

FOPAM 2019

POSTER PRESENTATIONS

Thursday, August 8 ♦ 1:30 p.m. to 3:30 p.m.

MACHINE LEARNING OF CORRELATION BETWEEN MOLECULAR STRUCTURE AND SOLVATION CHARACTERISTICS

Jie-Jiun Chang, Jia-Lin Kang, **David Shan-Hill Wong**, Cheng-Hung Chou, Hsuan-Hao Hsu, Chen-Hsuan Huang and Shang-Tai Lin

(Abstract ID 2)

ON THE CONVERGENCE OF THE DYNAMIC INNER PCA ALGORITHM

Sungho Shin, Alexander Smith, S Joe Qin and Victor Zavala

(Abstract ID 6)

IMPROVED BIOMARKER-BASED DIAGNOSTICS OF LEUKEMIA SUBTYPES USING MACHINE LEARNING METHODS

Katherine Schmidt, Purnima Kodate and **Kirti Yenkie**

(Abstract ID 10)

FAULT DETECTION AND IDENTIFICATION USING BAYESIAN RECURRENT NEURAL NETWORKS

Weike Sun, Antonio Paiva, Peng Xu, Anantha Sundaram and Richard Braatz

(Abstract ID 11) – presented on Thursday

SPARSE PRINCIPAL COMPONENT ANALYSIS (SPCA) TO FACILITATE KNOWLEDGE DISCOVERY AND PROCESS MONITORING

Ahmet Palazoglu and Murat Kulaheci

(Abstract ID 12)

A DATA ENGINEERING APPROACH FOR TRACKING INDUSTRIAL CHEMICAL WASTES IN END-OF-LIFE SCENARIOS

Jose D. Hernandez-Betancur, Gerardo J. Ruiz-Mercado and John P. Abraham

(Abstract ID 14)

A NOVEL QUASI-DETERMINISTIC MONTE CARLO METHOD FOR ESTIMATION OF PROBABILITY DISTRIBUTIONS

Francesco Rossi, Linas Mockus and Gintaras Reklaitis

(Abstract ID 16)

COMBINING PROCESS SHORT CUTS AND ARTIFICIAL NEURAL NETWORKS FOR PREDICTIVE LIFE CYCLE ASSESSMENT OF CHEMICALS

Johanna Kleinekorte, Marcel Welz, Lorenz Fleitmann, Leif Kröger, Kai Leonhard and André Bardow

(Abstract ID 18)

SCALE-UP/DOWN OF A MONOCLONAL ANTIBODY MANUFACTURING BIOPROCESS USING DATA ANALYTICS

Pierantonio Facco, Simeone Zomer, Ruth C. Rowland-Jones, Douglas Marsh, Paloma Diaz-Fernandez, Gary Finka, Fabrizio Bezzo and Massimiliano Barolo

(Abstract ID 20)

NOVEL TOOL TO SELECT SURROGATE MODELING TECHNIQUE FOR DESIGN SPACE APPROXIMATION

Bianca Williams and Selen Cremaschi

(Abstract ID 22)

SPECTROSCOPIC MODEL CALIBRATION IN BIOMANUFACTURING USING JUST-IN-TIME LEARNING

Aditya Tulsyan, Hamid Khodabandehlou, Tony Wang, Gregg Schorner, Myra Coufal and Cenk Undey

(Abstract ID 24)

DATA FUSION BY JOINT NON-NEGATIVE MATRIX FACTORIZATION FOR HYPOTHESIZING PSEUDO-CHEMISTRY USING BAYESIAN NETWORKS

Anjana Puliyaanda, Arno De Klerk, Zukui Li and Vinay Prasad

(Abstract ID 26)

ADVERSARIAL AUTOENCODER BASED FAULT DIAGNOSIS MODEL FOR COMPLEX CHEMICAL PROCESSES

Kyojin Jang, Jonggeol Na, Minsu Kim, Seokyoung Hong and Il Moon

(Abstract ID 28)

REPRESENTATION LEARNING FOR INFERENCE SENSOR DEVELOPMENT IN AN ELECTRIC ARC FURNACE

Lee Rippon, Ibrahim Yousef, Jean-Francois Beaulieu, Michel Ruel, Sirish Shah and Bhushan Gopaluni

(Abstract ID 30)

DATA-DRIVEN PROCESS CONTROL VIA REINFORCEMENT LEARNING AND RECURRENT NEURAL NETWORKS

Nathan Lawrence, Philip Loewen, Gregory Stewart and **Bhushan Gopaluni**

(Abstract ID 32)

SMART PROCESS DATA ANALYTICS FOR SUPERVISED CLASSIFICATION

Fabian Mohr, Weike Sun and Richard D. Braatz

(Abstract ID 38)

COLOR MONITORING IN THE MANUFACTURE OF EXTRUDED POLYMER RECYCLE

Ellen Keene, Mark Rickard, Shari Kram, Stephanie Donati and Dane Powell

(Abstract ID 40)

BLIND SOURCE SEPARATION IN RAMAN AND ATR-FTIR SPECTROSCOPY: A
PROCESSING CASE STUDY

Giovanni Maria Maggioni, Stefani Kocevskaja, Ronald W. Rousseau and Martha A. Grover

(Abstract ID 42)

DEEP DETERMINISTIC POLICY GRADIENT ALGORITHM FOR BATCH PROCESS
CONTROL

Haeun Yoo, Boeun Kim and Jay H. Lee

(Abstract ID 44)

MACHINE LEARNING FOR MOLECULAR PROPERTY PREDICTIONS AND A
SOFTWARE ECOSYSTEM THAT ENABLES IT

Johannes Hachmann

(Abstract ID 46)

LEARNING SPATIOTEMPORAL DYNAMICS IN WHOLESALE ENERGY MARKETS
WITH DYNAMIC MODE DECOMPOSITION

Clay Elmore and **Alexander Dowling**

(Abstract ID 47) – presented on Thursday

DECISION-MAKING FOR MULTI-MICROGRID MANAGEMENT SYSTEM USING
ALTERNATING DIRECTION METHOD OF MULTIPLIERS

Dongho Han and Jay H. Lee

(Abstract ID 48)

GRAY-BOX IDENTIFICATION USING POLYNOMIAL NARMAX MODELS

Allyne M. dos Santos, Argimiro R. Secchi, Maurício B. de Souza Jr, Sigurd Skogestad and
Dinesh Krishnamoorthy

(Abstract ID 50)

NEURAL NETWORK TO ANALYZE WASTEWATER TREATMENT PLANT WITH CEPT

Signe Moe, Bård Myhre, Anne Marthine Rustad and Frank Batey

(Abstract ID 52)

A ROBUST EXTREMUM SEEKING SCHEME USING TRANSIENT MEASUREMENTS

Dinesh Krishnamoorthy and Sigurd Skogestad

(Abstract ID 54)

DEEP NEURAL NETWORKS FOR ARTIFACT REMOVAL FROM DATA GENERATED BY NONLINEAR SYSTEMS: HEART RATE MONITORING

Mohammad Reza Askari, Mudassir Rashid, Iman Hajizadeh, Mert Sevil, Sediqeh Samadi and Ali Cinar

(Abstract ID 56)

AN INFORMATION-THEORETIC APPROACH TO SENSOR DEPLOYMENT FOR HYDROCARBON PRODUCTION SURVEILLANCE

Ashutosh Tewari, Kuang-Hung Liu, Stijn de Waele and Dimitri Papageorgiou

(Abstract ID 58)

KNOWLEDGE-CONSTRAINED MACHINE LEARNING: PREDICTIVE PROCESS MODELING IN THE ABSENCE OF MECHANISTIC UNDERSTANDING AND LARGE DATA SETS

Daniel Griffin, Behnam Partopour and Seth Huggins

(Abstract ID 60)

MERGING MACHINE LEARNING WITH MECHANISTIC MODELS VIA SEQUENTIAL AND INTEGRATED HYBRID PROCESS MODELING

William Bradley and Fani Boukouvala

(Abstract ID 62)

STABILITY OF GAUSSIAN PROCESS LEARNING BASED OUTPUT FEEDBACK MODEL PREDICTIVE CONTROL

Michael Maiworm, Daniel Limon, Jose Maria Manzo and **Rolf Findeisen**

(Abstract ID 64)

TOWARDS NEURAL NETWORK BASED CONTROL WITH GUARANTEES — APPLICATION TO A CHEMICAL REACTOR

Tim Zieger, Janine Matschek, **Hoang Hai Nguyen**, Thimo Oehlschlägel, Anton Savchenko and Rolf Findeisen

(Abstract ID 66)

DATA SCIENCE ENABLEMENT WITH TIME SERIES DATA USING PI INTEGRATORS AND OSISOFT CLOUD SERVICES

Akhilesh Jain, Elizabeth McErlean and Joy Wang

(Abstract ID 74)