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## Publikationer

### **A Novel RMPC Strategy for Three-Phase Inverters Operating in Grid-Connected and Standalone Modes**

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**Towards systematic reliability modeling of smart buildings**

Lazarova-Molnar, S., Markoska, E. & Shaker, H. R., 28. jun. 2017, *2017 Winter Simulation Conference, WSC 2017*. Chan, V. (red.). IEEE Press, s. 2484-2494

**A Practical Approach to Validation of Buildings' Sensor Data: A Commissioning Experience Report**

Mattera, C. G., Lazarova-Molnar, S., Shaker, H. R. & Jørgensen, B. N., 8. jun. 2017, *Proceedings of the Third International Conference on Big Data Computing Service and Applications*. IEEE Computer Society Press, s. 287-292

**Reliability of Cyber Physical Systems with Focus on Building Management Systems**

Lazarova-Molnar, S., Shaker, H. R. & Mohamed, N., 17. jan. 2017, *2016 IEEE 35th International Performance Computing and Communications Conference, IPCCC 2016*. IEEE Press, 6 s.

**Adaptive Control for Revolute Joints Robot Manipulator with Uncertain/Unknown Dynamic Parameters and in Presence of Disturbance in Control Input**

Seyed Sakha, M. & Shaker, H. R., 2017, *Proceedings of the 3rd International Conference on Mechatronics and Robotics Engineering*. Association for Computing Machinery, s. 23-29

**Adverse Condition and Critical Event Prediction in Cranfield Multiphase Flow Facility**

Egedorf, S. & Shaker, H. R., 2017, *Proceedings of IEEE International Conference on Sensing, Diagnostics, Prognostics, and Control*. IEEE Press, s. 557-564

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

Seyed Sakha, M. & Shaker, H. R., 2017, *Proceedings of 4th International IEEE Conference on Control, Decision and Information Technologies*. IEEE Press, s. 1036-1041 (International Conference on Control, Decision and Information Technologies).

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

Shaker, H. R. & Lazarova-Molnar, S., 2017, *I: Energy and Buildings*. 138, s. 526-529

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

Daisy, M., Dashti, R. & Shaker, H. R., 2017, *I: Electrical Engineering*. 99, 2, s. 573-582

**Frequency Interval Cross Gramians for Linear and Bilinear Systems**

Jazlan, A., Sreeram, V., Shaker, H. R., Togneri, R. & BinhMinh, H., 2017, *I: Asian Journal of Control*. 19, 1, s. 22-34

**Generalization of the  $\lambda$ -method for decentralized economic dispatch considering reactive resources**

Vergara Barrios, P. P., Shaker, H. R., Jørgensen, B. N. & Pereira da Silva, L. C., 2017, *2017 IEEE PES Innovative Smart Grid Technologies Conference Europe, ISGT-Europe 2017 - Proceedings*. IEEE Press, 6 s.



**Optimal Sensors and Actuators Placement for Large-Scale Unstable Systems via Restricted Genetic Algorithm**  
Seyyed Sakha, M. & Shaker, H. R., 2017, I: *Engineering Computations*. 34, 8, s. 2582-2597

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

Lazarova-Molnar, S., Mohamed, N. & Shaker, H. R., 2017, *Proceedings of the 2017 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems*. IEEE, 6 s.

**A new method presentation for locating fault in power distribution networks**

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

Lazarova-Molnar, S., Shaker, H. R., Mohamed, N. & Jorgensen, B. N., 26. apr. 2016, *Proceedings of the 3rd MEC International Conference on Big Data and Smart City*. IEEE, s. 344-350 7460392

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

Lazarova-Molnar, S. & Shaker, H. R., 2016, *Intelligent Enviroments: Workshop Proceedings of the 12th International Conference on Intelligent Environments*. Novais, P. & Konomi, S. (red.). IOS Press, s. 436-445 (Ambient Intelligence and Smart Environments, Bind 21).

**Fault Recoverability Analysis via Cross-Gramian**

Shaker, H. R., 2016, *Mechatronics and Robotics Engineering for Advanced and Intelligent Manufacturing*. Zhang, D. & Wei, B. (red.). Springer, Bind III. s. 377-386 (Lecture Notes in Mechanical Engineering).

**Frequency interval balanced truncation of discrete-time bilinear systems**

Jazlan, A., Sreeram, V., Shaker, H. R. & Togneri, R., 2016, I: *Cogent Engineering*. 3, 1, 15 s., 1203082.

**Stability Analysis for Operation of DG Units in Smart Grids**

Pouresmaeil, E., Shaker, H. R., Mehraza, M., Shokridehaki, M. A., Rodrigues, E. & Catalão, J. P. S., 14. sep. 2015, *Proceedings of the 5th IEEE International Conference on Power Engineering, Energy and Drives*. IEEE, s. 447-452

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

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**A Brief Note on the Generalized Singular Perturbation Approximation**

Shaker, H. R., 7. jul. 2015, *Proceedings of the 6th International Conference on Modeling, Simulation and Applied Optimization*. IEEE Press, s. 1-2

**Control Configuration Selection for Multivariable Switched Dynamical Systems and Processes**

Shaker, H. R., 7. jul. 2015, *Proceedings of the 6th International Conference on Modeling, Simulation and Applied Optimization*. IEEE Press, s. 1-4

**Commercial Buildings Energy Performance within Context: Occupants in Spotlight**

Lazarova-Molnar, S., Kjærgaard, M. B., Shaker, H. R. & Jørgensen, B. N., maj 2015, *Proceedings of the 4th International Conference on Smart Cities and Green ICT Systems (SMARTGREENS)*. Helfert, M., Krempels, K-H., Donnellan, B. & Klein, C. (red.). Institute for Systems and Technologies of Information, Control and Communication, Bind 1. s. 306-312

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

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

Shaker, H. R. & Tahavori, M., 2015, I: *International Journal of Control*. 88, 1, s. 30-37

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

Pouresmaeil, E., Shaker, H. R., Veje, C., Shokridehaki, M., M. G. Rodrigues, E. & P. S. Catalão, J., 2015, *Proceeding of IEEE Powertech 2015*. IEEE, s. 1-6

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

Pouresmaeil, E., Shaker, H. R., Mehra, M., Shokridehaki, M. A., Rodrigues, E. & Catalão, J. P. S., 2015, *Proceedings of the 5th IEEE International Conference on Power Engineering, Energy and Drives (Powereng2015)*. Best Paper Award. IEEE, s. 31-36

**Time-Interval Model Reduction of Bilinear Systems**

Shaker, H. R. & Tahavori, M., 3. aug. 2014, I: *International Journal of Control*. 87, 8, s. 1487-1495

**Frequency-Interval Model Reduction of Bilinear Systems**

Shaker, H. R. & Tahavori, M., jul. 2014, I: *IEEE Transactions on Automatic Control*. 59, 7, s. 1948-1953 6690103.

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

Justesen, K. K., Andreasen, S. J. & Shaker, H. R., 1. apr. 2014, I: *Journal of Fuel Cell Science and Technology*. 11, 2, 021004.

**Lyapunov stability for continuous-time multidimensional nonlinear systems**

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**Frequency-interval control reconfigurability for automated processes**

Shaker, H. R., 1. jan. 2014, I: *Natural Hazards*. 72, 2, s. 1021-1027 7 s.

**Generalized Hankel Interaction Index Array for Control Structure Selection for Discrete-Time MIMO Bilinear Processes and Plants**

Shaker, H. R. & Tahavori, M., 2014, *Proceedings of the 53rd IEEE Conference on Decision and Control*. IEEE, s. 3149-3154 (IEEE Conference on Decision and Control. Proceedings).

**Stability analysis and output feedback control for a class of switched nonlinear systems**

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

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**Generalized time-limited balanced reduction method**

Shaker, H. R. & Shaker, F., 11. sep. 2013, *Proceedings of the American Control Conference*. IEEE, s. 5530-5535 6580703

**Optimal Sensor and Actuator Location for Unstable Systems**

Shaker, H. R. & Tahavori, M., sep. 2013, I: *Journal of Vibration and Control*. 19, 12, s. 1915-1920

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

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Frequency-interval control configuration selection for multivariable bilinear systems  
Shaker, H. R. & Tahavori, M., jul. 2013, I: *Journal of Process Control*. 23, 6, s. 894–904

Control reconfigurability of bilinear systems  
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An interaction measure for control configuration selection for multivariable bilinear systems  
Shaker, H. R. & Stoustrup, J., 1. apr. 2013, I: *Nonlinear Dynamics*. 72, 1-2, s. 165-174 10 s.

Model Reduction via Time-Interval Balanced Stochastic Truncation for Linear Time Invariant Systems  
Tahavori, M. & Shaker, H. R., 1. mar. 2013, I: *International Journal of Systems Science*. 44, 3, s. 493-501

Frequency-interval interaction measure for control configuration selection for multivariable processes  
Shaker, H. R., 1. jan. 2013, *Proceedings of the IEEE International Conference on Control Applications*. IEEE Press, s. 889-893 5 s. 6662863

Generalized frequency-interval balanced model reduction method  
Shaker, H. R., 1. jan. 2013, *Proceedings of the IEEE Conference on Decision and Control*. IEEE Press, s. 5546-5551 6 s. 6760763

Lyapunov stability for continuous-time 2D nonlinear systems  
Shaker, H. R., 1. jan. 2013, *Proceedings of the IEEE Conference on Decision and Control*. IEEE Press, s. 4586-4589 4 s. 6760602

Generalized cross-gramian for linear systems  
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Control configuration selection for multivariable descriptor systems  
Shaker, H. R. & Stoustrup, J., 26. nov. 2012, *Proceedings of the American Control Conference*. s. 6294-6299 6 s. 6315372

Relative Error Model Reduction via Time-Weighted Balanced Stochastic Singular Perturbation  
Tahavori, M. & Shaker, H. R., nov. 2012, I: *Journal of Vibration and Control*. 18, 13, s. 2006-2016

$H_2$  optimal filtering for bilinear systems  
Shaker, H. R., 1. okt. 2012, I: *Nonlinear Dynamics*. 70, 2, s. 999-1005 7 s.

Optimal filtering scheme for bilinear discrete-time systems: A linear matrix inequality approach  
Shaker, H. R., 17. sep. 2012, *IFAC Proceedings Volumes (IFAC-PapersOnline)*. PART 1 udg. Bind 7. s. 302-306 5 s.

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Shaker, H. R., 17. sep. 2012, *IFAC Proceedings Volumes (IFAC-PapersOnline)*. PART 1 udg. Bind 7. s. 713-716 4 s.

Model reduction of switched systems based on switching generalized gramians  
Shaker, H. R. & Wisniewski, R., 1. jul. 2012, I: *International Journal of Innovative Computing, Information and Control*. 8, 7 B, s. 5025-5044 20 s.

Control Configuration Selection for MIMO Nonlinear Systems  
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Control of a methanol reformer system using an Adaptive Neuro-Fuzzy Inference System approach  
Justesen, K. K., Andersen, J., Ehmsen, M. P., Andreasen, S. J., Shaker, H. R. & Sahlin, S. L., 2012.

Methanol Reformer System Modeling and Control using an Adaptive Neuro-Fuzzy Inference System approach  
Justesen, K. K., Ehmsen, M. P., Andersen, J., Andreasen, S. J., Shaker, H. R. & Sahlin, S. L., 2012.

Modeling and control of three phase rectifier with electronic smoothing inductor  
Singh, Y. V., Rasmussen, P. O., Andersen, T. O. & Shaker, H. R., 1. dec. 2011, *IECON Proceedings (Industrial Electronics Conference)*. s. 1450-1455 6 s. 6119521

Control Reconfigurability of Bilinear Hydraulic Drive Systems  
Shaker, H. R. & Tahavori, M., 2011, *International Conference on Fluid Power and Mechatronics (FPM)*. IEEE Press, s. 477-480

Generalised gramian framework for model/controller order reduction of switched systems  
Shaker, H. R. & Wisniewski, R., 2011, *International Journal of Systems Science*. 42, 8, s. 1277-1291

Time-Weighted Balanced Stochastic Model Reduction  
Tahavori, M. & Shaker, H. R., 2011, *The 50th IEEE Conference on Decision and Control and European Control Conference*. IEEE Press, s. 7777-7781

Stability Analysis for a Class of Discrete-Time Two-Dimensional Nonlinear Systems  
Shaker, H. R. & Tahavori, M., sep. 2010, *International Journal of Systems Science*. 41, 3, s. 293-299

Accuracy Enhanced Stability and Structure Preserving Model Reduction Technique for Dynamical Systems with Second Order Structure  
Tahavori, M. & Shaker, H. R., 2010, *Annual International Conference on Mechanical Engineering, Sharif University of Technology, Tehran, Iran*.

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  
Shaker, H. R. & How, J. P., 2010, *Proceedings of the American Control Conference*. s. 2517 - 2520

Switched controller order reduction  
Shaker, H. R., Wisniewski, R. & Tabatabaeipour, S., 1. dec. 2009, *2009 IEEE International Conference on Control and Automation, ICCA 2009*. s. 2237-2242 6 s. 5410439

Switched systems reduction framework based on convex combination of generalized gramians  
Shaker, H. R. & Wisniewski, R., 1. dec. 2009, *Journal of Control Science and Engineering*. 2009, 710478.

"Discussion: model reduction of large-scale discrete plants with specified frequency domain balanced structure" (Zadegan, A., and Zilouchian, A., 2005, *ASME J. Dyn. Syst. Meas., Control*, 127, pp. 486-498)"  
Shaker, H. R. & Wisniewski, R., 1. nov. 2009, *Journal of Dynamic Systems, Measurement and Control*. 131, 6

Frequency-domain generalized singular perturbation method for relative error model order reduction  
Shaker, H. R., 1. feb. 2009, *Journal of Control Theory and Applications*. 7, 1, s. 57-62 6 s.

Generalized Gramian Framework for Model Reduction of Switched Systems  
Shaker, H. R. & Wisniewski, R., 2009, *2009 European Control Conference (ECC)*. IEEE

On Exact/Approximate Reduction of Dynamical Systems Living on Piecewise linear Partition  
Shaker, H. R. & Wisniewski, R., 2009, *Proceedings MATHMOD 09 Vienna: ARGESIM Report no. 34 and 35*. Breitenecker, F. & Troch, I. (red.). Vienna University of Technology

On Model Reduction of Hybrid Systems

Shaker, H. R. & Wisniewski, R., 2009, *CICADA workshop on Hybrid Systems and Model Reduction*.

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

Shaker, H. R., 1. apr. 2008, I: *International Journal of Control, Automation and Systems*. 6, 2, s. 180-185 6 s.

Accuracy and efficiency enhanced nonlinear model order reduction

Gheisari, Y., Shaker, H. R., Torabi, M. A. & Samavat, M., 1. dec. 2007, *Proceedings of the 2006 IEEE Conference on Computer Aided Control Systems Design, CACSD*. s. 3007-3012 6 s. 4064821

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

Shaker, H. R., Samavat, M. & Ghareveisi, A. A., 1. dec. 2007, *Proceedings of the 2006 IEEE Conference on Computer Aided Control Systems Design, CACSD*. s. 3003-3006 4 s. 4064820

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

Gholami, M., Salahshoor, K., Tabatabaei-Pour, M., Shaker, H. R. & Alizadeh, T., 1. dec. 2007, *IECON Proceedings (Industrial Electronics Conference)*. s. 744-749 6 s. 4460321

Accuracy and Efficiency Enhancement in Nonlinear Model Order Reduction

Shaker, H. R. & Samavat, M., 2007, I: *International Journal of Modelling, Identification and Control*. 2, 2, s. 147-153

Accuracy and efficiency enhancement in model order reduction of large circuits

Shaker, H. R., Tabatabaeepour, M., Samavat, M. & Gharaveisi, A. A., 1. dec. 2006, *Midwest Symposium on Circuits and Systems*. Bind 1. s. 266-270 5 s. 4267125

A clustering-based bounded-error approach for identification of PWA hybrid systems

Tabatabaei-Pour, M., Gholami, M., Salahshoor, K. & Shaker, H. R., 1. dec. 2006, *9th International Conference on Control, Automation, Robotics and Vision, 2006, ICARCV '06*. 4150167

A new mixed method for relative error model order reduction

Shaker, H. R., Tabatabaeepour, M., Samavat, M. & Gharaveisi, A. A., 1. dec. 2006, *Midwest Symposium on Circuits and Systems*. Bind 2. s. 356-360 5 s. 4267364

Recursive identification of piecewise affine hybrid systems

Tabatabaei-Pour, M., Gholami, M., Shaker, H. R. & Moshiri, B., 1. dec. 2006, *9th International Conference on Control, Automation, Robotics and Vision, 2006, ICARCV '06*. 4150225

Accuracy enhancement in HiMAT aircraft controller reduction

Shaker, H. R. & Samavat, M., 17. nov. 2006, *1st International Symposium on Systems and Control in Aerospace and Astronautics*. Bind 2006. s. 250-254 5 s. 1627621

Accuracy Enhanced Model Reduction Technique for Nonlinear Dynamical Systems

Shaker, H. R. & Samavat, M., 2006, *Proceedings of 2nd Int. Symposium on Chaos and Nonlinear Dynamical Systems*. Iran: Aerospace Research center

Accuracy Enhancement in Model Reduction and Some Benchmark Examples

Shaker, H. R. & Samavat, M., 2006, *Proceedings of ASME Int. Conf. on Modeling and Simulation*. Kuala Lumpur, Malaysia

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  
Shaker, H. R. & Samavat, M., 2005, I: Int. J. of Automatic Control and System Engineering. 5, 4, s. 31-36

## **Priser**

**Best poster award in International Conference on Medium and High Temperature PEM Fuel Cells,**  
Shaker, H. R. (Modtager), 2012

### **IEEE Senior Member**

Shaker, H. R. (Modtager), 2018

**Winner of best poster award in International Conference on Medium and High Temperature PEM Fuel Cells,**  
Shaker, H. R. (Modtager), 2012

**Winner of the Best Paper Award at 5th IEEE International Conference on Power Engineering, Energy and Drives (Powereng2015)**

Shaker, H. R. (Modtager), 2015

**Winner of the Best Paper Award at IEEE International Conference on Big Data and Smart City,**  
Shaker, H. R. (Modtager), 2016

**Winner of the best poster award in Fuel Cells Science Technology**

Shaker, H. R. (Modtager), 2012

## **Aktiviteter**

### **Discover Energy (Tidsskrift)**

Shaker, H. R. (Associeret redaktør)

apr. 2023 → ...

### **International Conference on Electrical and Electronics Engineering**

Shaker, H. R. (Teknisk program komite)

2023

### **International Conference on Signal Processing and Machine Learning**

Shaker, H. R. (Teknisk program komite)

2023

### **International Conference on Smart Energy Grid Engineering**

Shaker, H. R. (Teknisk program komite)

2023

### **International Conference on System Reliability and Safety**

Shaker, H. R. (Teknisk program komite)

2023

### **10th IEEE Conference on Smart Energy Grid Engineering, SEGE 2022**

Shaker, H. R. (Teknisk program komite)

2022

**International Conference on Signal Processing and Machine Learning**

Shaker, H. R. (Teknisk program komite)  
2022

**9th IEEE International Conference on Smart Energy Grid Engineering, SEGE 2021**

Shaker, H. R. (Teknisk program komite)  
2021

**2020 7th International Conference on Electrical and Electronics Engineering (ICEEE)**

Shaker, H. R. (Teknisk program komite)  
2020

**Energy Informatics (Tidsskrift)**

Shaker, H. R. (Redaktør)  
2019 → ...

**5th International Conference on Electrical and Electronics Engineering**

Shaker, H. R. (Teknisk program komite)  
2018

**Advances in Mechanical Engineering (Tidsskrift)**

Shaker, H. R. (Redaktør)  
jan. 2015 → jan. 2018

**2nd International Conference on Mechatronics and Robotics Engineering**

Shaker, H. R. (Arrangør)  
2015 → 2016

**International Journal of System Control and Information Processing (Tidsskrift)**

Shaker, H. R. (Redaktør)  
2014 → ...

**Project proposals/research grant applications for researchers and PhD students at SDU**

Shaker, H. R. (Deltager)  
2014

**Systems Science & Control Engineering (Tidsskrift)**

Shaker, H. R. (Redaktør)  
2012 → ...

**Hovedvejlederkursus for ph.d.-vejledere / Course for ph.d.-supervisors**

Shaker, H. R. (Deltager)  
2011

**Problem Based Learning (PBL)**

Shaker, H. R. (Deltager)  
2011

**University Pedagogy for Assistant Professors**

Shaker, H. R. (Deltager)  
2010 → 2012

**Massachusetts Institute of Technology**

Shaker, H. R. (Gæsteforsker)  
1. jul. 2009 → 1. jan. 2010

## Basic Course in Pedagogy for University Teachers

Shaker, H. R. (Deltager)

2009

## Pedagogical view: Educational practice - Basis/values

In today's dynamic world, brimming with endless possibilities and exciting challenges, I firmly believe that education must transcend traditional boundaries. As a devoted university professor in the vibrant field of Energy Informatics, I see myself as a catalyst for unleashing the boundless potential within my students. My mission is not only to impart knowledge but also to empower them to navigate the ever evolving landscape of science and technology with confidence and enthusiasm.

Guided by the belief that education is a journey of discovery, I embrace the role of a mentor, guiding my students through their transformative learning experiences. I find immense joy in illustrating how the concepts we explore in the classroom are not just theoretical constructs but powerful tools to tackle real-world problems. Witnessing their eyes light up with excitement as they grasp the impact of their newfound knowledge is truly gratifying.

Early in my teaching journey, I had the privilege of being part of Aalborg University, an institution renowned for its pioneering problem-based, project-organized model - the illustrious PBL - Aalborg Model. Embracing this revolutionary approach has allowed me to sharpen my teaching and mentoring skills, and more importantly, it has elevated my students' learning experiences to new heights. In my classes, I foster an environment that encourages interdisciplinary exploration and collaborative learning. I blend a myriad of teaching methodologies, from engaging workshops and virtual interactions to vibrant face-to-face sessions. By seamlessly integrating these diverse techniques, I ensure that each student's unique learning style is addressed, sparking their curiosity and igniting their passion for knowledge.

However, the heart of my teaching philosophy lies in my unyielding commitment to student feedback.

I firmly believe that the best educators are perpetual learners. I eagerly embrace the invaluable insights shared by my students, as their feedback not only shapes my approach but also cultivates a sense of care and dedication towards their growth and success.

I recognize the significance of personal connections in the learning process. To build a supportive and encouraging atmosphere, I warmly welcome informal conversations with my students, nurturing an environment where they feel empowered to express their thoughts and seek guidance. Together, we embark on a transformative journey, where even the smallest adjustments can pave the way for profound learning outcomes.

My passion for teaching lies not only in the dissemination of knowledge but in the cultivation of future leaders, innovators, and problem solvers. It is a privilege to guide my students towards a world of possibilities, where they can confidently embrace the challenges that await them beyond graduation.

Incorporating my pedagogical expertise with the dynamic PBL - Aalborg Model, I wholeheartedly commit to inspiring a generation of Energy Informatics enthusiasts, empowering them to create a brighter and more sustainable tomorrow.

## 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

Lecturer

Lectured, designed lesson plans, homework assignments, and exams for the following courses:

1. BSc Course, Mechatronics 2, Aalborg University, Aalborg, Denmark, 2011 and 2012.
2. BSc Course, Cybernetics, Norwegian University of Science and Technology (NTNU), Ålesund, Norway, 2013.
3. BSc Course, Feedback Control Systems, Norwegian University of Science and Technology (NTNU), Ålesund, Norway, 2013.
4. BSc Course, Control Engineering, University of Southern Denmark, Odense, Denmark, 2014-2022.
5. BSc Course, Engineering Optimization, University of Southern Denmark, Odense, Denmark, 2017, 2018, and 2022.
6. BSc Course, Expert in Teams, University of Southern Denmark, Odense, Denmark, 2018, and 2019.
7. MSc Course, Linear Optimal Control, Aalborg University, Aalborg, Denmark, 2010.
8. MSc Course, State-Space Control, Aalborg University, Aalborg, Denmark, 2010-2012.
9. MSc Course, Stochastic Process, Aalborg University, Aalborg, Denmark, 2011-2013.
10. MSc Course, Multivariable and Nonlinear Control Methods, Aalborg University, Aalborg, Denmark, 2012, and 2013.
11. MSc Course, Dynamics and Control of processes and systems, University of Southern Denmark, Odense, Denmark, 2015-2019.



12. MSc Course, Modeling and Optimization of Energy Processes, University of Southern Denmark, Odense, Denmark, 2016-2019.
13. MSc Course, Advanced Optimization for Energy Applications, University of Southern Denmark, Odense, Denmark, 2020.
14. MSc Course, Advanced Optimization, University of Southern Denmark, Odense, Denmark, 2022.
15. MSc Course, Data-Based Modeling Methods, University of Southern Denmark, Odense, Denmark, 2015.
16. MSc Course, Fault Detection and Diagnosis in Industrial Systems, University of Southern Denmark, Odense, Denmark, 2016, and 2019.
17. MSc Course, Fault Detection and Diagnosis in Engineering Systems, University of Southern Denmark, Odense, Denmark, 2020, and 2021.
18. MSc Course, Model Predictive Control, University of Southern Denmark, Odense, Denmark, 2022.
19. MSc Course, System Identification, Aalborg University, Aalborg, Denmark, 2011, and 2012.
20. MSc Course, Fuzzy Logic and Neural Networks, Aalborg University, Aalborg, Denmark, 2011, and 2012.
21. PhD Course, Model Reduction, Aalborg University, Aalborg, Denmark, 2008.
22. Industrial/PhD Course, Efficient Modeling and Control of Complex Systems, Aalborg University, Aalborg, Denmark, 2011-2013.

#### Supervisor

Supervised and mentored students and junior researchers/faculty members. Held regular office hours and supervisory meetings, evaluated the performance for the following projects and education:

1. BSc Project Supervision, Mechatronic Design, Control, and Optimization of an Inverted Pendulum, 2011.
2. BSc Project Supervision, Mechatronic Design, Modeling, and Control of a Small-Scale Wave Energy Converter, in collaboration with WAVE STAR, Aalborg University, Aalborg, Denmark, 2011.
3. BSc Project Supervision, Implementation of a voice coil actuator in Wave-Star PTO Systems, Aalborg University, Aalborg, Denmark, 2011.
4. BSc Project Supervision, Integration of a Sound Reception System in Ulstein System, in collaboration with Ulstein Power & Control, Norwegian University of Science and Technology (NTNU), Ålesund, Norway, 2013.
5. BSc Project Supervision, Logging, and Visualization of ship ballast operations, in collaboration with MMC Green Technology, Norwegian University of Science and Technology (NTNU), Ålesund, Norway, 2013.
6. BSc Project Supervision, Camera-based distance measurement on a DP vessel, in collaboration with Rolls-Royce, Norwegian University of Science and Technology (NTNU), Ålesund, Norway, 2014.
7. BSc Project Supervision, Searchlight on board, in collaboration with Rolls-Royce, Norwegian University of Science and Technology (NTNU), Ålesund, Norway, 2014.
8. BSc Project Supervision, Rule-Based Fault Detection for Smart Buildings, University of Southern Denmark, Odense, Denmark, 2018.
9. BSc Project Supervision, Fault Detection and Diagnostics of Ventilation Systems of OU44 Smart Building at SDU, University of Southern Denmark, Odense, Denmark, 2018.
10. BSc Project Supervision, Adverse effects and critical event prediction in the electric power grid, University of Southern Denmark, Odense, Denmark, 2018.
11. BSc Project Supervision, Analysis of the Danish Electric Billing Rules with Focus on Power Quality, University of Southern Denmark, Odense, Denmark, 2021.
12. BSc Project Supervision, Data Validation for Smart Buildings, University of Southern Denmark, Odense, Denmark, 2021.
13. BSc Project Supervision, Digital Twin-Based Fault Detection and Diagnosis in the District Heating System, University of Southern Denmark, Odense, Denmark, 2023.
14. MSc Project Supervision: "Analysis and Control of Wind Turbines," in collaboration with VESTAS, Aalborg University, Aalborg, Denmark, 2011.
15. MSc Project Supervision: "Identification of Varying Dynamics in Hydraulic Actuator Systems," Aalborg University, Aalborg, Denmark, 2011.
16. MSc Project Supervision: "System Identification and control for Fuel Cells Systems for the Automotive industry," in collaboration with Serenergy, Aalborg University, Aalborg, Denmark, 2011.
17. MSc Project Supervision: "Control of a Servo Hydraulic Robot," Aalborg University, Aalborg, Denmark, 2012.
18. MSc Project Supervision: "Modeling and Control of a Robot Manipulator," Aalborg University, Aalborg, Denmark, 2012.
19. MSc Project Supervision: "Neuro-fuzzy Control of a Hydraulic Crane," Aalborg University, Aalborg, Denmark, 2012.
20. MSc Project Supervision: "Feedforward Control for a Reformed Methanol Fuel Cell System," in collaboration with Serenergy, 2012 (won best AAU ET thesis award).
21. MSc Project Supervision: "Industrial Kitchen Energy Optimization," in collaboration with Milan-Ingenieurbuero, University of Southern Denmark, 2015.
22. MSc Project Supervision: "Adverse Condition and Critical Event Prediction in Commercial Buildings," in collaboration with NASA's Ames Research Center, University of Southern Denmark, 2016.
23. MSc Project Supervision: "Analysis and Design of Model-Based Fault Diagnosis Systems for Building Systems and Components," University of Southern Denmark, 2018.
24. MSc Project Supervision: "Fault and Critical Event Prediction in Commercial Buildings," in collaboration with NASA's Ames Research Center, University of Southern Denmark, 2019.
25. MSc Project Supervision: "Data Validation in Fjernvarme Fyn's District Heating System," University of Southern Denmark, 2021.
26. MSc Project Supervision: "Optimization of a Renewable Energy Portfolio with Power-to-X Integration: Capital Investment and Operational Scheduling," University of Southern Denmark, 2023.

27. PhD Project supervision: "Motor-Integrated Variable Speed Drives," Aalborg University, Aalborg, Denmark, 2011-2012.
  28. PhD Project supervision: "Reformed Methanol Fuel Cell Systems - and their use in Electric Hybrid Systems," Aalborg University, Aalborg, Denmark, 2012-2013.
  29. PhD Project supervision: "Fault Location in Electric Distribution Systems," Persian Gulf University, Bushehr, Iran, 2015-2020.
  30. PhD Project supervision: "Software Tools and Methods for Building Fault Detection and Diagnostics," University of Southern Denmark, Odense, Denmark, 2015-2018.
  31. PhD Project supervision: "Fault-tolerant portfolio optimization in Smart Grid," University of Southern Denmark, Odense, Denmark, 2015-2018.
  32. PhD Project supervision: "Analysis of Electronic Loads on Electrical Measurements, Power Quality, and Billing," University of Southern Denmark, Odense, Denmark, 2018-2021.
  33. PhD Project supervision: "Automated Data Validation and Reconstruction, Proactive and Predictive Maintenance of Energy systems and processes," University of Southern Denmark, Odense, Denmark, 2020-2023.
  34. PhD Project supervision: "Automatic Data Validation, Fault, and Anomaly Detection and Diagnosis for Operation- and Energy Performance Improvements," University of Southern Denmark, Odense, Denmark, 2021-2024.
  35. PhD Project supervision: "Smart Asset Maintenance and Management for Electric Power Distribution Grids," University of Southern Denmark, Odense, Denmark, 2022-2025.
  36. PhD Project supervision: "Application of state estimation and machine learning techniques for energy management of microgrids," University of Southern Denmark, Odense, Denmark, 2023-2025.
  37. Postdoctoral Project Supervision/Mentorship: "Diagnostics of Buildings Energy Performance," University of Southern Denmark, Odense, Denmark, 2018-2020.
  38. Supervisor for Assistant Professors in: "Teacher Training Programme for Assistant Professors and Postdocs," University of Southern Denmark, Odense, Denmark, 2018-2020.
- Internship Coordinator for the BSc students 2011-2013 Aalborg University · Aalborg, Denmark