

FOPAM 2019

POSTER PRESENTATIONS

Wednesday, August 7 ♦ 1:30 p.m. to 3:30 p.m.

PHYSICALLY CONSISTENT DATA-DRIVEN SOFT-SENSOR DEVELOPMENT
Yu-Da Hsiao, **Cheng-Hung Chou**, Hai-Bin Wu, Jia-Lin Kang, David Shan Hill Wong, Yuan Yao, Yao Chen Chuang, Shi-Shang Jang and John Di-Yi Ou
(Abstract ID 1)

A STUDY ON DEEP AUTOENCODER BASED FAULT DETECTION IN TENNESSEE EASTMAN PROCESS
Zhongying Xiao, Arthur Kordon and Subrata Sen
(Abstract ID 3)

SMART PROCESS DATA ANALYTICS FOR MODEL PREDICTION
Weike Sun and Richard Braatz
(Abstract ID 5)

USE OF AI AND DATA ANALYTICS IN ELECTRIC POWER DISTRIBUTION
Linas Mockus, Bri-Mathias Hodge and Gintaras Reklaitis
(Abstract ID 7)

REAL-TIME OPTIMIZATION STRATEGIES USING SURROGATE OPTIMIZERS
Dinesh Krishnamoorthy and Sigurd Skogestad
(Abstract ID 8) – *presented on Wednesday*

CONDITION-BASED MAINTENANCE FOR SENSOR NETWORK ROBUSTNESS IN CONTINUOUS PHARMACEUTICAL MANUFACTURING
Sudarshan Ganesh, Qinglin Su, Francesco Rossi, Zoltan Nagy and Gintaras Reklaitis
(Abstract ID 9)

A NOVEL ALGORITHM FOR CLUSTERING BIG DATA TO DETECT AND DIAGNOSE FAULTS
Avery Smith and **Kody Powell**
(Abstract ID 15)

HYBRID MODELS: HOW CAN WE TEACH PHYSICAL LAWS TO MACHINE LEARNING MODELS?
Harini Narayanan, Michael Sokolov, Massimo Morbidelli and Alessandro Butté
(Abstract ID 17)

IMPROVED ACCURACY AND EXPLAINABILITY OF MACHINE LEARNING IN
A WEB-BASED INDUSTRIAL PROCESS MONITORING SYSTEM FOR ETHYLENE
PRODUCTION

Fangyuan Ma, Chengyu Han, Cheng Ji, Xianyao Han, Jingde Wang and **Wei Sun**
(Abstract ID 21)

ON-LINE CLASSIFICATION OF COAL COMBUSTION QUALITY USING NONLINEAR
SVM FOR IMPROVED NEURAL NETWORK OPTIMIZER PERFORMANCE

Jacob Tuttle, Landen Blackburn and Kody Powell
(Abstract ID 25)

IMAGE-BASED FEATURE EXTRACTION FOR EPS MONITORING ON WWTP
BIOREACTORS

Eugeniu Strelet, Ricardo Rendall, **Ivan Castillo**, Hui Lin, Leo Chiang and Marco S. Reis
(Abstract ID 27)

BAYESIAN STATISTICAL LEARNING AND STOCHASTIC PROGRAMMING FOR
OPTIMAL ENERGY MARKET PARTICIPATION

Xian Gao and Alexander Dowling
(Abstract ID 29)

A DEEP NEURAL NETWORK APPROACH TO FAULT DETECTION IN STOCHASTIC
NONLINEAR SYSTEMS

Kai Wang, **Bhushan Gopaluni**, Junghui Chen and Zhihuan Song
(Abstract ID 31)

COMBINING MECHANISTIC MODELLING WITH MACHINE LEARNING IN AN
INDUSTRIAL CASE STUDY: PREDICTING CREAM CHEESE FERMENTATION

Wei Yu, **David Wilson**, Y Lin and Brent Young
(Abstract ID 33)

MACHINE LEARNING PREDICTION OF BATTERY CYCLE LIFE

Kristen Severson, Peter Attia, Norman Jin, Nicholas Perkins, **Benben Jiang**, Zi Yang, Michael
Chen, Muratahan Aykol, Patrick Herring, Dimitrios Fraggedakis, Martin Bazant, Stephen Harris,
William Chueh and Richard Braatz
(Abstract ID 35)

LEARNING-BASED CONTROL: APPLICATIONS IN TREATMENT OF COMPLEX
SUBSTRATES USING NON-EQUILIBRIUM PLASMAS

Ali Mesbah, Angelo Bonzanini and David Graves
(Abstract ID 37)

DEEP REINFORCEMENT LEARNING FOR PID CONTROLLER TUNING

Kuang-Hung Liu, **Thomas Badgwell** and Michael Kovalski
(Abstract ID 41)

DUAL ADAPTIVE CONTROL OF A FED-BATCH BIOREACTOR BASED ON APPROXIMATE DYNAMIC PROGRAMMING

Ha-Eun Byun, Boeun Kim and Jay H. Lee

(Abstract ID 45)

UTILITY FUNCTIONS FOR BAYESIAN DESIGN OF TESTS FOR FAULT DETECTION AND ISOLATION

Evangelos Stefanidis, Kyle Palmer and George Bollas

(Abstract ID 49)

ACTIVE METRIC LEARNING FOR SUPERVISED CLASSIFICATION

Krishnan Kumaran, Dimitri Papagoergiou, Laurens Lueg and Nicolas Sahinidis

(Abstract ID 53)

MACHINE LEARNING TO IDENTIFY VARIABLES IN THERMODYNAMICALLY SMALL SYSTEMS

David Ford, Aditya Dendukuri, **Gulce Kalyoncu**, Khoa Luu and Matthew Patitz

(Abstract ID 55)

LEAST ANGLE REGRESSION AND PARTIAL LEAST SQUARES REGRESSION ON PROCESS DATA WITH HIGH COLLINEARITY

Siyi Guo, Kenmond Pang and Si-zhao Qin

(Abstract ID 57)

INCREASED PREDICTIVE ACCURACY WITH SIMULATION OPTIMIZATION BASED FEATURE SELECTION

Sara Shashaani and Kimia Vahdat

(Abstract ID 59)

DEVELOPMENT OF A MODEL PREDICTIVE CONTROL FOR STABILIZATION OF A GAS LIFT OIL WELL

Felipo Soares, Maurício de Souza Jr. and Argimiro Secchi

(Abstract ID 61)

COLLOIDAL PEROVSKITE HALIDE EXCHANGE OPTIMIZATION VIA REAL-TIME MACHINE LEARNING INTEGRATED WITH AUTOMATED MICROFLUIDIC SAMPLING

Robert Epps, Michael Bowen, Kameel Abdel-Latif and Milad Abolhasani

(Abstract ID 63)

OPTIMIZATION OF BIOTECHNOLOGICAL PROCESSES FUSING MACHINE LEARNING AND MODEL BASED CONTROL

Bruno Morabito, Johannes Pholodek, Anton Savchenko, Lisa Carius and Rolf Findeisen

(Abstract ID 65)

DEVELOPING MACHINE-LEARNING METHODS FOR THE QUANTITATION OF ORGANIC COMPOUNDS FROM ELECTRON-IONIZATION MASS SPECTROMETRY

Arnab Bose, Amrutha Raghu and Phillip R. Westmoreland

(Abstract ID 67)

DEEP LEARNING DRIVEN INDUSTRIAL AI FOR PROGNOSTICS AND HEALTH
MANAGEMENT OF COMPLEX SYSTEMS

Vlad Mironov, Konstantin Kiselev, **Srinivas Kodiyalam** and Piyush Modi

(Abstract ID 69)

OSISOFT ACADEMIC HUB FOR ENABLING STUDENT EDUCATION IN PROCESS
DATA ANALYTICS

Erica Trump and John Matranga

(Abstract ID 73)

MONITORING CRITICAL PROCESS PARAMETERS TO DESIGN AND CONTROL A
CRYSTALLIZATION PROCESS

Pietro Binel, Stefan Bötschi, Ashwin Kumar Rajagopalan, Fabio Salvatori, Manfred Morari
and Marco Mazzotti

(Abstract ID 75)