

## **Murat Kulahci**

*Professor*

*Technical University of Denmark*

*muku@dtu.dk (45) 45 25 33 82*

*and*

*Professor*

*Luleå University of Technology, Sweden*

*murat.kulahci@ltu.se*

*ORCID ID: [0000-0003-4222-9631](https://orcid.org/0000-0003-4222-9631)*

*h-index: 20 / i10-index:45*

---

### **EDUCATION**

#### **Ph.D. Industrial Engineering, May 2000**

*University of Wisconsin-Madison*

*Minor: Statistics*

#### **M.S. Finance (Quantitative Master's in Finance), May 1999**

*University of Wisconsin-Madison*

#### **M.E. Chemical Engineering, June 1997**

*Illinois Institute of Technology, Chicago, IL*

#### **B.S. Industrial Engineering, June 1993**

*Bogazici University, Istanbul, Turkey*

#### **B.S. Chemical Engineering, June 1993**

*Bogazici University, Istanbul, Turkey*

### **PROFESSIONAL EXPERIENCE**

#### **Professor, 2022 to present**

*Department of Applied Mathematics and Computer Science,*

*Technical University of Denmark*

#### **Professor, 2016 to present**

*Department of Business Administration, Technology and Social Sciences,*

*Luleå University of Technology, Sweden*

#### **Associate Professor, 2006 to 2022**

*Department of Applied Mathematics and Computer Science,*

*Technical University of Denmark*

#### **Guest Professor, 2012 to 2016**

*Department of Business Administration, Technology and Social Sciences,*

*Luleå University of Technology, Sweden*

#### **Assistant Professor, 2002 – 2007**

*Department of Industrial Engineering,*

*Arizona State University, USA*

**Research Associate, 2000 – 2001**

*Center for Quality and Productivity Improvement,  
University of Wisconsin-Madison, USA*

**Quantitative Analyst, 2000 – 2001**

*State of Wisconsin Investment Board, Madison, WI, USA*

**PROFESSIONAL SERVICES**

Council Member	European Network for Business and Industrial Statistics	2017 – 2021
Management Committee	Stu Hunter Research Conference	2017 to present
Editorial Board	Quality and Reliability Engineering – International	2006 to present
Editorial Board	Quality Engineering	2006 to present
Advisory Committee	Quality Engineering	2016 to present
Associate Editor	Journal of Simulation	2013 to present
Guest Editor	International Journal of Production Research on Quality Engineering	
Guest Editor	Quality and Reliability Engineering – International on Design for Six Sigma	
Guest Editor	Quality and Reliability Engineering – International on Data Mining	
Guest Editor	Quality Engineering on Stu Hunter Conference	
Organizing Committee	Stu Hunter Research Conference in Phoenix-USA	2014
Organizing Committee	Stu Hunter Research Conference in Copenhagen, Denmark	2017
Head	ASQ Søren Bisgaard Award committee	2013 to 2016
Member	ENBIS Young Statistician	2020 to present
Member	ENBIS Best Manager Awards Committee	2020 to present
Referee	Journal of American Statistical Association (JASA), Technometrics, Journal of Quality Technology, Journal of Applied Statistics, Quality and Reliability Engineering – International, Quality Engineering, Computers and Industrial Engineering, Journal of Simulation, Quality Technology and Quantitative Management, International Journal of Production Research, Chemometrics and Intelligent Laboratory Systems	

**PROJECTS FUNDED**

DTU Discovery Grant “Acytics: Cloud Based Automated Software” Project Budget: 100K DKK Managing Duty: Main supervision of a PostDoc	(2020-2021)
Lego System A/S “Production Data Analytics at LEGO” Project Budget: 1.48 mio. DKK Managing Duty: Main supervision of a PostDoc	(2021-2022)
Manufacturing Academy of Denmark (MADE) - FAST Project Budget: 2.2 mio. DKK Managing Duty: Main Supervision of a PhD student	(2020-2023)
Lego System A/S “Production Data Analytics at LEGO” Project Budget: 1 mio. DKK Managing Duty: Main supervision of a PostDoc	(2019-2020)
Innovationsfonden, Forskning, Teknologi & Vækst i Danmark “Research Based Enterprise – Qualification & Enterprising of Soft Tooling – RE-QUEST” Project Budget: ~2 mio. DKK/12.5 mio DKK	(2019-2021)

Managing Duty: Main supervision of a PostDoc

Innovationsfonden, Forskning, Teknologi & Vækst i Danmark (2019-2022)  
 “Electronic Systems Manufactured for Climate-ELMAC”  
 Project Budget: ~2 mio. DKK/17.5 mio DKK  
 Managing Duty: Main supervision of a PostDoc

Innovationsfonden, Forskning, Teknologi & Vækst i Danmark (2019-2021)  
 “Process optimization and Model-based learning extraction”  
 Industrial PhD  
 Managing Duty: Main supervision

DTU Oil and Gas Center 2019  
 “Development of User Interface for TE Process”  
 Project Budget: 0.2 mio. DKK  
 Managing Duty: Main supervision

Otto Mønstedts Fond 2018  
 Funding for inviting a guest professor  
 Project Budget: 0.21 mio. DKK

MADE Digital (2017-2019)  
 “Statistical Analysis and Utilization of Production Data”  
 Project Budget: 2.2 mio. DKK  
 Managing Duty: Main supervision of a Post Doc

Vinnova, Sweden (2016-2019)  
 ”Coordinated, efficient railway infrastructure maintenance planning”  
 Project Budget: 3.6 mi. SEK

Innovationsfonden, Forskning, Teknologi & Vækst i Danmark (2015-2019)  
 “BIOPRO2: BIO-based PROduction TOwards the next generation of optimized and sustainable processes”  
 Project Budget: ~2 mio DKK  
 Managing Duty: Main supervision of a PhD student

Innovationsfonden, Forskning, Teknologi & Vækst i Danmark (2015-2018)  
 “INTELLISWITCH Intelligent Quality Assessment of Railway Switches and Crossings,”  
 Project Budget: 2.9 mio. DKK  
 Managing Duty: Main supervision of a Post Doc

Manufacturing Academy of Denmark (MADE) (2014-2019)  
 “Monitoring control of injection molding processes with Lego”  
 Project Budget: 2.2 mio. DKK  
 Managing Duty: Main Supervision of a PhD student

Manufacturing Academy of Denmark (MADE) (2014-2017)  
 “Statistical Inference for Improved Industrial Processes with Danfoss,”  
 Project Budget: 2.2 mio. DKK  
 Managing Duty: Co-supervision of a PhD student

Swedish Research Council (Luleå University of Technology) (2014-2017)  
 “Statistical Methods for Improving Continuous Processes,”  
 Project Budget: 5.1 mio. SEK  
 Managing Duty: Main supervision of a PhD student

Danish Meat Research Institute (2011-2015)

“Monitoring Animal Wellbeing,”  
Project Budget: 0.8 mio. DKK  
Managing Duty: Main supervision of a PhD student

BaneDanmark (2012-2014)  
Four consulting projects: “Track Ballast Conditions”, “Deterioration Models for Switches”, “Improvement of  $\Delta\sigma H$ -model”, “Development of Class 4 Defect Prognosis Tool,”  
Project Budget: 0.9 mio. DKK  
Managing Duty: Main supervision of a research associate

DSB (2012)  
“Investigation of IC4 Train’s Brake System”  
Project Budget: 1.2 mio. DKK

Danish Agency for Science, Technology and Innovation (2009)  
“An Integrated Design Optimization Framework Using Computer Simulation Experiments”  
Project Budget: 0.2 mio. DKK

Architecture Technology Corporation (2005)  
*Routing Protocol Design Toolset for Wireless Ad Hoc Networks to Maximize Quality of Service*  
Project Budget: 20K USD

USCAR: General Motors, Ford and DaimlerChrysler (2000-2002)  
“Developing Statistical Monitoring and Control Techniques for On-board Diagnostics”  
Project Budget: 0.25 mio. USD

State of Wisconsin Investment Board (2000-2002)  
“Developing Quantitative Techniques for Asset Allocation Problems”  
Project Budget: 0.1 mio. USD

## **INDUSTRY COLLABORATION**

The LEGO Group (2014 to 2023); PhD Project/ Postdoc Projects on data analytics for production

Novo Nordisk (2012-2021); BS/MS projects on data analytics for production

Jyske Bank (2019-2021); MS projects on Data Analytics methods for Fixed Income Securities

Dansk Retur System (2021); Process improvement through digitalization

Arla Foods (2017 to 2020); Project on process surveillance and improvement with Big Data

Danfoss (2014 to 2018); PhD Project on statistical inference in improved industrial quality

BaneDanmark (2012 to 2016); Several projects on proper scheduling of railroad maintenance and condition based maintenance on switches and crossings

Christian Hansen (2015 to 2018); Batch process alignment and monitoring

CP Kelco (2016 to 2018); Data analytics for Batch Processes

Danish Meat Research Institute (2011 to 2015); PhD project on statistical monitoring of animal welfare in slaughterhouses

Bavarian Nordik (2012 to 2013); Short courses on statistics and designs of experiments and projects on statistical process surveillance

Amgen Inc. (2011 to 2013); Designing controlled experiments for sequential processes

MAN Diesel & Turbo (2013); Statistical Quality Analysis on the Manufacturing of MAN Diesel & Turbo Maritime Engine Fuel Injectors

Dong Energy (2007 and 2012); Projects on modelling and prediction of energy markets and Danish retail gas consumption

DSB (2012); Investigation of the malfunction in IC4 train's brake system

SAS Institute Inc. (2001 to 2005); Software development for the design and analysis of split plot experiments

DaimlerChrysler, Ford and General Motors (1995-2001); Low Emission Partnership: Developing statistical monitoring and control techniques for on-board diagnostics

State of Wisconsin Investment Board (2000 to 2004); Portfolio management using quantitative techniques for asset allocation problems

Ramgen Power Systems Inc. (2006 to 2008); Computer simulation experiments for turbomachinery problems of a transonic compressor stage

W. L. Gore and Associates (2000 to 2010); Developing techniques for the design and analysis of experiments for sequential processes

Baker Investment Group (2000-2002); Collaboration in developing statistical techniques for stock selection and risk analysis for active management of portfolios

Rhodia Inc (2001); Developing the methodology for the design and analysis of accelerated life experiments used in particular for stability analysis of *L. acidophilus* bacteria

Society of Automotive Engineers (2001 to 2007); Teaching several short courses for a broad range of automotive engineers both in USA and Europe on the developments on on-board diagnostics

## **AWARDS**

Young Scientist Award (2001), Gordon Research Conference in Statistics in Chemistry and Chemical Engineering, Williamstown-Massachusetts

ASQ Statistics Division Søren Bisgaard Award (2017)

## LIST OF PUBLICATIONS

### BOOKS

- Does, R. J. M. M., R. W. Hoerl, M. Kulahci and G. G. Vining (Eds.) (2017), *Søren Bisgaard's Contributions to Quality Engineering*, Milwaukee: ASQ Quality Press
- Montgomery, D. C., Jennings, C. L. and Kulahci, M. (2015), *Introduction to Time Series Analysis and Forecasting*, 2<sup>nd</sup> Edition, New York: Wiley
- Bisgaard, S. and Kulahci, M. (2011), *Time Series Analysis and Forecasting by Example*, New York: Wiley

### BOOK CHAPTER

- Kulahci, M and Borrer, C. (2008), "Advanced Statistical Process Control", *Statistical Methods in Business and Industry*, New York: Wiley

### JOURNAL ARTICLES AND PROCEEDINGS

#### 2022

113. Cacciarelli, D., M. Kulahci and J. S. Tyssedal (2022), "Stream-based active learning with linear models," *Knowledge Based Systems*, 254
112. Topalian, S. O. N., P. Ramin, K. Kjellberg, M. Kulahci, X. F. Alsina, D. J. Batstone & K. V. Gernaey (2022), "Forecasting Operational Conditions: A case-study from dewatering of biomass at an industrial wastewater treatment plant", *Proceedings of the 14th International Symposium on Process Systems Engineering*, pp. 2077-2082 (Computer Aided Chemical Engineering, Vol. 49).
111. Spooner, M., R. Ambat, H. C. Gudla and M. Kulahci (2022), "A climate classification for corrosion control in electronic system design", *Machine Learning with Applications*, 9
110. Conceil-Gudla, H., M. Spooner, M. Kulahci and R. Ambat (2022), "Transient risk of water layer formation on PCBAs in different climates: Climate data analysis and experimental study," *Microelectronics Reliability*, 136
109. Cacciarelli, D. and M. Kulahci (2022), "A novel fault detection and diagnosis approach based on orthogonal autoencoders," *Computers and Chemical Engineering*, to appear
108. Rønsch, G., M. Kulahci and M. Dybdahl, (2022) "Real-time adjustment of injection molding process settings by utilizing Design of Experiment, time-series profiles and PLS-DA", *Quality Engineering*, 34, pp. 215-229
107. Andersen, J. F., A. R. Andersen, M. Kulahci and B. F. Nielsen (2022), "A numerical study of Markov decision process algorithms for multi-component replacement problems", *European Journal of Operational Research*, 299, pp. 94-102
106. Andersen, E. B., I. U. Udugama, K. Gernaey, A. R. Khan, C. Bayer and M. Kulahci (2022), "An easy to use GUI for simulating Big Data using Tennessee Eastman Process," *Quality and Reliability Engineering International*, 38, pp. 264-282

## 2021

105. Kaya G.K., P. Dologlu, C. O. Ozer, O. Sahin, A. Palazoglu and M. Kulahci (2021), "A study of Spectral Envelope Method for Multi-Cause Diagnosis using Industrial Data," *Computer Aided Chemical Engineering*
104. Holm, N. N., M. Hussain and M. Kulahci (2021), "Classification Methods for Market Making in Auction Markets," *Journal of Financial Data Science*, 3, pp. 151-169
103. Segdhi, M., O. Kauppila, E. Vanhatalo, B. Bergquist, M. Kulahci (2021), "A Taxonomy of Railway Track Maintenance Planning and Scheduling: A Review and Research Trends," *Reliability Engineering and System Safety*, to appear
102. Aakjær, M., M. L. De Bruin, M. Kulahci, M. Andersen (2021), "Surveillance of AntiDepressant Safety (SADS): Active signal detection of serious medical events following SSRI and SNRI initiation using big healthcare data," *Drug Safety*, 44, pp. 1215-1230
101. Reinhartz, C., M. Kulahci and O. Ravn (2021), "An Extended Tennessee Eastman Simulation Dataset for Fault-Detection and Decision Support Systems," *Computers and Chemical Engineering*, 149, <https://doi.org/10.1016/j.compchemeng.2021.107281>
100. Rønsch, G., M. Kulahci and M. Dybdahl, (2021) "An investigation of the utilisation of different data sources in manufacturing with application in Injection Moulding", *International Journal of Production Research*, to appear, <https://doi.org/10.1080/00207543.2021.1893853>
99. Sessa, M, A. R. Khan, A. Mascolo, D. Liang, M. Andersen and M. Kulahci (2021), "Artificial intelligence in pharmacoepidemiology: a systematic review. Part 2 – Comparison of the performance of Artificial Intelligence and Traditional Pharmacoepidemiological Techniques" *Frontiers of Pharmacology*, <https://doi.org/10.3389/fphar.2020.568659>

## 2020

98. Udugama, I. A., C. Gargalo, Y. Yamashita, M. Taube, A. Palazoglu, B. Young, K. Gernaey, M. Kulahci and C. Bayer, (2020) "The Role of Big Data in Industrial (Bio)Chemical Process Operations", *Industrial & Engineering Chemistry Research*, 59, pp 15283-1297
97. Gajjar, S., M. Kulahci and A. Palazoglu (2020), "Least Squares Sparse Principal Component Analysis and Parallel Coordinates for Real-time Process Monitoring" *Industrial & Engineering Chemistry Research*, 59, 15656-15670
96. Capaci, F., E. Vanhatalo, A. Palazoglu, B. Bergquist and M. Kulahci (2020). "On Monitoring Industrial Processes Under Feedback Control," *Quality and Reliability Engineering International*, 36, 2720-2737
95. Snaith, W., L. Yeow, M. Kulahci, M. Clarke, and B. Gy. Plósz (2020), "Machine learning techniques can improve Bayesian practical identification of water quality models – A systematic framework," *Proceedings to Water Resource and Recovery Modelling Seminar*, Arosa, Switzerland
94. Andersen, E. B., I. A. Udugama, K. V. Gernaey, C. Bayer and M. Kulahci (2020), "Big Data Generation for Time Dependent Processes: The Tennessee Eastman Process for Generating Large Quantities of Process Data," *Proceedings of the 30<sup>th</sup> European Symposium on Computer Aided Process Engineering (ESCAPE30)*, Milano, Italy

93 Frumosu, F. D., Khan, T. A. R., H. Schiøler, M. Kulahci, M. Zaki, and P. Westermann (2020), “Cost-sensitive learning classification strategy for predicting product failures,” *Expert Systems with Applications*, 161, <https://doi.org/10.1016/j.eswa.2020.113653>

92. Guyonvarch, E., E. Ramin, M. Kulahci and B. G. Plósz (2020), “Quantifying the Sources of Uncertainty in Calculating the Limiting Flux in Secondary Settling Tanks Using iCFD,” *Water Science and Technology*, 81, pp 241-252

91. Sessa, M, A. R. Khan, A. Mascolo, D. Liang, M. Andersen and M. Kulahci (2020), “Artificial intelligence in pharmacoepidemiology: a systematic review. Part 1 - Overview of Knowledge Discovery Methods in Artificial Intelligence” *Frontiers of Pharmacology*, <https://doi.org/10.3389/fphar.2020.01028>

90. Frumosu, F. D., G. Ørnskov Rønsch and M. Kulahci (2020), “Mould wear-out prediction in the plastic injection moulding industry: A case study,” *International Journal of Computer Integrated Manufacturing*, 33, pp 1245-1258, <https://doi.org/10.1080/0951192X.2020.1829062>

89. Kulahci, M., F. D. Frumosu, A. R. Khan, G. Ø. Rønsch and M. P. Spooner (2020), “Experiences with Big Data: Accounts from a Data Scientist’s Perspective.” *Quality Engineering*, 32, pp 529-542, <https://doi.org/10.1080/08982112.2019.1686641>

## 2019

88. Kulahci, M. (2019), Discussion on “Søren Bisgaard’s Contributions to Quality Engineering: Design of Experiments” by G.Vining, *Quality Engineering*, 31, pp. 149-153

87. Capaci, F., E. Vanhatalo, M. Kulahci and B. Bergquist (2019). “The Revised Tennessee Eastman Process Simulator as Testbed for SPM and DoE Methods,” *Quality Engineering*, 2, pp. 212-229

86. Frumosu, F. D. and M. Kulahci (2019), “Outliers Detection Using an Iterative Strategy for Semi-Supervised Learning,” *Quality and Reliability Engineering International*, 35, pp. 1408-1423, <https://doi.org/10.1002/qre.2522>

## 2018

85. Spooner, M., and M. Kulahci (2018), “Monitoring batch processes with dynamic time warping and k-nearest neighbours,” *Chemometrics and Intelligent Laboratory Systems*, 183, pp. 102-112

84. Andersen, P. B., T. Sousa, A. Thingvad, L. Berthou and M. Kulahci (2018), “Added Value of Individual Flexibility Profiles of Electric Vehicle Users for Ancillary Services,” *Proceedings of IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids*, Aalborg, Denmark

83. Frumosu, F. D. and M. Kulahci (2018), “Big Data Analytics using Semi-supervised Learning Methods,” *Quality and Reliability Engineering International*, 34, pp. 1413-1423

82. Spooner, M., D. Kold and M. Kulahci (2018), “Harvest time prediction for batch processes,” *Computers and Chemical Engineering*, 117, pp 32-41



81. Khan, T. A. R., H. Schiøler, M. Zaki, and M. Kulahci,(2018), “Rare-events classification: An approach based on Genetic Algorithm and Voronoi Tessellation,” *Proceedings of the 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining*, Melbourne, Australia

80. Löwe R., C. Urich, M. Kulahci, M. Radhakrishnan, A. Deletic, K. Arnbjerg-Nielsen (2018), “Simulating Flood Risk under Non-stationary Climate and Urban Development Conditions – Experimental Setup for Multiple Hazards and a Variety of Scenarios,” *Environmental Modelling and Software*, 102, pp 155-171

## 2017

79. Gajjar, S., M. Kulahci and A. Palazoglu (2017), “Real Time Fault Detection and Diagnosis Using Sparse Principal Component Analysis,” *Journal of Process Control*, 67, pp 112-128

78. Khan, A. R. H. Schiøler, and M. Kulahci and T. S. Knudsen (2017), “Selection of Objective Function for Imbalanced Classification: An Industrial Case Study,” *Proceedings to 22<sup>nd</sup> Emerging Technologies and Factory Automation, Limassol, Cyprus*

77. Capaci, F., E. Vanhatalo, B. Bergquist and M. Kulahci (2017), “Managerial Implications for Improving Continuous Production Processes.” *Conference Proceedings, 24th International Annual EurOMA Conference: Inspiring Operations Management*, Edinburgh, Scotland

76. Khan, A. R. H. Schiøler, T. Knudsen and M. Kulahci, (2017), “Big Data Analytics for Industrial Process Control,” *Proceedings to 22<sup>nd</sup> Emerging Technologies and Factory Automation, Limassol, Cyprus*

75. Löwe R., C. Urich, M. Kulahci, M. Radhakrishnan, A. Deletic, K. Arnbjerg-Nielsen (2017), “Setup for Scenario-free Modelling of Urban Flood Risk in Non-stationary Climate and Urban Development Conditions,” *Proceedings to 14<sup>th</sup> International Conference on Urban Drainage (ICUD)*, Prague, Czech Republic

74. Spooner, M., D. Kold and M. Kulahci (2017), “Selecting local constraint for optimal alignment of batch process data with dynamic time warping,” *Chemometrics and Intelligent Laboratory Systems*, 167, pp. 161-170

73. Vanhatalo, E., M. Kulahci and B. Bergquist (2017), “On the Structure of Dynamic Principal Component Analysis Used in Statistical Process Monitoring,” *Chemometrics and Intelligent Laboratory Systems*, 167, pp. 1-11

72. Capaci, F., E. Vanhatalo, B. Bergquist and M. Kulahci (2017), “Exploring the Use of Design of Experiments in Industrial Processes Operating Under Closed-Loop Control,” *Quality and Reliability Engineering International*, 33(7), pp. 1601-1614

71. Gajjar, S., M. Kulahci and A. Palazoglu (2017), “Selection of Non-zero Loadings In Sparse Principal Component Analysis,” *Chemometrics and Intelligent Laboratory Systems*, 162, pp.160-171

70. Kulahci, M. and A. Menon (2017), “Trellis Plots as Visual Aid for the Analysis of Split Plot Experiments,” *Quality Engineering*, 29(2), pp. 211-225

## 2016

69. Kulahci, M. and J. Tyssedal (2016), “Split Plot Designs for Multistage Experimentation,” *Journal of Applied Statistics*, 44(3), pp. 493-510

68. Gao, H, S. Gajjar, M. Kulahci, Zhu, Q. and A. Palazoglu (2016), "Process Knowledge Discovery Using Sparse Principal Component Analysis," *Industrial and Engineering Chemistry Research*, 55, 12046-12059

67. Gajjar, S., M. Kulahci and A. Palazoglu (2016), "Use of Sparse Principal Component Analysis (SPCA) for Fault Detection," *Proceedings of the 11<sup>th</sup> IFAC Symposium on Dynamics and Control Process Systems*

66. Gronskyte, R., L. K. H. Clemmensen, M. S. Hviid and M. Kulahci, (2016) "Monitoring Pigs' Movement at the Slaughterhouse Using Modified Angular Histograms," *Biosystems Engineering*, 141, pp. 19-30

## 2015

65. Vanhatalo, E. and M. Kulahci (2015), "Impact of Autocorrelation on Principal Components and their Use in Statistical Process Control," *Quality and Reliability Engineering International*, 32, pp. 1483-1500

64. Vining, G., M. Kulahci and S. J. Pedersen (2015), "Recent Advances and Future Direction for Quality Engineering," *Quality and Reliability Engineering International*, 32, pp. 863-875

63. Gronskyte, R., L. K. H. Clemmensen, M. S. Hviid and M. Kulahci, (2015) "Pig Herd Monitoring and Undesirable Tripping and Stepping Prevention," *Computers and Electronics in Agriculture*, 119, pp. 51-60

62. Khan, A. R., H. Schiøler, T. S. Knudsen, and M. Kulahci (2015), "Statistical Data Mining for Efficient Quality Control in Manufacturing," *Proceedings of the 20th IEEE International Conference on Emerging Technologies and Factory Automation*

61. Guyonvarch, E., E. Ramin, M. Kulahci and B. G. Plósz (2015), "iCFD: Interpreted computational fluid dynamics – Degeneration of CFD to one-dimensional advection-dispersion model using statistical experimental design – The case of secondary clarifier," *Water Research*, 83 ,pp. 396–411

60. Vanhatalo, E. and M. Kulahci (2015), "The Effect of Autocorrelation on the Hotelling  $T^2$  Control Chart," *Quality and Reliability Engineering International*, 31(8), pp. 1779-1796

59. Tyssedal, J. and M. Kulahci (2015), "Experiments for Multi-Stage Processes," *Quality Technology and Quantitative Management*, 12(1), pp. 13-28

## 2014

58. Hansen, M. K., A. K. Sharma, M. Dybdahl, J. Boberg and M. Kulahci (2014), "In vivo Comet assay - statistical analysis and power calculations of mice testicular cells," *Mutation Research – Genetic Toxicology and Environmental Mutagenesis*, 774, pp. 29-40

57. Hansen, M. K. and M. Kulahci (2014). "Assessment of the type I error rate when ignoring the hierarchical structure of in vivo Comet assay data," In Peter Linde (ed.), *Symposium in Applied Statistics*, University of Copenhagen, pp. 83:92

56. Kulahci, M. (2014), Discussion on "The statistical evaluation of categorical measurements: Simple scales, but treacherous complexity underneath" by Jeroen de Mast, Thomas Akkerhuis, Tashi Erdmann, *Quality Engineering*, 26(1), pp. 40-43

## 2013

55. Gronskyte, R., M. Kulahci, L. K. H. Clemmensen (2013), "Monitoring Motion of Pigs in Thermal Videos", *Proceedings to the Workshop on Farm Animal and Food Quality Imaging*, pp. 31-36.

54. Otterstedt, M. S., K. M. Rasmussen and M. Kulahci (2013), "A New Paradigm in Mortgage Loan Advice," *Proceedings to the Annual International Conference on Operations Research & Statistics*, pp. 77-82

## 2012

53. Lundkvist, P., K. Vännann and M. Kulahci (2012), "A Comparison of Decision Procedures for  $C_{pk}$  when Data are Autocorrelated," *Quality Engineering*, 4, pp. 460-472

52. Capehart, S. R., A. Keha, M. Kulahci and D. C. Montgomery (2012), "Generating Blocked Fractional Factorial Split-Plot Designs Using Integer Programming," *International Journal of Experimental Design and Process Optimisation*, 3, pp. 111-132

## 2011

51. Tyssedal, J., M. Kulahci and S. Bisgaard (2011), "Split-Plot Designs with Mirror Image Pairs as Subplots," *Journal of Statistical Planning and Inference*, 141(12), pp. 3686-3696

50. Capehart, S. R., A. Keha, M. Kulahci and D. C. Montgomery (2011), "Designing Fractional Factorial Split-Plot Experiments Using Integer Programming," *International Journal of Experimental Design and Process Optimisation*, 2, pp. 34-57

49. Dehendorff, C., M. Kulahci and K. K. Andersen (2011), "Designing Simulation Experiments with Controllable and Uncontrollable Factors for Applications in Health Care," *Journal of Royal Statistical Society, Series C*, 60, pp. 31-49

48. McClary, D. W., V. R. Syrotiuk, and M. Kulahci (2011), "Steepest-Ascent Constrained Simultaneous Perturbation for Cross-Layer Network Optimization," *Transactions on Modeling and Computer Simulation*, 21 (1), pp. 1-22

## 2010

47. Gupta, S., Kulahci, M., Montgomery, D. C. and Borrer, C. (2010), "Analysis of Signal-Response Systems Using GLMM," *Quality and Reliability Engineering International*, 26, pp. 375-385

46. Dehendorff, C., M. Kulahci, K. K. Andersen, S. Merser (2010), "Conditional Value of Risk as a Waiting Time Measure in Simulations of an Orthopaedic Surgery," *Quality Technology and Quantitative Management*, 7 (3), pp. 321-336

45. Dehendorff, C., M. Kulahci, K. K. Andersen (2010), "Analysis of Experiments with Multiple Noise Sources," *Quality and Reliability Engineering International*, 26, pp. 137-146

44. McClary, D. W., V. R. Syrotiuk, and M. Kulahci (2010), "Profile-Driven Regression for Modelling and Optimization," *Transactions on Modeling and Computer Simulation*, 20(3)

## 2009

43. Bisgaard, S. and Kulahci (2009), "Time Series Model Selection and Parsimony" *Quality Engineering*, 21 (3), 341-353.

42. Bekki, J. M., J. W. Fowler, G. T. MacKulak and M. Kulahci (2009), "Simulation Based Cycle Time Quantile Estimation in Manufacturing Settings Employing Non-FIFO Dispatching Policies," *Journal of Simulation*, 3(2), pp. 69-83
41. Almimi, A. A., M. Kulahci and D. C. Montgomery (2009), "Checking the Adequacy of Fit of Split-Plot Models," *Journal of Quality Technology*, 41(3), pp. 272-284

## 2008

40. Hoskins, D., C. Colbourn and M. Kulahci (2008), "Truncated D-optimal Designs for Screening Experiments," *American Journal of Mathematical and Management Sciences*, 28, pp. 359-383
39. McClary, D. W., V.R. Syrotiuk and M. Kulahci (2008). "A framework for reactive optimization in mobile ad hoc net-works," *Proceedings to the 1st IEEE International Conference on Information Technology*
38. Dehlendorff, C., M. Kulahci, K. K. Andersen (2008), "Designing Simulation Experiments with Controllable and Uncontrollable Factors" *Proceedings of Winter Simulation Conference, Miami, FL (Invited Session)*
37. Bisgaard, S. and Kulahci (2008), "Box-Cox Transformations and Time Series Modeling – Part 2," *Quality Engineering*, 20(4), pp. 516-523
36. Bisgaard, S. and Kulahci (2008), "Box-Cox Transformations and Time Series Modeling – Part 1," *Quality Engineering*, 20(3), pp. 376-388
35. Elias, R. J., D. C. Montgomery, S. Low and M. Kulahci (2008), "Demand Signal Modeling: a short-range panel forecasting algorithm for semiconductor firm device-level demand," *European Journal of Industrial Engineering*, 2(3), pp. 253-278
34. Almimi, A. A., M. Kulahci and D. C. Montgomery (2008), "Follow-up Designs to Resolve Confounding in Split-Plot Experiments," *Journal of Quality Technology*, 40(2), pp. 154-166
33. Vännmann, K. and M. Kulahci (2008), "A Model Free Approach to Eliminate Autocorrelation When Estimating Capability Indices," *Quality and Reliability Engineering International*, 24, pp. 213-228
32. Almimi, A. A., M. Kulahci and D. C. Montgomery (2008), "Estimation of Missing Observations in Two-Level Split-Plot Designs," *Quality and Reliability Engineering International*, 24, pp. 127-152
31. Bisgaard, S. and Kulahci (2008), "Forecasting with Seasonal Time Series Models," *Quality Engineering*, 20(2), pp. 250-260
30. Bisgaard, S. and M. Kulahci (2008), "Using a Time Series Model for Process Adjustment and Control," *Quality Engineering*, 20 (1), pp.134-141

## 2007

29. Bisgaard, S. and M. Kulahci (2007), "Practical Time Series Modeling II," *Quality Engineering*, 19 (4) pp. 393-400
28. Kulahci, M. (2007) "Split-plot Experiments with Unusual Numbers of Subplot Runs," *Quality Engineering*, 19 (4), pp. 363-372

27. McClary, D. W., V. R. Syrotiuk, and M. Kulahci (2007), "Meta-Regression: A Framework for Robust Reactive Optimization," *Proceedings of the 1st IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO '07)*, Boston, Massachusetts, pp.375–378
26. Bisgaard, S. and M. Kulahci (2007), "Practical Time Series Modeling," *Quality Engineering*, 19, pp. 253-262
25. Graves, S., S. Bisgaard, M. Kulahci, J. James, K. Marko, T. Ting, J. Van Gilder, C. Wu, and H. Zatorski, (2007) "Accelerated Testing for On-Board Diagnostics," *Quality and Reliability Engineering International*, 23, pp. 189-201
24. Bisgaard, S. and M. Kulahci (2007), "Beware of the Effect of Autocorrelation in Regression," *Quality Engineering*, 19, pp. 143-148
23. Bisgaard, S. and M. Kulahci (2007), "Process Regime Changes," *Quality Engineering*, 19, pp. pp. 83-87
22. Kulahci, M. (2007), "Blocking Factorial Experiments," *Quality and Reliability Engineering International*, 23, pp. 283-289
21. Kulahci, M. and S. Bisgaard (2007), "The Partial Confounding and the Projection Properties of Plackett and Burman Designs," *Quality and Reliability Engineering International*, 23 (7), pp. 791-800

## 2006

20. Elias, R. J., D. C. Montgomery and M. Kulahci (2006), "An Overview of Short-term Statistical Forecasting Methods," *International Journal of Management Science and Engineering Management*, 1, pp. 17-36
19. Kulahci, M. and S. Bisgaard (2006), "Challenges in Multivariate Control Charts with Autocorrelated Data". *Proceedings to the 12th ISSAT International Conference on Reliability and Quality in Design*, Chicago-IL
18. Bisgaard, S. and M. Kulahci (2006), "Studying Input Output Relationships II," *Quality Engineering*, 18(3), pp. 405-410
17. Bisgaard, S. and M. Kulahci (2006), "Studying Input Output Relationships I," *Quality Engineering*, 18(2), pp. 273-281
16. Kulahci, M. and S. Bisgaard (2006), "A Generalization of the Alias Matrix," *Journal of Applied Statistics*, Vol. 33, No. 4, pp. 387-395
15. Bisgaard, S. and M. Kulahci (2006), "The Application of Principal Component Analysis for Process Monitoring," *Quality Engineering*, Vol. 18, No. 1, pp. 95-103
14. Kulahci, M., J. Ramirez and R. Tobias (2006), "Split-Plot Fractional Designs: Is Minimum Aberration Enough?" *Journal of Quality Technology*, Vol. 38, No. 1, pp. 56-64

## 2005

13. Vadde, K.K., V. R. Syrotiuk, and M. Kulahci (2005), "Towards Understanding Factor Dynamics," *Proceedings of the Second IEEE International Workshop on Adaptive Wireless Networks (AWiN'05)*, St. Louis, Missouri
12. Bisgaard, S. and M. Kulahci (2005), "Interpretation of Time Series Models," *Quality Engineering*, Vol. 17, No. 4, pp. 653-658
11. Tyssedal, J. and M. Kulahci (2005), "Analysis of Split-Plot Designs with Economical Run Sizes," *Journal of Quality and Reliability Engineering International*, Vol. 21, No. 5, pp. 539-551
10. Kulahci, M. and S. Bisgaard (2005), "The Use of Plackett and Burman Designs to Construct Split-Plot Designs," *Technometrics*, Vol. 47, No. 4, pp. 495-502
9. Bisgaard, S. and M. Kulahci (2005), "The Effect of Autocorrelation on Statistical Process Control Procedures," *Quality Engineering*, Vol. 17, No. 3, pp. 481-489
8. Bisgaard, S. and M. Kulahci (2005), "Checking Process Stability with the Variogram," *Quality Engineering*, Vol. 17, No. 2, pp. 323-327

#### **2004**

7. Wiezel, A. and M. Kulahci (2004), "Sensitivity of Tennis Players to Racquet Characteristics," *Proceedings to the 5th Engineering of Sport Conference*, California-USA

#### **2003**

6. Box, G.E.P., S. Bisgaard, S. Graves, M. Kulahci, J. Van Gilder, T. Ting, J. James, K. Marko, H. Zatorski, C. Wu (2003) "Performance Evaluation of Dynamic Monitoring Systems: *The Waterfall Chart*," *Quality Engineering*, Vol. 16, No. 2, pp. 183-191
5. Kulahci, M. and G. E. P. Box (2003), "Catalysis of Discovery and Development in Engineering and Industry," *Quality Engineering*, 15(3), 509-513

#### **2002**

4. Bisgaard, S. and M. Kulahci (2002), "Improving and Controlling Business Processes," *Quality Engineering*, 14(2), 341-344

#### **2001**

3. Bisgaard, S. and M. Kulahci (2001), "Robust Product Design: Saving Trials with Split Plot Confounding," *Quality Engineering*, 13(3), 525-530
2. Bisgaard, S. and M. Kulahci (2001), "Switching-One-Column Follow-up Experiments for Plackett-Burman Designs," *Journal of Applied Statistics*, 28(8), 943-949

#### **2000**

1. Bisgaard, S. and M. Kulahci (2000), "Finding Assignable Causes," *Quality Engineering*, 12(4), 633-640

## REPORTS

1. Bisgaard, S. and M. Kulahci (1999), "Switching-One-Column Follow-up Experiments for Plackett-Burman Designs," *Institute for Technology Management Report Series*, No. 6, University of St. Gallen
2. Bisgaard, S. and M. Kulahci (1999), "Finding Assignable Causes," *Institute for Technology Management Report Series*, No. 7, University of St. Gallen
3. Graves S., S. Bisgaard, M. Kulahci, J. Van Gilder, T. Ting, K. Marko, J. James, H. Zatorski, and C. Wu (2001), "Foundations of Monitoring Dynamic Systems," downloadable at [www.prodsyse.com](http://www.prodsyse.com)
4. Graves S., S. Bisgaard, M. Kulahci, (2001), "A Bayes Adjusted Cumulative Sum (Cusum)," downloadable at [www.prodsyse.com](http://www.prodsyse.com)
5. Graves S., S. Bisgaard, M. Kulahci, (2001), "Designing Bayesian EWMA Monitors Using Gage R & R and Reliability Data," downloadable at [www.prodsyse.com](http://www.prodsyse.com)
6. Graves S., S. Bisgaard, M. Kulahci, (2001), "A Bayesian EWMA for Mean and Variance," downloadable at [www.prodsyse.com](http://www.prodsyse.com)
7. Tyssedal, J. and M. Kulahci (2004), "Split-Plot Designs with Economical Run Sizes," *Department of Mathematical Sciences Technical Report Series*, No. 1/04, Norwegian University of Science and Technology
8. Vännann, K. and M. Kulahci (2006), "A Model Free Approach to Eliminate Autocorrelation When Estimating Capability Indices," *Department of Mathematics Research Report*, No. 06/5, Luleå University of Technology.
9. Hansen, M. K. and Kulahci, M. (2014). "The type I error rate for Comet assay data when the hierarchical structure is disregarded," *DTU Compute Technical Report Series*, No. 9. Technical University of Denmark
10. Sliusarenko, T., R. Gronskyte, L. K. H. Clemmensen, M. Kulahci and B. K. Ersbøll (2014), *Study Delay, DTU Compute Technical Report*, No. 11, Technical University of Denmark
11. Khan, T. A. R., H. Schiøler, S. Knudsen, M. Kulahci and M. Zaki, M. Kulahci,(2016), "Classification of Noisy Data: An Approach Based on Genetic Algorithms and Voronoi Tessellation," *Cambridge University Network*

## CONFERENCE PRESENTATIONS

1. Graves, S., M. Kulahci, S. Bisgaard, J. James, K. Marko, T. Ting, J. Van Gilder, C. Wu, and H. Zatorski (2000), "A New Approximation for the Average Run Length of a Cusum," *Joint Statistical Meeting*, Indianapolis
2. Kulahci, M. and S. Bisgaard (2002), "The Application of Plackett and Burman Designs to Split Plot Experiments," *Quality & Productivity Research Conference*, Tempe (Invited Session)
3. Kulahci, M and S. Bisgaard (2002), "Understanding Plackett and Burman Designs," *European Network for Business and Industrial Statistics Conference*, Rimini-Italy

4. Kulahci, M, J. Ramirez, M. Cotter and R. Tobias (2003), "Fractionation of Two-level Designs for Multi-Step Processes (Preserving the Split-Plot Structure)," *European Network for Business and Industrial Statistics Conference*, Barcelona-Spain
5. Tyssedal, J. and M. Kulahci (2004), "Analysis of Split-Plot Designs with Mirror Image Pairs as Subplots," *European Network for Business and Industrial Statistics Conference*, Copenhagen-Denmark
6. Kulahci, M., S. Graves, and S. Bisgaard (2004), "A Modeling Strategy for Multidimensional Non-linear Problems," *INFORMS Conference*, Denver (Invited Session)
7. Kulahci, M. and K. Vänmann (2005), "How to Handle Autocorrelation in Capability Analysis," *European Network for Business and Industrial Statistics Conference*, New Castle-UK
8. Almimi, A. A, M. Kulahci and D. C. Montgomery (2005), "Follow-up Designs to Resolve Confounding in Split-Plot Experiments," *Research in Engineering and Applied Sciences Symposium*, Tempe
9. Vadde K. K., V. R. Syrotiuk and M. Kulahci (2005), "Towards Understanding Factor Dynamics," *2<sup>nd</sup> IEEE International Workshop on Adaptive Wireless Networks (AWiN)*, St. Louis, Missouri
10. Vänmann, K. and M. Kulahci (2006), "A New Method to Handle Autocorrelation in Capability Analysis," *ISBIS*, Lima-Peru
11. Kulahci, M., S. Bisgaard and X. Huang (2006), "Multivariate SPC with Cross- and Autocorrelated Data," *50<sup>th</sup> Fall Technical Conference*, Columbus-OH
12. Kulahci, M., J. Ramirez and R. Tobias (2006), "Split-Plot Fractional Designs: Is Minimum Aberration Enough?" *50<sup>th</sup> Fall Technical Conference*, Columbus-OH, (Invited Session)
13. Kulahci, M. (2007), "Designing Two-level Split-plot Experiments," *Quality & Productivity Research Conference*, Santa Fe, NM (Invited Session)
14. Ramirez, J., M. Kulahci, M., and R. Tobias (2008), "Fractional Factorial Designs for Multi-Step Processes," *Quality & Productivity Research Conference*, Madison, WI (Invited Session)
15. Dehlendorff, C., M. Kulahci, K. K. Andersen (2008), "Simulation Experimentation in Health Care Applications," *European Network for Business and Industrial Statistics Conference*, Athens-Greece
16. Dehlendorff, C., M. Kulahci, K. K. Andersen (2008), "Designing Simulation Experiments with Controllable and Uncontrollable Factors," *Winter Simulation Conference*, Miami, FL (Invited Session)
17. Capehart, S. R., A. Keha, M. Kulahci and D. C. Montgomery (2009), "Generating Blocked Fractional Factorial Split-Plot Designs Using Integer Programming," *Fall Technical Conference*
18. Kulahci, M.(2009), "Design Space Search in Computer Experiments," *European Network for Business and Industrial Statistics Conference*, (Invited Session)
19. Dehlendorff, C., M. Kulahci, K. K. Andersen (2009), "Designing Simulation Experiments with Controllable and Uncontrollable Factors" *INFORMS*, Tempe (Invited Session)
20. Kulahci, M. (2010)," Design and Analysis of Computer Experiments," *Joint Research Conference on Statistics in Quality, Industry, and Technology*, Gaithersburg, MD (Invited Session)
21. Holst, E. and M. Kulahci. (2011)," Hotelling's T<sub>2</sub> – An Introduction to Theory and Applications," *33<sup>rd</sup> Symposium in Applied Statistics*, Copenhagen, Denmark



22. Kulahci, M. (2011), "Multivariate Process Control with Autocorrelated Data," *Quality & Productivity Research Conference*, Roanoke, Virginia (Invited Session)
23. Lundkvist, P., K. Vännann and M. Kulahci (2011), "A Comparison of Decision Procedures for  $C_{pk}$  when Data are Autocorrelated," *European Network for Business and Industrial Statistics Conference*
24. Kulahci, M (2013), Discussion on "Statistical Evaluation of Categorical Variables" by J. de Mast, *1<sup>st</sup> Stu Hunter Conference*, Amsterdam, The Netherlands (Invited Session)
25. Kulahci, M. (2013), "Process Monitoring with Multivariate Cross- and Autocorrelated Data", *12<sup>th</sup> Workshop on Quality Improvement Methods*, Dortmund, Germany (Invited Session)
26. Kulahci, M. (2013), "Multivariate Statistical Process Control," *Workshop on Farm Animal and Food Quality Imaging at the Scandinavian Conference on Image Analysis*, Espoo, Finland (Invited Session)
27. Gronskyte, R., M. Kulahci, L. K. H. Clemmensen (2013), "Monitoring Motion of Pigs in Thermal Videos," *Workshop on Farm Animal and Food Quality Imaging at the Scandinavian Conference on Image Analysis*, Espoo, Finland
28. Sharma, A. K., A. Mortensen, M. K. Hansen, M. Kulahci, E. B. Wedebye, M. Dybdahl (2013) "Investigation of germ cell genotoxicity by using the in vivo comet assay in testis cells of mice," *The XIII International Congress of Toxicology*, Seoul, Korea
29. Tobias, R., J. G. Ramirez and M. Kulahci (2013), "Fractional Factorial Designs for Multistep Processes," *Joint Statistical Meetings*, Montreal, Canada (Invited Session)
30. Kulahci, M. and J. Tyssedal (2014), "Experiments for Multi-Stage Processes," *Fall Technical Conference*, Richmond, USA (Invited Session)
31. Vanhatalo, E. and M. Kulahci (2014), "The Effect of Autocorrelation on the Hotelling  $T^2$  Control Chart," *Fall Technical Conference*, Richmond, USA
32. Petersen, S. J., M. Kulahci and S. Frosch (2014), "Case presentation: Screening experimentation on a pilot scale oven for factor identification," *European Network for Business and Industrial Statistics Conference*, Vienna, Austria
33. Kulahci, M. (2015), "Industrial Statistics in Future Manufacturing," *1<sup>st</sup> Brazilian SPC/DOE Conference*, Sao Paulo, Brazil (Invited Session)
34. Guyonvarch, E., E. Ramin, M. Kulahci and B. G. Plósz (2015), "ICFD Modeling of Final Settlers Developing Consistent and Effective Simulation Model Structures," *9<sup>th</sup> IWA Symposium on Systems Analysis and Integrated Assessment*, Gold Coast, Queensland, Australia
35. Vanhatalo, E. and M. Kulahci (2015), "Principal Component Analysis of the Autocorrelated Data," *15<sup>th</sup> ENBIS Conference*, Prague, Czech Republic
36. Capaci, F., B. Bergquist, E. Vanhatalo and M. Kulahci (2015), "Simulating and Analyzing Experiments in the Tennessee Eastman Process Simulator," *15<sup>th</sup> ENBIS Conference*, Prague, Czech Republic
37. Gajjar, S., M. Kulahci and A. Palazoglu (2016), "Use of Sparse Principal Component Analysis and Multidimensional Visualization Technique for Process Fault Detection and Diagnosis," *AICHE Spring Meeting*, Houston, Texas, USA
38. Vanhatalo, E., M. Kulahci, B. Bergquist and F. Capaci, (2016), "Lag Structure in Dynamic Principal Component Analysis," *Fourth International Conference on the Interface between Statistics and Engineering*, Palermo, Italy

39. Capaci, F., M. Kulahci, B. Bergquist and E. Vanhatalo (2016), "A Two-step Procedure for Fault Detection in the Tennessee Eastman Process Simulator," *Fourth International Conference on the Interface between Statistics and Engineering*, Palermo, Italy
40. Gajjar, S., M. Kulahci and A. Palazoglu (2016), "Use of Sparse Principal Component Analysis (SPCA) for Fault Detection," *11<sup>th</sup> IFAC Symposium on Dynamics and Control Process Systems*, Trondheim, Norway
41. Spooner, M. and M. Kulahci, (2016), "Selecting Appropriate Constraints for Alignment of Batch Process Data with Dynamic Time Warping," *Fourth International Conference on the Interface between Statistics and Engineering*, Palermo, Italy
42. Capaci, F., E. Vanhatalo, M. Kulahci and B. Bergquist (2016), "A Two-step Procedure for Fault Detection in the Tennessee Eastman Process Simulator," *16<sup>th</sup> ENBIS Conference*, Sheffield, UK
43. Gajjar, S., M. Kulahci and A. Palazoglu (2016), "Process knowledge discovery and selecting number of non-zero loadings in sparse principal component analysis," *AIChE Annual Meeting*, San Francisco, USA
44. Capaci, F., B. Bergquist, M. Kulahci and E. Vanhatalo (2017), "Managerial Implications for Improving Continuous Production Processes," *EurOMA 2017*, Edinburgh, Scotland
45. Frumosu, F. D. and M. Kulahci (2017), "Big Data Analytics for Online Monitoring of Processes," *17<sup>th</sup> ENBIS Conference*, Naples, Italy
46. Spooner, M. and M. Kulahci (2017), "Harvest Time Prediction for Batch Processes," *17<sup>th</sup> ENBIS Conference*, Naples, Italy
47. Löwe R., C. Urich, M. Kulahci, M. Radhakrishnan, A. Deletic, K. Arnbjerg-Nielsen (2017), "Setup for Scenario-free Modelling of Urban Flood Risk in Non-stationary Climate and Urban Development Conditions," *14<sup>th</sup> International Conference on Urban Drainage (ICUD)*, Prague, Czech Republic
48. Löwe R., C. Urich, M. Kulahci, M. Radhakrishnan, A. Deletic, K. Arnbjerg-Nielsen (2017), "Scenario-Neutral Simulation of Flood Risk for Multiple Drivers," *7<sup>th</sup> International Conference on Flood Management (ICFM7)*, Leeds, UK
49. Kulahci, M (2018), "Søren Bisgaard's Contributions to Quality Engineering: Time Series Analysis", *6<sup>th</sup> Stu Hunter Research Conference*, Roanoke, USA
50. Frumosu, F. D. and M. Kulahci (2018), "Big Data Strategies for Online Monitoring of Processes," *18<sup>th</sup> ENBIS Conference*, Nancy, France
51. Spooner, M. and M. Kulahci (2018), "Fault detection for batch processes using  $k$ -nearest neighbours and dynamic time warping," *18<sup>th</sup> ENBIS Conference*, Nancy, France
52. Kulahci, M. (2018), "Experiences with Big Data," *Fall Technical Conference*, West Palm Beach, FL, USA
53. Andersen, P. B., T. Sousa, A. Thingvad, L. Berthou and M. Kulahci (2018), "Added Value of Individual Flexibility Profiles of Electric Vehicle Users for Ancillary Services," *IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids*, Aalborg, Denmark

54. Khan, T. A. R., H. Schiöler, M. Zaki, and M. Kulahci, (2018), "Rare-events classification: An approach based on Genetic Algorithm and Voronoi Tessellation," *22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining*, Melbourne, Australia
55. Kulahci, M. (2019), Discussion on "Analysis-of-Marginal-Tail-Means (ATM): a new method for discrete black-box optimization" by Mak and Wu, *7<sup>th</sup> Stu Hunter Research Conference*, Milan, Italy
56. Kulahci, M. (2019), "Case Studies in Statistical Engineering," *ENBIS Spring Conference*, Barcelona, Spain
57. Kulahci, M. (2019), "Experiences with Big Data," *The 19<sup>th</sup> Annual Conference of the European Network for Business and Industrial Statistics (ENBIS)*, Budapest, Hungary
58. Frumosu, F. D. and M. Kulahci (2019), "Predictive maintenance in the injection moulding industry", *The 19<sup>th</sup> Annual Conference of the European Network for Business and Industrial Statistics (ENBIS)*, Budapest, Hungary
59. Kulahci, M. (2019), "Using Data for Real Time Applications," *High Tech Summit*, DTU, Lyngby, Denmark
60. Odabasi C., P. Dologlu, G. Kusoglu, M. Urus, O. Yurttas, M. Kulahci and A. Palazoglu (2020), "Fault Detection and Diagnosis in Refinery Operations: A Case Study on Rotating Equipment and Continuous Catalytic Reforming Unit," *AIChE Annual Meeting*
61. Rotari, M. and M. Kulahci (2021), "Deciphering Random Forest Models through Conditional Variable Importance," *The 21<sup>st</sup> Annual Conference of the European Network for Business and Industrial Statistics (ENBIS)*
62. Cacciarelli, D. and M. Kulahci (2021), "A novel Fault Detection and Diagnosis Approach based on Orthogonal Autoencoders," *The 21<sup>st</sup> Annual Conference of the European Network for Business and Industrial Statistics (ENBIS)*
63. Centofanti, F., A. Lepore, M. Kulahci and M. P. Spooner (2021), "Real-time Monitoring of Functional Data," *The 21<sup>st</sup> Annual Conference of the European Network for Business and Industrial Statistics (ENBIS)*
64. Kulahci, M., B. Bergquist and P. Söderholm (2021), "Autonomous Anomaly Detection and Handling of Spatiotemporal Railway Data," *Industrial AI Conference 2021*, Luelå, Sweden
65. Hansen, H. and M. Kulahci (2022), "Statistical process control vs deep learning for predictive maintenance of power plant process data," *ENBIS Spring Conference*, Grenoble, France
66. Cacciarelli, D. and M. Kulahci (2022), "A semi-supervised approach to stream-based active learning for industrial processes," *ENBIS Conference*, Trondheim, Norway
67. Rotari, M. and M. Kulahci (2022), "Analysis of multi-group data in a three-way structure", *ENBIS Conference*, Trondheim, Norway
68. Frumosu, F. and M. Kulahci (2022), "Process diagnostics using multivariate process capability indices", *ENBIS Conference*, Trondheim, Norway
69. Spooner, M. P. and M. Kulahci (2022), "Defining a design space of climate conditions for engineering design", *ENBIS Conference*, Trondheim, Norway
70. Kulahci, M. (2022), "Challenges and opportunities in Industrial Statistics in Industry 4.0", *ENBIS Conference*, Trondheim, Norway

## **INVITED SEMINAR PRESENTATIONS**

1. Kulahci, M. (2005), "Expanding the Six Sigma Toolbox," ICRA Conference, South Korea
2. Kulahci, M. (2006), "Using Statistics in Quality Engineering Applications," Annual Meeting of the Danish Society for Theoretical Statistics
3. Kulahci, M. (2010), "Design and Analysis of Computer Experiments with Two Types of Input Factors," Tilburg University, the Netherlands
4. Kulahci, M. (2013), "Designing Comparative Tests," DTU-VET
5. Kulahci, M. (2014), "New Possibilities for Production Control", MADE Innovation Workshop
6. Kulahci, M. (2017), "Production Statistics with Sensor Data", High Tech Summit, DTU
7. Kulahci, M. (2017), "Experiences with Big Data," MADE Innovation Conference, DTU
8. Kulahci, M. (2018), "Experiences in Production Statistics with Big Data," Hochschule Bohn-Rhein-Sieg, Germany
9. Kulahci, M. (2018), "Production Statistics with Large Data," BioPro2 Research Meeting, DTU
10. Kulahci, M. (2018), "Sparse chemometrics methods in process understanding and surveillance," Danish Chemometrics Society Annual Meeting
11. Kulahci, M. (2021), "A sequential approach for Data Driven Manufacturing," SESAM-World Webinar
12. Kulahci, M. (2021), "Production Analytics with Big Data," DigitalLead Webinar

## CURRENT AND PAST PostDoc, PhD AND MS STUDENTS

(Main supervision is indicated in bold letters)

### Post Doctoral Fellow

1. **Abdul Rauf Khan (2018-2021) MADE Digital and LEGO Collaboration**
2. **Max Peter Spooner (2019-2022) ELMAC**
3. **Flavia Dalia Frumosu (2020 – 2022) ReQuest and LEGO Collaboration**

### PhD STUDENT

1. **Ashraf Almimi (2006) – Split Plot Designs: Follow-up Experiments, Missing Observations and Model Adequacy Checking (ASU)**
2. Russ Elias (2006) – Demand Model Management: A Model-Based Expert System for the Forecasting of Semiconductor Product Demand (ASU)
3. Eric Maas (2008) – Statistical Modeling with Applications in Semiconductor Manufacturing (ASU)
4. **Shay Capehart (2008) – Designing fractional factorial split-plot experiments using integer programming (ASU)**
5. Christian Dehlendorff (2010) – Design of Computer Experiments (DTU)
6. **Merete Kjær Hansen (2014) – Design and Analysis of Biomedical Studies (DTU)**
7. **Ruta Gronskytte (2016) – Monitoring Animal Wellbeing (DTU)**
8. Søren Juhl Pedersen (2016) – Engineering Strategies for Improving the Convenience Food Production (DTU)
9. Abdul Rauf Khan (2017) – Statistical Inference for Improved Industrial Quality (AAU)
10. Sofie Pødenphant Jensen (2018) - Advancing linear and non-linear mixed models in engineering sciences. (DTU)
11. **Max Peter Spooner (2018) – Monitoring Batch Processes (DTU)**
12. **Francesca Capaci (2019) – Statistical Process Control for Continuous Processes (LTU)**
13. **Flavia-Dalia Frumosu (2019) – Data analysis methods for process understanding and improvement in injection moulding production (DTU)**
14. Jesper Fink Andersen (Expected 2022) – Stochastic Models for Predictive Maintenance (DTU)
15. Mia Aakjær (Expected 2022) - Epidemiological surveillance of adverse drug reactions using population-based healthcare register data (KU)
16. Nicolai Siim Larsen (Expected 2022) – Stochastic Financial Models based on Matrix-Analytic Methods (DTU)
17. **Georg Ørnkov Rønsch (Expected 2022) - Process optimization and Model-based learning extraction (DTU)**
18. Sajjad Bahrebar (Expected 2022) - Humidity robustness of Electronic Devices: PCBA Failure Risk Prediction based on probabilistic approach (DTU)
19. Ashish Chawla (Expected 2022) - Advanced Process Models for Analysis and Process Control of Continuous Casting of Iron (DTU)
20. **Marta Rotari (Expected 2023) - Production Analytics for a novel additive manufacturing system (DTU)**
21. **Davide Cacciarelli (Expected 2023) – Active Learning in Production (DTU)**
22. Jingrui Ge (Expected 2023) – Diagnosis and Modularization in Maintenance (DTU)
23. Hao-Ping Yeh (Expected 2024) - Multiphysics modelling of polymer based additive manufacturing technologies
24. Zishi Wu (Expected 2024) (AAU)

25. **Henrik Hansen (Expected 2024) – Predictive maintenance and the issues of unsupervised model validation, false positives, and use of domain knowledge in machine learning models for many different power plant components (DTU)**

## MS STUDENT

1. **Mingbo Wang (2004) – Classification and Regression Tree (CART) Approach to Stock Selection (ASU)**
2. Kate Benton (2005) – Statistical Modeling with applications in Semiconductor Manufacturing (ASU)
3. **Pavel Kozin (2007) – Modelling and prediction of the energy markets in Nord Pool (DTU)**
4. **Irena Stefaniak (2009) – Multivariate Statistical Process Control Applications for Autocorrelated Data (DTU)**
5. **Ruta Gronskyte (2011) – Methodologies of Early Detection of Student Dropouts (DTU)**
6. **Federica Gajani (2011) – Analysis of Time Series with Missing Data (DTU)**
7. **Harish Saini (2011) – Gas Demand Forecasting (DTU)**
8. **Jakob Blindum (2011) – Quality Control Techniques to Validate Analytical Methods in Biopharmaceutical Applications (DTU)**
9. **Fannar Guðmundsson (2013) – Model of Deposit’s Stickiness (DTU)**
10. Lilia Hadvig (2014) – Statistical Analysis of an Electric Vehicle Fleet Data (DTU)
11. Morten Lange Kirkegaard (2015) – Model Predictive Control and On-line Monitoring of Industrial Processes (DTU)
12. **Henriette Hein Vrå (2017) - Data Analytics for Quality Assurance in Pharmaceutical Industry (DTU)**
13. **Anne Milthers Pedersen (2017) - Data Analytics for Quality Assurance in Pharmaceutical Industry (DTU)**
14. **Renée Brown Frandsen (2017) - Identification of Root Causes of Quality Fluctuations in Injection Moulding Manufacturing (DTU)**
15. **Milana Ivkovic (2018) – Experimentation in Multiple Unit Operations in Series (DTU)**
16. Andrea Saretta (2019) – Analysis of maintenance activities at Rockwool (DTU)
17. Davide Sartori (2019) – Analysis of maintenance activities at Rockwool (DTU)
18. **Piotr Mi Mieszalo (2019) – Performance monitoring for production ramp-up (DTU)**
19. Sebastian Olivier Nymann Topalian (2020) - Data-Driven Modelling of Wastewater Treatment Plants
20. **Henrik Hviid Hansen (2020) – Machine learning for corporate bond selection (DTU)**
21. **Nikolaj Normann Holmn (2020) – Optimal spread pricing (DTU)**
22. Emil Atrup Wisberg (2021) – Predictive Maintenance (DTU)
23. **Georgios Vastardis (2022) – Project Portfolio Forecasting (DTU)**
24. **Tinna Dofradottir (2022) – Improvement of Manufacturing Process Development using DoE (DTU)**