Publications

High Dimensional Very Short-Term Solar Power Forecasting Based on a Data-Driven Heuristic Method

A Novel Fault Location Methodology for Smart Distribution Networks

Predictive Maintenance within Combined Heat and Power Plants based on a Novel Virtual Sample Generation Method

A Probabilistic Sequence Classification Approach for Early Fault Prediction in Distribution Grids Using Long Short-Term Memory Neural Networks

Linear and Nonlinear Fault Location in Smart Distribution Network under Line Parameter Uncertainty

Transient and Steady-State Faults Location in Intelligent Distribution Networks Compensated with D-STATCOM using Time-Domain Equations and Distributed Line Model

An Intelligent and Cost-Effective Method for Single-Phase Fault Location in Conventional Distribution Systems,


Optimal Outage Management Model Considering Emergency Demand Response Programs for a Smart Distribution System

Wind Power Forecasting Using Machine Learning: State of the Art, Trends and Challenges
Monitoring and Evaluation of Building Ventilation System Fans Operation using Performance Curves

Harmonic Interaction Among Electronic Loads and Its Effects on the Electrical Quantities and Billing: Case Study with Lighting Devices

High Impedance Fault Detection and Location in Combined Overhead Line and Underground Cable Distribution Networks Equipped with Data Loggers


Optimal Energy Management in the Smart Microgrid Considering the Electrical Energy Storage System and the Demand-side Energy Efficiency Program

Transmit Analysis of Tidal Power Plant Connected to Network When Faced with Symmetrical and Unsymmetrical Faults

A New Practical Approach for Discrimination between Inrush Currents and Internal Faults in Power Transformers

A Stochastic Programming Model for the Optimal Operation of Unbalanced Three-Phase Islanded Microgrids

Determining an Accurate Fault Location in Electrical Energy Distribution Networks in the Presence of DGs using Transient Analysis

A Mixed of Nonlinear Loads and their Effects on the Electrical Energy Billing

A New Model Predictive Control Based Method for Control of Grid Connected Inverter Using Predictive Functional Control

A Novel Fault Location Algorithm for Electrical Networks Considering Distributed Line Model and Distributed Generation Resources

Analysis of the Electrical Quantities Measured by Revenue Meters Under Different Voltage Distortions and the Influences on the Electrical Energy Billing
Harmonic Interaction Effects on Power Quality and Electrical Energy Measurement System

The Optimal Energy Management in the Smart Microgrid Considering Demand Response Program and Energy Storage

A Generalized Model for the Optimal Operation of Microgrids in Grid-Connected and Islanded Droop-Based Mode

A Stair-Step Probabilistic Approach for Automatic Anomaly Detection in Building Ventilation System Operation

Distributed Strategy for Optimal Dispatch of Unbalanced Three-Phase Islanded Microgrids

Fault Isolability Analysis and Optimal Sensor Placement for Fault Diagnosis in Smart Buildings

Real Fault Section Estimation in Electrical Distribution Networks Based on the Fault Frequency Component Analysis

Optimal Sensors and Actuators Placement for Large-Scale Switched Systems

Consensus-Based Method for Anomaly Detection in VAV Units

Optimal Trajectory Tracking Solution: Fractional Order Viewpoint

Novel Real-Time Model-Based Fault Detection Method for Automatic Identification of Abnormal Energy Performance in Building Ventilation Units

An Accurate Fault Location Algorithm for Smart Electrical Distribution Systems Equipped with Micro Phasor Measurement Units

A method for fault detection and diagnostics in ventilation units using virtual sensors

Comparative Analysis of White-, Gray- and Black-box Models for Thermal Simulation of Indoor Environment: Teaching Building Case Study
Distribution network fault section identification and fault location using artificial neural network  

Protection Coordination Assessment and Improvement of Electrical Network of an Industrial Complex in Connection to Power Grid: An Experience Report  

Online energy simulator for building fault detection and diagnostics using dynamic energy performance model  

A Holistic Fuzzy Measure for Load Priority in Under Frequency Load Shedding Schemes  

A New Matching Algorithm for Fault Section Estimation in Power Distribution Networks  

Adverse Condition and Critical Event Prediction in Commercial Buildings: Danish Case Study  

Fault Detection and Diagnostics in Ventilation Units Using Linear Regression Virtual Sensors  

Fault Location in Double Circuit Medium Power Distribution Networks Using an Impedance Based Method  

Impedance-based fault location method for four-wire power distribution networks  
Dashti, R., Daisy, M., Shaker, H. R. & Tahavori, M., 2018, In: IEEE Access. 6, 1, p. 1342-1349

Reliability of Cyber Physical Systems with Focus on Building Management Systems  

A New Computationally Efficient Algorithm for Optimal Sensors and Actuators Placement for Large-Scale Systems  

A new data-driven controllability measure with application in intelligent buildings  

A new fault-location method for HVDC transmission-line based on DC components of voltage and current under line parameter uncertainty  

A Practical Approach to Validation of Buildings’ Sensor Data: A Commissioning Experience Report  
Adaptive Control for Revolute Joints Robot Manipulator with Uncertain/Unknown Dynamic Parameters and in Presence of Disturbance in Control Input  

Adverse Condition and Critical Event Prediction in Cranfield Multiphase Flow Facility  

Distributed Consensus-Based Economic Dispatch Considering Grid Operation  

Frequency Interval Cross Gramians for Linear and Bilinear Systems  

Generalization of the λ-method for decentralized economic dispatch considering reactive resources  

On the Existence of Frequency-Interval Gramians for Bilinear Systems  

Optimal Sensors and Actuators Placement for Large-Scale Unstable Systems via Restricted Genetic Algorithm  

Reliability Modeling of Cyber-Physical Systems: A Holistic Overview and Challenges  

Towards systematic reliability modeling of smart buildings  

Fault detection and diagnosis for smart buildings: State of the art, trends and challenges  

A Conceptual Framework for Occupant-Centered Building Management Decision Support System  

A new method presentation for locating fault in power distribution networks  

Fault Recoverability Analysis via Cross-Gramian  

Frequency interval balanced truncation of discrete-time bilinear systems  
Commercial Buildings Energy Performance within Context: *Occupants in Spotlight*

A Brief Note on the Generalized Singular Perturbation Approximation

Challenge: Advancing Energy Informatics to Enable Assessable Improvements of Energy Performance in Buildings

Control configuration selection for bilinear systems via generalised Hankel interaction index array

Control Configuration Selection for Multivariable Switched Dynamical Systems and Processes

Integration of DG Sources for Compensation of Unbalanced Loads in Power Grid

Integration of Renewable Energy for the Harmonic Current and Reactive Power Compensation

Multifunctional Control of an NPC Converter for the Grid Integration of Renewable Energy Sources

Stability Analysis for Operation of DG Units in Smart Grids

Frequency-Interval Model Reduction of Bilinear Systems

Dynamic modeling of a reformed methanol fuel cell system using empirical data and adaptive neuro-fuzzy inference system models

Lyapunov stability for continuous-time multidimensional nonlinear systems

Frequency-Interval control reconfigurability for automated processes

Generalized Hankel Interaction Index Array for Control Structure Selection for Discrete-Time MIMO Bilinear Processes and Plants
Stability analysis and output feedback control for a class of switched nonlinear systems

Time-Interval Model Reduction of Bilinear Systems

Dynamic modeling of a Reformed Methanol Fuel Cell system using empirical data and Adaptive Neuro-Fuzzy Inference System models

Generalized time-limited balanced reduction method

Optimal Sensor and Actuator Location for Unstable Systems

Gas composition modeling in a reformed methanol fuel cell system using adaptive neuro-fuzzy inference systems

Frequency-Interval control configuration selection for multivariable bilinear systems

Control reconfigurability of bilinear systems

An interaction measure for control configuration selection for multivariable bilinear systems

Frequency-Interval interaction measure for control configuration selection for multivariable processes

Generalized frequency-interval balanced model reduction method

Lyapunov stability for continuous-time 2D nonlinear systems

Model Reduction via Time-Interval Balanced Stochastic Truncation for Linear Time Invariant Systems

Generalized cross-gramian for linear systems
Control configuration selection for multivariable descriptor systems
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Relative Error Model Reduction via Time-Weighted Balanced Stochastic Singular Perturbation

H₂ optimal filtering for bilinear systems

Optimal filtering scheme for bilinear discrete-time systems: A linear matrix inequality approach

Upper and lower bounds of frequency interval gramaions for a class of perturbed linear systems

Model reduction of switched systems based on switching generalized gramaions

Control Configuration Selection for MIMO Nonlinear Systems

Control of a methanol reformer system using an Adaptive Neuro-Fuzzy Inference System approach

Methanol Reformer System Modeling and Control using an Adaptive Neuro-Fuzzy Inference System approach

Modeling and control of three phase rectifier with electronic smoothing inductor

Control Recongurability of Bilinear Hydraulic Derive Systems

Generalised gramaian framework for model/controller order reduction of switched systems

Time-Weighted Balanced Stochastic Model Reduction

Stability Analysis for a Class of Discrete-Time Two-Dimensional Nonlinear Systems

Accuracy Enhanced Stability and Structure Preserving Model Reduction Technique for Dynamical Systems with Second Order Structure
Model Reduction of Hybrid Systems
Shaker, H. R., 2010, Department of Electronic Systems, Aalborg University, Denmark.

Stability Analysis for a Class of Switched Nonlinear Systems

Switched controller order reduction

Switched systems reduction framework based on convex combination of generalized gramians


Frequency-domain generalized singular perturbation method for relative error model order reduction

Generalized Gramian Framework for Model Reduction of Switched Systems

On Exact/Approximate Reduction of Dynamical Systems Living on Piecewise linear Partition

On Model Reduction of Hybrid Systems

Frequency-domain balanced stochastic truncation for continuous and discrete time systems

Accuracy and efficiency enhanced nonlinear model order reduction

Frequency domain stochastic balanced truncation: An accuracy enhanced large scale model reduction technique

Improved model predictive control of discrete-time hybrid systems with mixed inputs

Accuracy and Efficiency Enhancement in Nonlinear Model Order Reduction

A clustering-based bounded-error approach for identification of PWA hybrid systems
A new mixed method for relative error model order reduction

Accuracy and efficiency enhancement in model order reduction of large circuits

Recursive identification of piecewise affine hybrid systems

Accuracy enhancement in HiMAT aircraft controller reduction

Accuracy Enhanced Model Reduction Technique for Nonlinear Dynamical Systems

Accuracy Enhancement in Model Reduction and Some Benchmark Examples

Frequency-Domain Second Order Structure Preserving Model Reduction
Shaker, H. R. & Samavat, M., 2006, Proceedings of 14th International Annual Conference on mechanical Engineering. iranian society of mechanical engineering (ISME)

Accuracy Enhancement in HiMAT Aircraft Controller Reduction Using a Recently Developed Balanced Technique

Prizes
Best poster award in International Conference on Medium and High Temperature PEM Fuel Cells,
Shaker, Hamid Reza (Recipient), 2012

IEEE Senior Member
Shaker, Hamid Reza (Recipient), 2018

Winner of best poster award in International Conference on Medium and High Temperature PEM Fuel Cells,
Shaker, Hamid Reza (Recipient), 2012

Winner of the Best Paper Award at 5th IEEE International Conference on Power Engineering, Energy and Drives (Powereng2015)
Shaker, Hamid Reza (Recipient), 2015

Winner of the Best Paper Award at IEEE International Conference on Big Data and Smart City,
Shaker, Hamid Reza (Recipient), 2016

Winner of the best poster award in Fuel Cells Science Technology
Shaker, Hamid Reza (Recipient), 2012

Activities
Advances in Mechanical Engineering (Journal)
Hamid Reza Shaker (Editor)
Jan 2015 → ...

2nd International Conference on Mechatronics and Robotics Engineering
Hamid Reza Shaker (Organizer)
2015 → 2016

International Journal of System Control and Information Processing (Journal)
Hamid Reza Shaker (Editor)
2014 → ...

Project proposals/research grant applications for researchers and PhD students at SDU
Hamid Reza Shaker (Participant)
2014

Systems Science & Control Engineering (Journal)
Hamid Reza Shaker (Editor)
2012 → ...

Hovedvejlederkursus for ph.d.-vejledere / Course for ph.d.-supervisors
Hamid Reza Shaker (Participant)
2011

Problem Based Learning (PBL)
Hamid Reza Shaker (Participant)
2011

University Pedagogy for Assistant Professors
Hamid Reza Shaker (Participant)
2010 → 2012

Massachusetts Institute of Technology
Hamid Reza Shaker (Visiting researcher)

Basic Course in Pedagogy for University Teachers
Hamid Reza Shaker (Participant)
2009

Pedagogical view: Educational practice - Basis/values
We live in a rapidly changing world witnessing breakthroughs in the different areas of science and technology. We are facing a lot of new challenges and new opportunities. It is consequently important to prepare our students to meet the challenges. As a university teacher, I have a unique opportunity to play such role for my students at a formative time in their lives. I see my teaching role as a mentor to facilitate learning and to prepare them for what lies beyond their graduation date, regardless of the career path they choose. I enjoy helping students appreciate how the material learned in the classroom, the projects, the workshops, the discussions and even my informal conversations can help to solve real-world problems, and I enjoy more observing the excitement that such knowledge generates. In my teaching, I try my best to facilitate interdisciplinary learning and peer learning. I use different style of teaching ranging from teaching in the workshops, teaching using virtual environments to ordinary classroom face2face lecturing. I personally believe that the combination of the methods with a proper weight works the best. Feedback from students has been vital to the process of growth I have undergone since I began teaching. I learned from feedbacks, not only because "Who Dares to Teach Must Never Cease to Learn", but also because getting feedbacks allows making adjustments needed by students in the class before the end of the semester and will foster a feeling among the students that you care about your teaching. Often minor adjustments can make a huge difference in the learning. Personal contact with students is essential to my approach. Many need encouragement to talk to their teachers, so I emphasize my availability for informal discussion and my willingness to help them sort out any problems they have with what they are learning.
Pedagogical Education
- Two-year Course of "University Pedagogy for Assistant Professors", Aalborg University, Denmark , 2010-2012.
- Course / workshop on "intercultural classroom", Aalborg University, Denmark, 2012.
- Hovedvejlederkursus for ph.d.-vejledere / Course for PhD-supervisors, Aalborg University, Denmark, 2011.
- Problem Based Learning (PBL), Aalborg University, Denmark, 2010.
- Basic Course in Pedagogy for University Teachers, Aalborg University, Denmark, 2009.

Teaching experience
Lectedured, designed lesson plans, homework assignments, and exams for the following courses:

- BSc courses:
  - Mechatronics 2, Aalborg University, Aalborg, Denmark (2011-2012).
  - Cybernetics, Norwegian University of Science and Technology, Norway (2013).
  - Control Engineering, University of Southern Denmark, Odense, Denmark (2014-present).
- MSc courses:
  - Linear Optimal Control, Aalborg University, Aalborg, Denmark (2010).
  - State-Space Control, Aalborg University, Aalborg, Denmark (2010-2012).
  - Multivariable and Nonlinear Control Methods, Aalborg University, Aalborg, Denmark (2012-2013).
  - Dynamics and Control of processes and systems, University of Southern Denmark, Odense, Denmark (2015-present).
  - Modeling and Optimization of Energy Processes, University of Southern Denmark, Odense, Denmark (2016-present).
  - Data-Based Modeling Methods, University of Southern Denmark, Odense, Denmark (2015).
  - Fault Detection and Diagnosis in Engineering Systems, University of Southern Denmark, Odense, Denmark (2016, 2019).
  - System Identification, Aalborg University, Aalborg, Denmark (2011-2012).
  - Fuzzy Logic and Neural Networks, Aalborg University, Aalborg, Denmark (2011-2012).

- PhD course:

Supervised and mentored students and junior researchers. Held regular office hours and supervisory meetings, evaluated the performance for several projects and education programs. The project are mainly related to modeling, optimization and control with application area within Energy Technology, Smart Grid and Mechatronics.