Predictive Control of Multi-Timescale Processes	Room B	*Rohit Patwardhan (Online)*		Recorded Video	Jun Wen Tang
1:00PM-1:20PM	Learning Systems	Meta-Reinforcement Learning for Adaptive Control of Second Order Systems	Room B	*Rohit Patwardhan (Online)*		Live Zoom	Daniel McClement
11:00AM-11:20AM	Energy Systems	High-Grade Hydrogen Production from Different Feedstock Using Bubbling Fluidized-Bed Gasifier with Pressure Swing Adsorption	Room C	*Wu Zhe (In-Person)*		In-Person	Muhammad Ikhsan Taipabu
11:20AM-11:40AM	Energy Systems	Feature Construction and Selection for PV Solar Power Modeling	Room C	*Wu Zhe (In-Person)*		Live Zoom	Yu Yang
11:40AM-12:00NN	Energy Systems	Full Cycle Optimal Control Due to Slow Time-Varying Fouling Characteristics for Heat Exchanger Networks with Slow-Release Margin	Room C	*Wu Zhe (In-Person)*		Recorded Video	Tianyu Zhu
12:00NN-12:20PM	Energy Systems	Evaluating the Economic Impact of Using Curtailed Renewable Energy Sources for Green Hydrogen Production	Room C	*Wu Zhe (In-Person)*		In-Person	Haider Niaz
12:20PM-12:40PM	Energy Systems	Impacts of Mooring Line Lengthening on Position Controller Design for a Floating Offshore Wind Turbine	Room C	*Wu Zhe (In-Person)*		In-Person	Brendan Saunders
12:40PM-1:00PM	Energy Systems	An Energy Efficient Approach to Thermal Comfort Control in a VAV HVAC System	Room C	*Wu Zhe (In-Person)*		Recorded Video	Ravindra Gudi
1:00PM-1:20PM	Energy Systems	Uncertainty Estimation in Power Consumption of a Smart Home Using Bayesian LSTM Networks	Room C	*Wu Zhe (In-Person)*		In-Person	Nasibeh Zohrabi
1:20PM-2:20PM	Lunch	Lunch					
2:20PM-2:50PM	Keynotes	Three Parallel Keynotes					
2:20PM-2:50PM	Keynote 1	Challenges and Opportunities for Process Systems Engineering in Addressing Agricultural Water Sustainability by **Jinfeng Liu**	Room A	*Brent Young (In-Person)*		In-Person	Jinfeng Liu
2:20PM-2:50PM	Keynote 2	Three emerging technologies currently disrupting manufacturing and process control by **Tom Badgwell and Donald Bartusiak**	Room B	*Jay H. Lee (In-Person)*		In-Person	Tom Badgwell
2:20PM-2:50PM	Keynote 3	Developing Medical and Healthcare Services Based on Heart Rate Variability Analysis: Opportunities and Challenges by **Manabu Kano**	Room C	*Lakshminarayanan Samavedham (Online)*		Live Zoom	Manabu KANO
3:00PM-5:20PM	Parallel Sessions	Three Parallel Presentation Sessions					
3:00PM-3:20PM	Model Predictive Control	Dynamic reference programming-based model predictive control for optimal robust tracking	Room A	*Ikuro Mizumoto (Online)*		Live Zoom	Niannian Zheng
3:20PM-3:40PM	Model Predictive Control	A Simple Discretization Scheme for Gain Matrix Conditioning	Room A	*Ikuro Mizumoto (Online)*		In-Person	Siang Lim / Shams Elnawawi
3:40PM-4:00PM	Model Predictive Control	Nonlinear Model Predictive Control for the Suppression of the COVID-19 Pandemic Based on an Agent-Based Model	Room A	*Ikuro Mizumoto (Online)*		Recorded Video	Yue Niu
4:00PM-4:20PM	Model Predictive Control	ILC-Based Two-Layer Economic Performance Assessment and Improvement Strategy for Large-Scale Industrial Distributed MPC Systems	Room A	*Ikuro Mizumoto (Online)*		Recorded Video	Yao Shi
4:20PM-4:40PM	Model Predictive Control	Model Predictive Control of Industrial Demand Response for Production Lines	Room A	*Ikuro Mizumoto (Online)*		Recorded Video	Behzad Heydaryan
4:40PM-5:00PM	Model Predictive Control	Model Predictive Control of Air Handling Unit for a Single Zone Setup	Room A	*Ikuro Mizumoto (Online)*		Recorded Video	Faiq Ghawash
5:00PM-5:20PM	Model Predictive Control	A Contraction-Constrained Model Predictive Control for Nonlinear Processes Using Disturbance Forecasts	Room A	*Ikuro Mizumoto (Online)*		Live Zoom	Jie Bao
3:00PM-3:20PM	Process Monitoring	MPC Model-Plant-Mismatch Detection through Slow Feature Analysis with Industrial Application	Room B	*Tongwen Chen (In-Person)*		In-Person	Cameron Dyson
3:20PM-3:40PM	Process Monitoring	Process Decomposition and Distributed Fault Detection of Large-Scale Industrial Processes	Room B	*Tongwen Chen (In-Person)*		Live Zoom	Xunyuan Yin
3:40PM-4:00PM	Process Monitoring	Explainable Fault Diagnosis Model Using Stacked Autoencoder and Kernel SHAP	Room B	*Tongwen Chen (In-Person)*		Recorded Video	Suk Hoon Choi
4:00PM-4:20PM	Process Monitoring	GraphSAGE-LSTM-Based Deep Canonical Correlation Analysis for Batch Process Monitoring	Room B	*Tongwen Chen (In-Person)*		Recorded Video	Pan Yuqing
4:20PM-4:40PM	Process Monitoring	Design of a Database-Driven Quality Predictor for Painting Systems	Room B	*Tongwen Chen (In-Person)*		Live Zoom	Shohei Yamamoto
4:40PM-5:00PM	Process Monitoring	Fault Detection and Diagnosis Using AutoEncoders and Interpretable AI - Case Study on an Industrial Chiller	Room B	*Tongwen Chen (In-Person)*		Live Zoom	Aswin Venugopal
5:00PM-5:20PM	Process Monitoring	Imaging Wind Turbine Fault Signatures Based on Power Curve and Self-Organizing Map for Image-Based Fault Diagnosis	Room B	*Tongwen Chen (In-Person)*		Recorded Video	Francisco Bilendo
3:00PM-3:20PM	Applications I	A Sigmoid Function Based Method for Detection of Stiction in Control Valves	Room C	*Kalpesh (In-Person)*		In-Person	Seshu Damarla
3:20PM-3:40PM	Applications I	Online Learning for Machine Learning-Based Modeling and Predictive Control of Crystallization Processes under Batch-To-Batch Parametric Drift	Room C	*Kalpesh (In-Person)*		In-Person	Zhe Wu
3:40PM-4:00PM	Applications I	Missing Data Dynamic Forecasting of Fuzzy Time Series Based on Gaussian Mixture Model	Room C	*Kalpesh (In-Person)*		Live Zoom	Xu Huo
4:00PM-4:20PM	Applications I	Sensor Placement for Wastewater Treatment Plants: A Computationally Efficient Algorithm	Room C	*Kalpesh (In-Person)*		In-Person	Siyu Liu
4:20PM-4:40PM	Applications I	Automated Generation of Reaction Network Hypotheses for Complex Feedstocks	Room C	*Kalpesh (In-Person)*		In-Person	Karthik Srinivasan
4:40PM-5:00PM	Applications I	Optimization of Flotation Recovery with Integrated Quadratic Control	Room C	*Kalpesh (In-Person)*		In-Person	Devin Marshman
5:00PM-5:20PM	Applications I	Data Augmentation for Industrial Multivariate Time Series Via a Spatial and Frequency Domain Knowledge GAN	Room C	*Kalpesh (In-Person)*		Recorded Video	Jui Chien Lin
7:00PM-9:00PM	Banquet	Conference Banquet	TBA				

Time	Type	Title	Place	Chair	Co-Chair	Presentation Mode	Presenter
9:00AM-10:00AM	Plenary 2	From Process Control to Biomedical Engineering: The Broad Reach of Control Engineering by **Guy Dumont**	Big Room	*Bhushan Gopaluni (In-Person)*		In-Person	Guy Dumont
10:10AM-10:40AM	Keynotes	Three Parallel Keynotes					

Time	Session	Title	Room	Chair 1	Chair 2	Mode	Presenter
10:10AM-10:40AM	Keynote 4	Data Stories from the Frontline – The Analytics and AI Chronicles by **Rohit Patwardhan**	Online	Ravi Gudi (Online)		Live Zoom	Rohit Patwardhan
10:10AM-10:40AM	Keynote 5	Practical Process Monitoring and Smart Sensors in the Mineral Processing Industry by **Lidia Auret**	Online	Toru Yamamoto (Online)		Recorded Video	Lidia Auret
10:10AM-10:40AM	Keynote 6	Towards Harmony between Industrial and Ecological Systems: Opportunities for Advanced Control by **Bhavik Bakshi**	Online	Lakshminarayanan Samavedham (Online)		Live Zoom	Bhavik Bakshi
10:40AM-11:00AM	Tea Break	Tea Break	Foyer				
11:00AM-1:20PM	Parallel Sessions	Three Parallel Presentation Sessions					
11:00AM-11:20AM	Soft Sensing	Baseline Correction Using Local Smoothing Optimization Penalized Least Squares	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	Live Zoom	Tianhong Pan
11:20AM-11:40AM	Soft Sensing	Quality Prediction for Nonlinear Dynamic Processes Using Semi-Supervised Soft Sensors: An Application on Ammonia Decarburization Processes Decarburization Processes	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	Recorded Video	Yi-Shan Lee
11:40AM-12:00NN	Soft Sensing	A Simple Approach to Industrial Soft Sensor Development and Deployment for Closed-Loop Control	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	In-Person	Rui Nian
12:00NN-12:20PM	Soft Sensing	Extended Kalman Filter for Normal and Oxygen-Starved PEM Fuel Cells Using a Lumped Pseudo-2D Model	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	In-Person	Wesley Romey
12:20PM-12:40PM	Soft Sensing	Deep Learning Based Flare Image Analytics for Emissions Monitoring at the Edge	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	In-Person plus Live Zoom	Greg Makowski & Kalpesh Patel
12:40PM-1:00PM	Soft Sensing	Deployment of a Fuel Oil Blending Viscosity Inferential – a Comparison of Conventional and Machine Learning Models	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	Live Zoom	Ammar Bakhurji
1:00PM-1:20PM	Soft Sensing	3D Printer State Monitoring Mobile Application through a Deep Learning Approach	Room A	Ginuga Prabhaker Reddy (Online)	Lakshminarayanan Samavedham (Online)	Recorded Video	Gabriel Avelino R. Sampedro
11:00AM-11:20AM	Optimization & Control	Distributionally Robust Chance-Constrained Optimization with Deep Kernel Ambiguity Set	Room B	Qing Zhao (In-Person)		In-Person	Shu-Bo Yang
11:20AM-11:40AM	Optimization & Control	Experimental Verification of Output Feedback Control with CMAC Based Adaptive PFC and FF Input through Magnetic Levitation System	Room B	Qing Zhao (In-Person)		Recorded Video	Nozomu Otakara
11:40AM-12:00NN	Optimization & Control	Study on Control System Design Based on Smart Model Based Development Approach and Its Application for a Hydraulic Excavator	Room B	Qing Zhao (In-Person)		Recorded Video	Shin Wakitani
12:00NN-12:20PM	Optimization & Control	Design of a Data-Driven 2DOF Control System for the Two-Inertia System Considering Robustness	Room B	Qing Zhao (In-Person)		Live Zoom	Takuya Kinoshita
12:20PM-12:40PM	Optimization & Control	Performance Evaluation of Various Hyperparameter Tuning Strategies for Uncertain Parameter Forecast Using LSTM	Room B	Qing Zhao (In-Person)		Recorded Video	P S Pravin
12:40PM-1:00PM	Optimization & Control	Adaptive Energy Reference Time Domain Passivity Control of Teleoperation Systems in the Presence of Time Delay	Room B	Qing Zhao (In-Person)		In-Person	Nafise Faridi Rad
1:00PM-1:20PM	Optimization & Control	A Distributed Convex Optimization Algorithm with Continuous-Time Communication	Room B	Qing Zhao (In-Person)		Recorded Video	Mohammad Jahvani
11:00AM-11:20AM	Applications II	Mutual Information Induced Slow-Feature Analysis of Nonlinear Dynamic Systems and the Application in Soft Sensors	Room C	Seshu Damarla (In-Person)		Live Zoom	Xinrui Gao
11:20AM-11:40AM	Applications II	Set-Membership Estimation for Industrial Processes with Uncertain Scheduling Parameters	Room C	Seshu Damarla (In-Person)		In-Person	Zhichao Pan
11:40AM-12:00NN	Applications II	A Modified Bag-Of-Words Representation for Industrial Alarm Floods	Room C	Seshu Damarla (In-Person)		In-Person	Haniyeh Seyed Alinezhad
12:00NN-12:20PM	Applications II	Fractional Order Controller Design Using the Direct Synthesis Method	Room C	Seshu Damarla (In-Person)		Recorded Video	Salim Ahmed
12:20PM-12:40PM	Applications II	AlarmSoft: An Advanced Cloud-Based Alarm Management Application	Room C	Seshu Damarla (In-Person)		Live Zoom	Abdula Abulaban
12:40PM-1:00PM	Applications II	Robust Pandemic Control through Linearizing Variable Transformation	Room C	Seshu Damarla (In-Person)		In-Person	Klaske van Heusden
1:00PM-1:20PM	Applications II	Understanding E.Coli-Antimicrobial Resistance (AMR) from Systems Thinking and System Dynamics Perspective	Room C	Seshu Damarla (In-Person)		In-Person	Tio Zhi Kai
1:20PM-2:30PM	Lunch	Lunch					
2:30PM-3:30PM	Plenary 3	The Role of Process Systems Engineering (PSE) on the Path to Carbon Neutral Chemical Process Industry by **Jay Lee**	Big Room	Brent Young (In-Person)	Lakshminarayanan Samavedham (Online)	In-Person	Jay Lee
3:30PM-4:00PM	Closing Ceremony	Closing Ceremony	Big Room	Bhushan Gopaluni (In-Person)	Jie Bao (Online)		