Curriculum Vitae

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Personal data

Name: **Niels Kjølstad Poulsen.**

US: Msc.EE., Ph.D., Emeritus (former assoc. prof.).
DK: Cand. polyt., Lic. Techn., Emeritus (tidl. lektor).

Address: Section for Dynamical Systems,
Department of Applied Mathematics and Computer Science (**DTU-Compute**),
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Citation statistics:

Source		No	Citations	H-index
Goggle scholar	13.9.2023	455	9817	40
Research gate	7.9.2022		6798	36
ISI web of science	13.9.2023	148	2521	27
Scopus	7.9.2022	229	4376	32

Born: 18.12.1956, 55° 28′ 29.538″ N, 11° 56′ 50.928″ E
(5 km south of) Borup, Zealand, Denmark

Nationality: Danish

Education

1.8.65-73: *Borup-Kimmerslev centralskole (1-7+1-2 real).*

1.8.73-76: *Studentereksamen af Matematisk linjes Matematiske-Fysiske gren. Amtsgymnasiet i Roskilde.*

1.9.76-82 Enrolled at *Den Polytekniske Læreanstalt, Danmarks tekniske Højskole (DTH).* EE. line. Master of science (1.2.82) in Electrical Engineering (**Msc. EE.**) from the Institute of Mathematical Statistics and Operations Research (IMSOR), the Technical University of Denmark. Topic: adaptive controllers and their robustness properties. Focus: adaptive control of non-stationary systems. Supervisor: Tech. Dr. Jan Holst. Censor: Tech. Dr. Jan Sternby, Kockomation AB, Sweden

1.8.84: **Ph.D.** from The Institute of Mathematical Statistics and Operations Research (IMSOR), The Technical University of Denmark. Topic: Robust Adaptive Controllers. Supervisor: Tech. Dr. Jan Holst. Oponent: Tech. Dr. Lennart Ljung, Linköping University, Sweden.

Affiliation and Employment

1.2.82-1.8.84 Employed as Ph.D. student at The Institute of Mathematical Statistics and Operations Research (IMSOR), The Technical University of Denmark. Topic: Robust Adaptive Controllers.

1.8.84-1.8.86 Post doc at The Institute of Mathematical Statistics and Operations Research (IMSOR), The Technical University of Denmark. Financed by the Danish Technical Research Council under grant no. 16-3554. Topic: Robust Adaptive Controllers.

1.8.86-1.3.90 Assistant professor in the field of Stochastic Control Theory at The Institute of Mathematical Statistics and Operations Research (IMSOR), The Technical University of Denmark.

1.3.90-1.9.20 Associate professor in the field of Stochastic Control Theory at the Technical University of Denmark (DTU).

- **1990-1993**, Section for Mathematical Statistics, The Institute of Mathematical Statistics and Operations Research (IMSOR).
- **1993-2001**, Section for Mathematical Statistics, The Department of Mathematical Modelling (after a merger with Department of Numerical Analysis, the Department of Applied Mathematical Physics and later on the Section for Digital Signal Processing and the Section for Geoinformatics),
- **2001-2007**, Informatics and Mathematical Modelling (after a merger with Department of Computer Science and Engineering),
- **2007-2013**, Section for Mathematical Statistics, the Department of Informatics and Mathematical Modelling (DTU-Informatics). In 2007 The Technical University of Denmark merged with Risø National Laboratory, Danish Institute for Fisheries Research, Danish National Space Center, Danish Transport Research Institute and National Food Institute.
- **2013-2020**, Section for Dynamical Systems, the Department of Applied Mathematics and Computer Science (DTU Compute) after a merger with DTU Mathematics.

1.9.20 - Present: Emeritus in Stochastic Control Theory, affiliated with Section of dynamical systems, Department of Applied Mathematics and Computer Science (DTU Compute), the Technical University of Denmark (DTU).

1.7.98-15.8.99 Visiting professor at the Department of Engineering Science, University of Oxford (in collaboration Basil Kouvaritakis and Mark Cannon). Topic: Constrained Predictive Control. The research was supported by Danish Technical Research Council (STVF).

20.3.01-3.4.01 Visiting professor at the Federal University of Pernambuco (UFPE), Recife, Brazil. Course in Stochastic control applied to Wind Turbines.

Awards and memberships

11.5.1988 Recieved the Gorm Pedersen memorial grant.

6.2.2001 - Present Senior member of IEEE.

1998-2002 Chair for joint chapter on Control Systems/Robotics and Automation, Denmark Section.

30.3.2006 Nominied as the teacher of the year 2005 at The Department of Informatics and Mathematical Modelling, The Technical University of Denmark.

18.9.2009 Coauthor to the paper *Parametric Roll Resonance Detection using Phase Correlation and Log-Likelihood Testing Techniques*, which was rewarded as the best regular paper at the 8th IFAC International Conference on Manoeuvring and Control of Marine Craft. 2009 in Sao Paulo.

Scientific profile: Stochastic control theory

My scientific area of interest is centred around modelling and control of dynamical systems influenced by stochastic disturbances and other types of uncertainties. The interest is both devoted to methodological

development, application and teaching. These three components has a synergistic effect.

Figure 1: Often we are riding some white horses,
but usually there is a dark horse involved – **uncertainty**.
In the modelling process, this often ends up with a grey box model
with a white physical component and black stochastic component.

As the caption in Figure 1 indicates I work with stochastic grey-box models with both a physical component in the model as well as a stochastic element.

- Methodological track:
  - Control (including MPC) of systems influenced by stochastic disturbances and uncertainties.
  - Dynamic optimization
  - State estimation (filtering, prediction and smoothing). Kalman filters and tuning.
  - Fault diagnosis (detection, isolation and estimation) and fault tolerant control.
  - Modelling of stochastic systems
  - System identification and parameter estimation.
  - Adaptive control
- Application track:
  - Modelling and control of wind turbines
  - Winds parks and energy systems
  - Rigid and flexible robots. Mobile robots
  - Navigation and guidance. Localization and mapping.
  - Biological systems (Diabetes control, Deviant behaviour of diary cows, Optimal feeding of fish)
- Teaching track:
  - Stochastic control
  - Dynamic optimization
  - Stochastic simulation
  - Advance system identification
  - Statistical fault detection

Publications

Journal papers

— 1982 —

1. N. K. Poulsen, J. Holst (University of Lund): Robust Self Tuning Controllers in Non Stationary Situations, *Recerche di Automatica*, vol. 13(2), pp. 197-217, 1982. Also in proceedings of IFAC Workshop on Adaptive Control pp. 257-280, 27-29 October 1982, Florence, Italy. pub: poulsen82b. folder: mypubl. bibtex id: . dir: . Link

— 1986 —

2. E. Hendricks (Dtu-EE), N. K. Poulsen: Minimum Energy Control of Large Diesel Engines, *SAE technical paper*, vol. 85, section 4, pp. 835-844, 1986. pub: hendricks86. folder: mypubl. bibtex id: hendricks86b. dir: . Link

— 1992 —

3. N. K. Poulsen, A. Damsgaard (Danish Maritime Institute), T. A. Reinhold (Danish Maritime Institute): Determination of Flutter Derivatives for the Great Belt Bridge, *Journal of Wind Engineering and Industrial Aerodynamics*, vol. 41, pp. 153-164, 1992. Also presented at the Eighth International Conference on Wind Engioneering, July 8-12 1991, The Univ. of Western Ontario, London, Canada. pub: poulsen91b. folder: mypubl. bibtex id: poulsen91b. dir: . Link

4. J. Parkum, N. K. Poulsen, J. Holst (University of Lund): Recursive forgetting algorithms, *International Journal of Control*, vol. 55(1), pp. 109-128, 1992. pub: parkum92. folder: mypubl. bibtex id: parkum92a. dir: . Link

— 1993 —

5. J. Carstensen (Krüger), H. Madsen, N. K. Poulsen, M. K. Nielsen (Krüger): Grey box modelling in two time domains of a waste water pilot scale plant, *Environmetrics*, vol. 4(2), pp. 187-208, 1993. pub: carstensen93. folder: mypubl. bibtex id: carstensen93a. dir: . Link

— 1994 —

6. M. Rostgaard, N. K. Poulsen, O. Ravn (Dtu-EE): Spectral factorization using the delta operator, *Systems and Control Letters*, vol. 22(5), pp. 293-301, 1994. pub: rostgaard94a. folder: . bibtex id: . dir: . Link

7. J. Carstensen (Krüger), H. Madsen, N. K. Poulsen, M. K. Nielsen (Krüger): Identification of waste water treatment processes for nutrient removal on a full-scale WWTP by statistical methods, *Water Research*, vol. 28(10), pp. 2055-2066, 1994. pub: carstensen94. folder: . bibtex id: . dir: . Link

— 1996 —

8. M. Rostgaard, M. Lauritsen, N. Poulsen: A State Space Approach to the Emulator-Based GPC, *Systems and Control Letters*, vol. 28(5), pp. 291-301, 1996. pub: rostgaard96. folder: . bibtex id: . dir: . Link.

— 1997 —

9. M. B. Lauritsen, M. Rostgaard, N. K. Poulsen: GPC Using a Delta-Domain Emulator-Based Approach, *International Journal of Control*, vol. 68(1), pp. 219-232, 1997. pub: mbl97a. folder: . bibtex id: . dir: . Link

— 1998 —

10. H. Bechmann (Krüger), M. Nielsen (Krüger), H. Madsen, N. K. Poulsen: Control of sewer systems and waste water treatment plants using pollutant concentration profiles, *Water Science and Technology*, vol. 37(12), pp. 87-93, 1998. pub: bechmann98. folder: . bibtex id: . dir: . Link

— 1999 —

11. P. H. Sørensen (Dtu-EE), M. Nørgaard, O. Ravn (Dtu-EE), N. K. Poulsen: Implementation of Neural Network based non-linear predictive control, *Neurocomputing*, vol. 28, pp. 37-51, 1999. pub: poul-haase-1999. folder: . bibtex id: . dir: . Link

12. H. Bechmann (Krüger), H. Madsen, N. K. Poulsen, M. K. Nielsen (Krüger): Grey-Box modelling of pollutant loads from a sewer system, *Urban Water*, vol. 1, pp. 71-78, 1999. pub: bechmann99. folder: . bibtex id: . dir: . Link

— 2000 —

13. J. K. Pedersen (Dtu-EE), K. O. H. Pedersen (Dtu-EE), M. Akke (Sydkraft), N. K. Poulsen: Analysis of Wind Farm Islanding Experiment, *IEEE Transaction on Energy Conversion*, vol. 15(1), pp. 110-115, 2000. pub: akke-2000. folder: . bibtex id: . dir: . Link

14. Magnus Nørgaard, Niels K. Poulsen and Ole Ravn (Dtu-EE): New Development in State Estimation for Nonlinear Systems, *Automatica*, Vol. 36, pp. 1627-1638, 2000. pub: noergard2000a. folder: . bibtex id: . dir: . Link

15. H. Bechmann (Krüger), H. Madsen, N. K. Poulsen, M. K. Nielsen (Krüger): Grey Box Modelling of First Flush and Incoming Waste water at a Waste water Treatment Plant, *Environmetrics*, vol. 11, pp. 1-12, 2000. pub: bechmann2000a. folder: . bibtex id: . dir: . Link

— 2001 —

16. N. K. Poulsen, B. Kouvaritakis (Oxford university), M. Cannon (Oxford university): Non-linear Constrained Predictive Control Applied to a Coupled-tank Apparatus, *IEE proceedings - Control Theory and Applications*, vol. 148(1), pp. 17-24, 2001. pub: poulsen99a. folder: . bibtex id: . dir: . Link

17. N. K. Poulsen, B. Kouvaritakis (Oxford university), M. Cannon (Oxford university): Constrained Predictive Control and its application to a Coupled-tanks Apparatus, *International Journal of Control*, vol. 74(6), pp. 552-564, 2001. pub: poulsen99b. folder: . bibtex id: . dir: . Link

18. M. Nørgaard, O. Ravn (Dtu-EE), N. K. Poulsen: NNSYSID and NNCTRL Tools for System Identification and Control with Neural Networks, *IEE Computing and Control Engineering Journal*, vol. 12(1), pp. 29-36, 2001. pub: noergaard01a. folder: . bibtex id: . dir: . Link

— 2002 —

19. H. Bechmann (Krüger), M. K. Nielsen (Krüger), N. K. Poulsen, H. Madsen: Grey-box modelling of aeration tank settling, *Water research*, vol. 36(7), pp. 1887-1895, 2002. pub: bechmann2002a. folder: . bibtex id: . dir: . Link

20. M. Nørgaard, O. Ravn (Dtu-EE), N. K. Poulsen: NNSYSID-toolbox for system identification with neural networks, *Mathematical and Computer Modellling of Dynamical Systems*, vol. 8(1), pp. 1-20, 2002. pub: noergaard2002a. folder: . bibtex id: . dir: . Link

— 2003 —

21. J. K. Pedersen (Dtu-EE), K. O. Helgesen-Pedersen (Dtu-EE), N. K. Poulsen, V. Akhmatov (Dtu-EE), A. H. Nielsen (Dtu-EE): Contribution to a dynamic wind turbine model validation from a wind farm islanding experiment, *Electric Power Systems Research*, vol. 64, pp. 41-51, 2003. pub: pedersen2003a. folder: . bibtex id: . dir: . Link

22. V. Akhmatov (Dtu-EE), H. Knudsen (Nesa), A. H. Nielsen (Dtu-EE), J. K. Pedersen (Dtu-EE), N. K. Poulsen: Modelling and transient stability of large wind farms, *Electrical Power and Energy Systems*, vol. 25, pp. 123-144, 2003. pub: akhmatov2003a. folder: . bibtex id: . dir: . Link

23. K. O. H. Pedersen (Dtu-EE), A. H. Nielsen (Dtu-EE), N. K. Poulsen: Short-Circuit impedance measurement, *IEE Proceedings on Generation, Transmission and Distribution*, vol. 150(2), pp. 169-174, 2003. pub: pedersen2003b. folder: . bibtex id: . dir: . Link

— 2008 —

24. N. K. Poulsen, H. Niemann (Dtu-EE): Active Fault Diagnosis Based on Stochastic Tests, *International Journal of Applied Mathematics and Computer Science*, vol. 18, No. 4, pp. 487-496, 2008. pub: amcs07. folder: . bibtex id: . dir: . Link

25. Bernt M. Åkesson (DTU-ChE), John B. Jørgensen, Niels K. Poulsen, Sten B. Jørgensen (DTU-ChE): A Generalized Autocovariance Least-Squares Method for Kalman Filter Tuning. *Journal of Process Control,* Vol. 18, No. 7, pp. 769-779, 2008. pub: aakeson07b. folder: . bibtex id: . dir: . Link

— 2009 —

26. P. Pinson, T. S. Nielsen, H. A. Nielsen, N. K. Poulsen, H. Madsen: Temperature prediction at critical points in district heating systems, *European Journal of Operational Research*, Vol 194, No. 1, pp. 163-176, 2009 pub: pinson07a. folder: . bibtex id: . dir: . Link

27. Jakob Kjøbsted Huusom (DTU-ChE), Niels Kjølstad Poulsen and Sten Bay Jørgensen (DTU-ChE): *Improving Convergence of Iterative Feedback Tuning.* Journal of Process Control 19(4) 570-578, 2009. pub: huusom07c. folder: . bibtex id: . dir: . Link

— 2010 —

28. Jakob Kjøbsted Huusom (DTU-ChE), Niels Kjølstad poulsen and Sten Bay Jørgensen (DTU-ChE): *Iterative Feedback Tuning of State Space Control Loops with Observers given Model Uncertainty.* Brazilian Journal of Chemical Engineering, vol: 27(3), pages: 461-472, 2010. pub: BJChE09. folder: . bibtex id: . dir: . Link

— 2011 —

29. R. Jónsson (Dtu-EE), M. Blanke (Dtu-EE), N.K. Poulsen, F Caponetti (Dtu-EE)and S. Højsgaard (Foulum): *Oestrus Detection in Dairy Cows from Activity and Lying Data using on-line Individual Models.* Computers and Electronics in Agriculture, 76(1),6, 6-15, 2011. pub: compag11. folder: . bibtex id: . dir: . Link
30. Sven Creutz Thomsen, Hans Henrik Niemann (Dtu-EE)and Niels Kjølstad Poulsen: *Robust stability in constrained predictive control through the Youla parameterisations.* International Journal of Control, 2011, vol. 84(4), pp. 653-664. pub: ijc11a. folder: . bibtex id: . dir: . Link
31. Jakob K. Huusom (DTU-ChE), Håkan Hjalmarsson (KTH), Niels K. Poulsen, Sten B. Jørgensen (DTU-ChE): *A Design Algorithm using External Perturbation to Improve Iterative Feedback Tuning Convergence.* Automatica, 2011, vol. 47(12), pp. 2665-2670. pub: auto09a. folder: . bibtex id: . dir: . Link

— 2012 —

32. Jakob Kjøbsted Huusom (DTU-ChE), John Bagterp Jørgensen, Niels Kjølstad Poulsen and Sten Bay Jørgensen (DTU-ChE): *Tuning SISO offset-free Model Predictive Control Based on ARX Models.* Journal of Process Control, 2012, vol 22, pp. 1997-2007. pub: jpc09. folder: . bibtex id: . dir: . Link
33. Lars Christian Henriksen (Risø), Morten Hartvig Hansen (Risø) and Niels Kjølstad Poulsen: *Wind turbine control with constraint handling: a model predictive control approach.* IET Control Theory and Applications, vol. 6(11), pp. 1722-1734, 2012. pub: lch12. folder: . bibtex id: . dir: . Link

— 2013 —

34. Roberto Galeazzi (Dtu-EE), Mogens Blanke (Dtu-EE)and Niels K. Poulsen: *Early Detection of Parametric Roll Resonance on Container Ships.* IEEE Transactions on Control Systems Technology, 2013, Vol. 21(2), pp. 489-503. pub: cst12. folder: . bibtex id: . dir: . Link
35. Signe Schmidt (Hvidovre hsp.), Dimitri Boiroux, Anne Katrine Duun-Henriksen (Zealand Pharma), Laurits Frøssing (Hvidovre hsp.), Ole Skyggebjerg (Horus APS), John Bagterp Jørgensen, Niels Kjølstad Poulsen, Henrik Madsen, Sten Madsbad (Hvidovre hsp.) and Kirsten Nørgaard (Hvidovre hsp.): *Model-Based Closed-Loop Glucose Control in Type 1 Diabetes: The DiaCon Experience.* Journal of Diabetes Science and Technology, pp 1256-1264, Volume 7(5), September 2013. pub: jdst13. folder: . bibtex id: . dir: . Link
36. Damien Castaignet (Vestas), Ian Couchman (Oxford university), Niels Kjølstad Poulsen, Thomas Buhl (Risø) and Jens Jakob Wedel-Heinen (Vestas): *Frequency-Weighted Model Predictive Control of Trailing Edge Flaps on a Wind Turbine Blade.* IEEE Transaction on Control Systems Technology, Volume 21, Number 4, pp. 1105-1116, July, 2013. pub: damien13a. folder: . bibtex id: . dir: . Link
37. Lars Christian Henriksen (Risø), Morten Hartvig Hansen (Risø) and Niels Kjølstad Poulsen: *A simplified dynamic inflow model and its effect on the performance of free mean wind speed estimation.* Wind Energy, vol. 16(8), pp. 1213-1224, 2013. pub: we13. folder: . bibtex id: . dir: . Link

— 2014 —

38. Leo Emil Sokoler (Dong energy), Laura Standardi, Kristian Edlund (Dong energy), Niels Kjølstad Poulsen, Henrik Madsen and John Bagterp Jørgensen: *A Dantzig-Wolfe decomposition algorithm for linear economic model predictive control of dynamically decoupled subsystems.* Journal of Process Control, vol. 24(8), pp. 1225-1236, 2014. pub: sokoler14. folder: . bibtex id: . dir: . Link
39. Damien Castaignet (Vestas), Thanasis Barlas (DTU wind energy), Thomas Buhl (Risø), Niels K. Poulsen, Jens Jakob Wedel-Heinen (Vestas), Niels A. Olesen (Vestas), Christian Bak (Risø) and Taeseong Kim (Risø): *Full-scale test of trailing edge flaps on a Vestas V27 wind turbine: active load reduction and system identification.* Wind Energy, 2014, Volume 17(4), pp. 549-564, January 2014. https://doi.org/10.1002/we.1589. pub: damien13b. folder: . bibtex id: . dir: . Link

— 2015 —

40. Roberto Galeazzi (Dtu-EE), Mogens Blanke (Dtu-EE), Thomas Falkenberg (Dtu-EE), Niels Kjølstad Poulsen, Nikos Violaris (DNV), Gaute Storhaug (DNV) and Mikael Huss (Wallenius marine): *Parametric roll resonance monitoring using signal-based detection for container and car carriers.* Ocean Engineering, vol. 109, pages: 355-371, 2015. pub: rg_mb_nkp_oe2015. folder: . bibtex id: . dir: . Link

41. Leonardo Bergami (Risø) and Niels Kjølstad Poulsen: *A smart rotor configuration with linear quadratic control of adaptive trailing edge flaps for active load alleviation.* Wind Energy, vol. 18(4), pp. 625-641, 2015. pub: bergami15a. folder: . bibtex id: . dir: . Link

— 2016 —

42. Rasmus Fogtmann Halvgaard, Lieven Vandenberghe (UCLA), Niels Kjølstad Poulsen, Henrik Madsen and John Bagterp Jørgensen: *Distributed Model Predictive Control for Smart Energy Systems.* IEEE Transactions on Smart Grid, vol. 7(3), pp. 1675-1682, 2016. pub: rasmus_halvgaard16a. folder: . bibtex id: . dir: . Link

— 2017 —

43. Lars Norbert Petersen (Gea Process engineerin), Niels Kjølstad Poulsen, Hans Henrik Niemann (Dtu-EE), Christer Utzen (Gea) and John Bagterp Jørgensen: *An experimentally validated simulation model for a four-stage spray dryer* Journal of Process Control, vol: 57, pages: 50-65, 2017. pub: lnp17. folder: . bibtex id: . dir: . Link

44. Lars Norbert Petersen (Gea), Niels Kjølstad Poulsen, Hans Henrik Niemann (Dtu-EE), Christer Utzen (Gea) and John Bagterp Jørgensen: *Comparison of three control strategies for optimization of spray dryer operation.* Journal of Process Control, vol: 57, pages: 1-14, 2017. pub: lnp17b. folder: . bibtex id: . dir: . Link

45. Zeinab Mahmoudi, Kirsten Nørgaard (Hvidovre hsp.), Niels Kjølstad Poulsen, Henrik Madsen and John Bagterp Jørgensen: *Fault and meal detection by redundant continuous glucose monitors and the unscented Kalman filter.* Biomedical Signal Processing and Control, vol: 38, pages: 86-99, 2017. pub: zeinab17a. folder: . bibtex id: . dir: . Link

46. Dimitri Boiroux, Anne Katrine Duun-Henriksen (Zealand Pharma), Signe Schmidt (Hvidovre hsp.), Kirsten Nørgaard (Hvidovre hsp.), Niels Kjølstad Poulsen, Henrik Madsen and John Bagterp Jørgensen: *Adaptive control in an artificial pancreas for people with type 1 diabetes.* Control Engineering Practice, vol: 58, pp. 332-342, 2017. pub: dibo17a. folder: . bibtex id: . dir: . Link

47. Dimitri Boiroux, Tinna Björk Aradóttir (Novo), Kirsten Nørgaard (Hvidovre hsp.), Niels Kjølstad Poulsen, Henrik Madsen and John Bagterp Jørgensen: *An Adaptive Nonlinear Basal-Bolus Calculator for Patients With Type 1 Diabetes.* Journal of Diabetes Science and Technology, vol 11(1), pp. 29-36, 2017. pub: dibo17b. folder: . bibtex id: . dir: . Link

48. Thierry Gruber (Queensland univ.), Gregoire S. Larue (Queensland univ.), Andry Rakotonirainy (Queensland univ.) and Niels K. Poulsen: *Developing a simulation framework for safe and optimal trajectories considering drivers driving style.* IET Intelligent Transport Systems, Vol. 11, No. 10, pp. 624-631. The Institution of Engineering and Technology, 2017. pub: thierry17. folder: . bibtex id: . dir: . Link

49. Henrik Niemann (Dtu-EE), Niels Kjølstad Poulsen, Mahmood Mirzaei and Lars Christian Henriksen: *Fault diagnosis and condition monitoring of wind turbines.* International Journal of Adaptive Control and Signal Processing, p. 586-613, 2017. pub: hhn17. folder: . bibtex id: . dir: . Link

— 2018 —

50. Dimitri Boiroux, Anne Katrine Duun-Henriksen (Zealand Pharma), Signe Schmidt (Hvidovre hsp.), Kirsten Nørgaard (Hvidovre hsp.), Sten Madsbad (Hvidovre hsp.), Niels Kjølstad Poulsen, Henrik Madsen and John Bagterp Jørgensen: *Overnight glucose control in people with type 1 diabetes.* Biomedical Signal Processing and Control, vol. 39, pp. 503-512, 2018. pub: dibo18a. folder: . bibtex id: . dir: . Link

51. Sekunda, A. K. (Dtu-EE), Niemann, H. H. (Dtu-EE)and Niels Kjølstad Poulsen: *Detector design for active fault diagnosis in closed-loop systems.* International Journal of Adaptive Control and Signal Processing. 18 p. 2018. pub: sekunda18a. folder: . bibtex id: . dir: . Link

52. De Zotti, G., Pourmousavi, S. A. (Queensland univ.), Madsen, H. and Poulsen, N. K.: *Ancillary Services 4.0: A Top-To-Bottom Control-Based Approach for Solving Ancillary Services Problems in Smart Grids.* IEEE Access. 6, p. 11694-11706, 2018. pub: zotti18a. folder: . bibtex id: . dir: . Link

53. Sadeghi, H. (Iranian univ. of science and technology); Poshtan, J. (Iranian univ. of science and technology); Poulsen, N. K. and Niemann, H. H. (Dtu-EE): *Estimating the Density of Fluid in a Pipeline System with an Electropump.* Journal of Pipeline Systems Engineering and Practice. 9, 2, 06018002, 2018. pub: sadeghi18a. folder: . bibtex id: . dir: . Link

54. Sekunda, A. K. (Dtu-EE), Niemann, H. H. (Dtu-EE), Poulsen, N. K. and Santos, I. F. (DTU-Mee): *Closed loop identification of a piezoelectrically controlled radial gas bearing: Theory and experiment.* Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering. 232(7) p. 926-936. pub: sekunda18b. folder: . bibtex id: . dir: . Link

55. Boiroux, D., Bátora (Slovak University of Technology), V., Hagdrup, M., Wendt S. L. (Zealand Pharma), Poulsen, N. K., Madsen, H. and Jørgensen, J. B.: *Adaptive model predictive control for a dual-hormone artificial pancreas.* Journal of Process Control. 68, p. 105-117, 2018. pub: dibo18a. folder: . bibtex id: . dir: . Link

56. Mahmoudi, Zeinab; Boiroux, Dimitri; Cameron, Faye (Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA); Poulsen, Niels Kjølstad; Bequette, B. Wayne (Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA); Jørgensen, John Bagterp: *An automated meal detector and bolus calculator in combination with closed-loop blood glucose control.* IFAC Workshop Series, vol: 51, issue: 27, pages: 168-173. pub: zeinab18b. folder: . bibtex id: . dir: . Link

57. Boiroux, Dimitri; Bàtora, Vladimr (Slovak University of Technology, Bratislava), Marian Tarnik (Slovak University of Technology, Bratislava); Hagdrup, Morten; Wendt, Sabrina Lyngbye; Poulsen, Niels Kjølstad ; Madsen, Henrik; Jørgensen, John Bagterp: *Adaptive model predictive control for a dual-hormone artificial pancreas.* Journal of Process Control, vol: 68, pages: 105-117, 2018. pub: dibo18b. folder: . bibtex id: . dir: . Link

58. De Zotti, Giulia; Pourmousavi Kani, Seyyed Ali (University of Queensland St Lucia QLD, Australia); Morales, Juan Miguel (Department of Applied Mathematics, the University of Malaga, Spain.); Madsen, Henrik; Poulsen, Niels Kjølstad: *Consumers' Flexibility Estimation at the TSO Level for Balancing Services.* IEEE Transactions on Power Systems, vol: 34, issue: 3, pages: 1918 - 1930, 2019 pub: zotti18b. folder: . bibtex id: . dir: . Link

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Patents

1. Patent application filed on *Early Detection of Parametric Roll on Ships (Paroll).* In collaboration with Mogens Blanke (Dtu-EE) (40 %) and Roberto G. Galeazzi (Dtu-EE) (40 %). Application on funding (750 KDkr) to proof of concept granted (12.11.2009). Commercial license agreement with (Amarcon) (the Nederlands) 2009-2014. Scientific collaboration with (DNV-GL) (Norway) 2009-present and (Wallinius) (Sweden) 2009-present .

2. Patent application filed 3.12.2015 on *Condition monitoring of a rotor arrangement in particular a wind turbine.* In collaboration with Hans Henrik Niemann (Dtu-EE)(30%), Mahmood Mirzei (25%) and Lars Christian Henriksen (25 %).
3. Process in filing an application initiated (Notification of Invention filed with DTU) 24.1.2017. Title: *Systematic Fatigue control for Wind Turbine.* In collaboration with Niclas Laursen Brok (60 %) and Henrik Madsen (20 %).

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47. T. H. Sejerøe (Dtu-EE), O. Ravn (Dtu-EE), N. K. Poulsen, *Simultanuous Location and Mapping - A Simulation Platfrom*, no 04, pp. 18, Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2005.

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48. L. V. Mogensen (Dtu-EE), N. A. Andersen (Dtu-EE), O. Ravn (Dtu-EE), N. K. Poulsen, *Using Kalmtool in Navigation of Mobile Robots*, no 16, pp. 20, Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2007.

49. P. Pinson, T. S. Nielsen, H. A. Nielsen, N. K. Poulsen, H. Madsen, *Temperature prediction in district heating systems with cFIR models*, no 10, pp. 36, Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2007.

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50. Niels Kjølstad Poulsen: *On Discrete Time Control of Continuous Time Systems*, IMM-Technical Report-2008-08, pp. 13, Department of Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2008.

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51. Niels Kjølstad Poulsen: *Set point control in the state space setting*, IMM-Technical Report-2009-04, pp. 34, Department of Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2009.

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52. Lars Christian Henriksen and Niels Kjølstad Poulsen: *An online re-linearization scheme suited for Model Predictive and Linear Quadratic Control.* IMM-Technical Report-2010-13, pp. 12, Department of Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2010. pub: tr13-2010. folder: . bibtex id: tr13-2010. dir: . Link

53. Lars Christian Henriksen and Niels Kjølstad Poulsen: *A Trust-region-based Sequential Quadratic Programming Algorithm.* IMM-Technical Report-2010-14, pp. 5, Department of Informatics and Mathematical Modelling, The Technical University of Denmark, DTU, 2010. pub: tr14-2010. folder: . bibtex id: tr14-2010. dir: . Link

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54. Aradóttir, T.B.,Mahmoudi, Z., Bengtsson, H., Jensen, M.L., Boiroux, D., Poulsen, N.K.: Dose response modelling in type 2 diabetes based on self-monitored blood glucose and insulin data. September 2019.

55. Aradóttir, T.B.,Mahmoudi, Z., Bengtsson, H., Jensen, M.L., Boiroux, D., Poulsen, N.K.: Dose prediction based on self-measured blood glucose and insulin data: A novel approach to basal insulin titration September 2019.

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Reports

1. B. G. Thygesen, N. K. Poulsen, J. Holst (University of Lund), *A State-Space Description for Sampled Delay Systems using Delta Operator*, 1991
2. B. G. Thygesen, M. Rostgaard, N. K. Poulsen, J. Holst (University of Lund), *Design of Deterministic Controllers based on the Delta-Operator*, 1992
3. B. G. Thygesen, N. K. Poulsen, *Generalized Predictive controller design using the delta operator*, 1993
4. N. K. Poulsen, J. Holst (University of Lund), *Kalman Filtering with Unknown Variance Level*, 1993
5. N. K. Poulsen, M. Rostgaard, B. G. Thygesen, O. Ravn (Dtu-EE), *Prediction Error Methods for Delta Models*, 1993
6. M. Lauritsen, M. Rostgaard, N. K. Poulsen, *A Simple Second Order Approach to the Selection of Closed-Loop Poles*, 1996
7. U. H. Thygesen, N. K. Poulsen, *Robustness of Non-Linear Systems towards Multi-Dissipative Pertubations*, 1997
8. Magnus Nøgaard, N.K. Poulsen and Ole Ravn: *Unification of New Nonlinear State Estimators.* pp. 1-, 1998. pub: magnus-noergaard98. folder: . bibtex id: . dir: . Link
9. H. H. Niemann (Dtu-EE), N. K. Poulsen, J. Hennningsen, *Active Fault Diagnosis of the Coupled Mass Benchmark System, Part 1 - Analysis.*
10. J. Henningsen, N. K. Poulsen, H. H. Niemann, *Active Fault Diagnosis of the Coupled Mass Benchmark System, Part 2 - Simulation.*

11. Jakob Kjøbsted Huusom and Niels Kjølstad Poulsen and Sten Bay Jørgensen: *Closed loop identification for nonlinear process models. Challenges and methods.*
12. Hans Henrik Niemann (Dtu-EE)and Niels Kjølstad Poulsen and Jan Henningsen *Active Fault Diagnosis of the Coupled Mass Benchmark System*
13. H. Markou (Risø), M. H. HansenaffRisø, T. BuhlaffRisø, T. van Engelen, E.S. Politis, V. Riziotis, N. K. Poulsen, A. J. Larsen (DTU), T. S. Mogensen (DTU) and J. G. Holierhoek (Delft): *Aeroelastisc Stability and Control of Large Wind Turbines - Main Results.* StabCon report. pub: markou06. folder: . bibtex id: . dir: . Link
14. Torben Skov Nielsen, Niels K. Poulsen, Henrik Madsen and Lars Gottlieb: *Control of Supply Temperature in District Heating Systems with Multiple Supply Points.* pub: nielsen04. folder: . bibtex id: . dir: . Link
15. H. Niemann (Dtu-EE), N. K. Poulsen, A Multi-Model Approach for System Diagnosis.
16. Dimitri Boiroux and Daniel A. Finan and Niels K. Poulsen and Henrik Madsen and John B. Jørgensen: *Computation of Ideal Insulin Administration in People with Type 1 Diabetes Using Constrained Nonlinear Optimal Control* .
17. Anders Bahnsen, Peter Johansen and Niels K. Poulsen: *A 3-Phase Current Sensor For Use In Substation Automation.*
18. V. Batora, D. Boiroux, M. Hagdrup, M. Tarnik, J. Murgas, S. Schmidt, K. Nørgaard, N.K. Poulsen, H. Madsen, J.B. Jørgensen: Glucagon Administration Strategies for a Dual-Hormone Artificial Pancreas. submitted to IEEE Transactions on Biomedical Engineering, June, 2015. pub: batora15. folder: . bibtex id: . dir: . Link
19. Tim van Engelen (ECN), K. Thomsen, H. Markou, T. Buhl (Risø), D. Vinkelaar (ECN). B. Marrat (TUD), V. Politis (CRES) V. Rizioti and S. Voutsinas (NTAU): *Morphological Study of Aeroelastic Control Concepts for Wind Turbines.* StabCon project, Task-7 Report. Dec. 20 2005. pub: stabcon-task-7. folder: . bibtex id: . dir: . Link

Ph.D. (co)supervision

1. Jens Parkum *Recursive Identification of Time-varying Systems*, financed by the Danish Technical Research Council (STVF).
2. Bent Georg Thygesen *Modelling and Control of Systems in the Delta Domain.*
3. Jacob Carstens *Identification of Wastewater Processes*, Financed by The Danish Academy of Technical Sciences (ATV) and Krüger AS.
4. Kent Rasmussen *Process Identification: Model structure and Model Uncertainty* in cooperation with Department of Chemical Engineering.
5. Morten Rostgaard *Digital control of dynamic system under high sampling frequency*, Financed by the Danish Technical Research Council and in coperation with Department of Automation.
6. Jens Rane Baungaard *Modelling and Control of Flexible Robots* in cooperation with Department of Automation.
7. Magnus Nørgaard *Application of Neural Nets in Control* in cooperation with Department of Automation.
8. Anca Petrov *Adaptive control applied on Vehicles (Ships).*
9. Morten Lauritsen *Rapproachment between Control and System Identification.*
10. Ma Xin: *Extremum control of wind turbines* in cooperation with Risø National Laboratory.
11. Uffe H. Thygesen: *Dissipativity methods in robust control.*
12. Henrik Bechmann *Modelling and Predictive Control of Waste Water Systems* financed by Krüger A/S and The Danish Academy of Technical Sciences (ATV).
13. Martin Bak *Control under constraints* in cooperation with Department of Automation
14. Maria Eliza Medeiros de Barros *Concurrent structural, aerodynamic and controls optimization of wind turbines* in cooperation with Risø and Brazilian wind energy center (not finished).

15. Vladislav Akhmatov *Analysis of dynamic behaviour of electric power systems with large amount of wind turbine* in cooperation with department of electric power engineering and NESA. Financed by Nesa and The Danish Academy of Technical Sciences (ATV).
16. Jakob Kjøbsted Huusom *Model Identification for control.*
17. Oliver Gehrke *Self-organizing distributed control of a distributed energy system with a high penetration of renewable energy*, supported by the Danish Technical Research Council (STVF).
18. Peter Bjørn Andersen *Wind turbine with trailing edge flaps for load alleviation.* Cosupervisors: Christian Bak, MAc Gaunaa, Thomas Buhl (Dtu-Risø). Opponents: Torben Knudsen (Aau, chairmann), Jakob Wedel-Heinen (Vestas), Gijs van Kuik (Delft). Suported by the Danish Counsil for independent Research, Technology and Production Science. Defended 18.5.2010.
19. Sven Creutz Thomsen *Non-linear optimal control and control of wind turbines.* Cosupervisor: Hans Henrik Niemann (Dtu-EE). Finansed by DTU. Opponents: William Leithead (University of Strathclyde), Jakob Stoustrup (Aalborg university), John Bagterp Jørgensen (DTU-Informatics, Chairman). Defended 10.9.2010
20. Lars Christian Henriksen: *Model-based Predictive Control of Wind Turbines.* Cosupervised by Morten Hartvig Hansen. Financed by Risø. Opponetns: Tim van Engelen (ECN), Per Brath (Vestas), John Bagterp Jørgensen (DTU-Informatics, Chairman). Defended 31.1.2011
21. Ragnar Ingi Jonsson: *Fault Diagnosis for Identification of Deviant Behaviour in Dairy Cows.* Supervised by Mogens Blanke, Søren Høgsgaard (Foulum). Opponents: Fredrik Gustavsson (Linkøping), Rudi de Mol and Henrik Madsen (Chair, DTU Informatics). Defended 31.5.2011
22. Tryggvi Jonsson: *Forecasting and decision-making in electricity market with focus on wind energy.* Supervisor: pp, nkp and Torben Skov Nielsen. Opponents: Murat Kulachi, Patrick McSharry (Oxford) and Peter Meibom (Danish Energy). Industrial PhD with Enfor. Defended 27.4.2012.
23. Damien Castaignet: *Model predictive control of trailing edge flaps on a wind turbine blade.* Supervisor: Thomas Buhl (Dtu wind energy). Cosupervisor: Jakob Wedel-Heinen (Vestas). Industrial PhD. Vestas, High technology foundation. Defended 10.5.2012.
24. Dimitri Boiroux: *Model Predictive Control Algorithms for Pen and Pump Insulin Administration.* Supervisor: John Bagterp Jørgensen. Cosupervisor: Henrik Madsen. Opponents: Mads Peter Sørensen, Jørgen Knudsen (2control), Luigi Del Re (University of Linz). Part of the DiaCon project, which was financed by NaBIT. Defended: 26.10.2012.
25. Mahmood Miraei: *Concurrent Aero-Servo-Elastic Analysis and Design of Wind Turbines.* Finansed by The CaseD project (Danish Strategic Research Counsil). Cosupervisor: Hans Henrik Niemann (Dtu-EE). Opponents: Carlo Bottasso (University of Milan), Jakob Stoustrup (Aau) and John Bagterp Jørgensen. Defended: 21.1.2013.
26. Leonardo Bergami: *Adaptive Trailing Edge Flap, control for enhanced load alleviation* Supervisor: Thomas Buhl (DTU Wind energy). Cosupervisor: Mac Gaunaa (DTU Wind energy), Jakob Wedel-Heinen (Vestas). Defended: 4.7.2013.
27. Rasmus Halvgaard: *Model Predictive Control for Smart Energy Systems.* Supervisor: John Bagterp Jørgensen, Henrik Madsen, nkp. Start 1.11.2010. Defended: 25.4.2014.
28. Laura Standardi: *Economic Model Predictive Control for Large-Scale and Distributed Energy Systems. Part of the smart and cool project).* Supervisor: John Bagterp Jørgensen, nkp. Opponents: Antony Rossiter (University of Sheffield), Lars Larsen (Danfoss), Juan Miguel. Defended: 9.2.1015
29. Martin Juul Jørgensen: *Enhanced Subsea Acoustically Aided Inertial Navigation* Start 15.12.2011. Financied by IMM and Sonardyne. Cosupervisor: Mikael Bliksted Larsen (Sonardyne ltd.)
30. Gianluca Frison: *Optimization Algorithms for Experimental Design, Parameter Estimation, and Control of Dynamic Systems.* Supervisor: John Bagterp Jørgensen. Cosupervisor: Henrik Madsen, nkp.
31. Leo Emil Sokoler: *Stochastic Model Predictive Control with Applications in Smart Energy Systems.* Supervisor: John Bagterp Jørgensen. Cosupervisor: Henrik Madsen, nkp. Indistriel supervisor Kristian Edlund (Dong Eneregy). Financed by Dong Energy. phds: PhDthesisEmilSokoler.pdf. folder: X:/phds. bibtex id: . dir: xx. Link
32. Tuhfe Gocmen: *Possible Power of Downregulated Offshore Wind Power Plants.* Supervisor: Poul Sørensen (DTU Wind energy). Cosupervisor: Gregor Giebel (DTU Wind energy).

33. Lars Norbert Petersen *Economic Model Predictive Control for Spray Drying Plants.* Supervisor: John Bagterp Jørgensen. Cosupervisors: Hans Henrik Niemann (Dtu-EE), Christer Utzen (GEA Process Engineering) Industrial PhD with GEA Process Engineering.
34. Andre Sekunda: *Fault diagnosis and optimal control of electro-mechanical systems.* Supervisor: Hans Henrik Niemann (Dtu-EE), Co supervisor: Ilmar Santos (DTU Mechanical Engineering) and nkp. Opponents: Michel Kinnaert (Brussels), Roberto Galeazzi (chairmann) and Carsten Skovmose Kallesøe (Grundfos). Start 15.12.2014. Defence 23.3.2018.
35. Morten Hagdrup: *Model Predictive Control based on Stochastic Differential Equations - An Artificial Pancreas with Fast Insulin, Glucagon and Multiple Sensors.* Supervisor: John Bagterp Jørgensen. Co supervisors: Henrik Madsen, nkp, Bjarne Poulsen. Start 1.9.2014.
36. Dan Hermann: *Optimisation of combine harvesters yield using model-based control.* Industrial PhD. Supervisor: Ole Ravn (Dtu-EE). Co-supervisor: Nils Axel Andersen (Dtu-EE)and Niels Kjølstad Poulsen. Industrial Supervisors: Morten Leth Bilde and Bingcheng (NiAGCO A/S). Defence: 2018.
37. Giulia De Zotti: *Market Mechanisms for the integration of Distributed Energy Resources.* Financed by the Smartnet project. Supervisor: nkp, Henrik Madsen. Start 15.12.2014. Defence 21.6.2019.
38. Tinna Björk Aradóttir: *CGM-Augmented Insulin Pens for People with Type 2 Diabetes.* Supervisor: nkp, Dimitri Boiroux, Peter Herskind (Novo), Henrik Bengtsson (Novo) and Kirsten Nørgaard (Hvidovre hospital). Start: 1.10.2016. Defence: 6.1.2020. Opponents: Jan Kloppenborg (chair), B. Wayne Bequette (Chemical and Biological Engineering, Rensselaer Polytechnic Institute), Niels Jessen (Department of Clinical Medicine, Aarhus university)
39. Robert Miklos: *Learning-based Model Predictive Control of Spray Dryers.* Main supervison: Hans Henrik Niemann (Dtu-EE). Cosupervisor: Lars Norbert Petersen (Gea), Christor Utzen (Gea), John Bagerterp Jørgensen and Niels Kjlstad Poulsen. Start: 1.1.2017. Defence: 25.5.2020. Opponents: Jakob Kjøbsted Huusom (DTU Chemical Engineering), Håkan Hjalmerson (Reglerteknik, KTH), Jan Demon Bendsen (AAU).
40. Frederik Banis: *Efficient Operation of Energy Grids.* Part of the uGrip project (Zagrep University and OFFICE in Oldenburg). Cosupervisor: Henrik Madsen and Daniela Guericke. Start 1.12.2016. Defense 22.12.2020. Opponents: Uffe Høgsbro Thygesen, Jan Dimon Bendtsen, Aalborg University and Jaume Salom Tormo, IREC - Institut de Recerca en Energ Catalunya, Spain.
41. Jan Lorenz Svensen: *Model Predictive Control in Urban Systems.* Cosupervisor: Anne Katrine Falk (DHI), and Hans Henrik Niemann (Dtu-EE). Start 15.9.2017. From 1.9.2020 Mainsupervisor Henrik Madsen (nkp cosupervisor). Defense: 15.3.2021. Examinors: Professor Peter Steen Mikkelsen, DTU Environment Professor, Chief Specialist Carsten Skovmose Kallesœe, Aalborg University, Grundfos Associate Professor Carlos Ocampo-Martinez, Universitat Politcnicade Catalunya (UPC). Moderator: Associate Professor Uffe Hgsbro Thygesen, DTU Compute.
42. Niclas Laursen Brok: *Stochastic Dynamic Optimization and Control Theory.* Main supervisor: Henrik Madsen. Cosuperviser: John Bagterp Jørgensen and nkp. Start 1.9.2017. Hand in 14.12.2020. Defense 15.4.2021.

Post Doc projects

1. Supervisor in post doc project (Magnus Nørgaard) *Event based Kalman filtering* financed (3 year) by the Danish Technical Research Council and in cooperation with Department of Automation (DTU).
2. Collaboration with Jakob Kjøbsted Huusom *Model Identification and Optimal Tuning for Model Predictive Controllers.* Financed (2 year) by the Danish Technical Research Council. Collaborator: John Bagterp Jørgensen.
3. Maria Faldborg Steinhausen *Optimal feeding of fish* (6 month) financed by the Danish ministry of Food, Agriculture and Fisheries.
4. Daniel A. Finan. Financed (2 year) by the DiaCon project. Main collaborator: John Bagterp Jørgensen. Collaborator: Henrik Madsen.
5. Lars Christian Henriksen. Financed (1 year) by the *CaseD* project.
6. Mahmood Mirzeai. Financed by the projects: *CaseD, Radar@Sea* and *Possible Power.*

7. Dimitri Boiroux *A bi-hormonal Artificial Pancreas based on an Ensemble Nonlinear Model Predictive Control Algorithm.* Financed by the Danish Diabetes Academy. Main collaborator: John Bagterp Jørgensen, collaborator: Henrik Madsen.
8. Zeinab Mahmoudi: Main collaborator: John Bagterp Jørgensen, collaborator: Henrik Madsen.

Participation in projects with external founding

1. *Robust adaptive controllers*, 3 year post doc project (Niels K. Poulsen) financed by the Danish Technical Research Council (STVF). Role: PI.
2. *Recursive Identification of Time-varying Systems* 3 year Ph.D. project (Jens Parkum) financed by the Danish Technical Research Council (STVF). Role: PI and supervisor.
3. *Identification of Wastewater Processes*, 3 year idustrial Ph.D. project (Jacob Carstens) Financed by The Danish Academy of Technical Sciences (ATV) and Krüger A/S. Role: Co-supervisor.
4. *Digital control of dynamic system under high sampling frequency*, 3 year Ph.D. project (Morten Rostgaard) Financed by the Danish Technical Research Council (STVF). In collaboration with Ørsted. Role: PI and supervisor. 375 kkr. (1.1.93-1.1.96).
5. *Modelling and Predictive Control of Waste Water Systems*, 3 year idustrial Ph.D. project (Henrik Bechmann), financed by Krüger A/S and The Danish Academy of Technical Sciences (ATV). Role: Cosupervisor.
6. *Analysis of dynamic behaviour of electric power systems with large amount of wind turbine*, 3 year year industrial Ph.D. project (Vladislav Akhmatov), Financed by Nesa A/S and The Danish Academy of Technical Sciences (ATV). Role: Cosupervisor.
7. *Event based Kalman filtering*, 3 year post doc project (Magnus Nørgaard) financed by the Danish Technical Research Council (STVF) (1.368 kkr) and in cooperation with Automation DTU. Role: PI and supervisor.
8. Participation in the BIPS project (*Center for online Berøringsfri kontrol, styring og regulering af Industrielle Processer og Systemer*) financed by Erhversfremmestyrelsen/Ministeriet for Videnskab, Teknologi og Udvikling (15.7 Mkr). Cooperation between FORCE Technology, Afdelingen for Optik og Plasmaforskning (Risø), IMM (DTU), Banestyrelsen, Coloplast A/S, Junckers Industrier A/S, SCITEQ-Hammel A/S. Role: project collaborator.
9. Support (2002-2004, acess to DTU HPC center) to the project: *Modellling and Control of Dynamic Systems* from the Danish Center for Scientific Computing under grant CPU-1101-30.
10. Participation in *Aeroelastic integrated wind turbine control* financed by Danish Ministry of Energy under the Danish Energy Research Programme (EFP) and in cooperation with Risø, MEK (DTU) and IMM (DTU). Role: work package leader.
11. Participation in *Operation and control of large wind turbines and wind farms* 3 year project financed by Elkraft System (PSO) in cooperation with Risø, IMM (DTU), E2 and AAU
12. Participation in *STABCON* (Aeroelastic stability and control of large wind turbines) project (48 month) financed by the European Community under the Energy, Environment and Sustainable Development Programme and is a colaboration bewtween Risø, DTU (MEK and IMM), The Energy Research Centre of The Netherlands, Center for Renewable Energy Sources, National Techn. Univ. of Athens, Universität Stutgart, Delft Unversity and NEG Micon A/S.
13. Participation in *Self-organizing distributed control of a distributed energy system with a high penetration of renewable energy*, supported by the Danish Technical Research Council (STVF) with 3MDkr. Participans: Risø, Ørsted (Elteknik), IMM
14. Participation in Center for Model Based monitoring and Control (CMBC). Collaboration between FLS-Automation, Dong Energy, Danfoss, Skov, Aalborg University, DTU (IKT and IMM)
15. Participation in Concurrent aero-servo-elastic design (CASED). Collaboration between Risø, Aalborg University (Process control) and Vestas. Financed by the Danish strategic research council (10Mkr).
16. Control Algorithms for Semi- and Fully-Automated Pen and Pump Insulin Administration (DIACON). Collaboration between IMM-DTU, Biocentrum-DTU, Department of Endocrinology, Hvidovre Hospital and Novo Nordisk A/S. Financed (8 Mkr) by the Danish Research and Innovations Agency under the NABIIT Strategic Research Program.

17. Improving short-term predictability and controlability of offshore wind generation with Local Area Weather Radars (Radar@Sea). Collaboration between DTU-IMM, Risø, DHI, Wattenfall and Dong Energy. Finaced (5.4 Mkr) by Public servide obligation (PSO).
18. Optimal feeding of fish (LAX). Financed (400 kkr) by the Danish ministry of Food, Agriculture and Fisheries.
19. Possible power (possPower). Collaboration between Risø, Dong Energy, Vestas, Siemens Windpower, Wattenfald. Finaced (864 kkr) by Energinet.dk (PSO).
20. Adaptiv forbrugsbalancering af supermarkeds køl og - frost (Smart and Cool). (Laura Standardi). Collaboration between Aalborg Universitet, DTU, Dong, Danfoss. Financed (7.6 Mkr) by EU. Role: cosupervisor.
21. uGriP (Frederik Banis). Collaboration with univ. of Zagreb. Role: Partner.
22. Water Smart Citites (Damianos Tranos/Jan Lorenz Svensen). In collaboration with DTU environment (lead), DHI, HOFOR, BIOFOS, Odense vand and Århus vand. Role: Partner.
23. SmartNet (Giulia de Zotti). Project leaded by Henrik Madsen. Role: PhD supervisor.

Member of advisory board for the 2 projects: PlugAndPlay (led by Jakob Stoustrup, Aalborg university) and TotalControl (led by Gunner Larsen, DTU).

Censorships

Opponent in connection to defence of Ph.D. dissertations. (Msc, Bsc and courses are not listed):

1. Jan-Eric Englund: *Adaptive recursive M-estimators for dependent sequences*, Department for Mathematical Statistics Lunds Tekniska Högskola, Sweden
2. Erik Weyer: *System identification in the behavioral framework*, Department for Technical Cybernetics, NTH, Trondheim, Norway
3. Christian Wagner: *Application of Neural Nets and Fuzzy logic in control*, Department of Control and Engineering Design, DTU and Danfoss AS
4. Muzhi Zhang: *Intelligent Hydraulic Actuator and Experimental Bases Modelling of Losses in Pumps and Motors*, Department of Control and Engineering Design, DTU
5. Torben Ole Andersen: *Active Control of Hydraulic Actuators and Multivariable Hydraulic Systems*, Department of Control and Engineering Design, DTU
6. Lars Henrik Hansen: *Stochastic Modelling of Central Heating systems.*
7. Jan Nygaard Nielsen: *Stochastic Modelling of Dynamic Systems*
8. Kurt Creutzburg: *Optimization of metabolic networks for metabolite overproduction.*
9. Torben Skov Nielsen: *On-line Prediction and control in non-linear Stochastic Systems.*
10. Niels Rode: *Fed-Batch Process Modelling for State Estimation and Optimal Control.*
11. Jacob Viborg Tornfeldt Sørensen: *Data Assimilation in Hydrodynamic Models of Continental Shelf Seas*
12. Knut Rapp: *Nonlinear Estimation and Control in the Iron Ore Pelletizing Porcess, An application and analysis of the extended Kalman filter.* Supervisor: Per-Ole Nymann, Narvik Højsokle, Opponent: Bernt Lie, Telemarkens Højskole. Administrator: Rolf Henriksen, Trondheim.
13. Martin Drews: *Data assimilation on atmospheric dispersion of radiactive materials.* Vejleder Henrik Madsen and Bent Lauritsen, Risø National Laboratorium. Censor: Jan Holst, Lunds Universitet and Dr. Robert Finck Statens Strålskyddsinstitut, Stockholm
14. John Bagterp Jørgensen: *Moving Horizon Estimation and Control.* Supervisor: Sten Bay Jørgensen. Censors: Wolfgang Marquardt and Stig Strand.
15. Dennis Bonné: *Optimal and Reproducible Operation of Batch Processes.* Supervisor: Sten Bay Jørgensen. Censorer: Dominique Bonvin and Henrik Weisberg Andersen.

16. Trond Nypan: *Mobile Terminal Positioning by Database Matching and Filtering.* Supervisor: Oddvar Hallingstad. Cocensors: Sverre Holm (Institutt for Informatikk, Univ. i Oslo), Torbjøn Svendsen (Institutt for elektronikk og telekommunikasjon, NTNU), Rolf Henriksen (Ins. for teknisk kyberteknikk)
17. Jan Frydendall: *Data Assimilation in Marine Models.* Supervisor: Henrik Madsen, Jakob Tornfeldt Sørensen, DHI. Oponents: Jacob Carstensen (DMU), Arnold Willem Heemink (Delft University).
18. Piotr Niemczyk: *Model-based fuel flow control for fossil-fired power plants.* Supervisor: Jan Dimon Bendtsen and Anders P. Ravn. Oponents: Rafal Wisniewski, Claudio De Persis.
19. Fannar Thordarson: *Grey box modelling of Hydrological systems - with focus on uncertainties.i* Supervisors: Henrik Madsen (IMM), Henrik Madsen (DHI). Opponents: Michael Robdrup Rasmussen (Aau), Patrick Willems (Leuven)
20. Martin Choux: *Nonlinear, Adaptive and Fault-Tolerant Control for Electro Hydraulic Servo Systems.* Supervisor: Mogens Blanke (Dtu-EE) and Geir Holand (Agder, Norway). Opponents: Torben Ole Andersen (Aau), Olav Egeland (NTNU, Trondheim).
21. Søren Christiansn: *Model Based Control of a Ballast Stabilized Floating Wind Turbine Exposed to Wind and Waves.* Supervisor: Thomas Bak{affAau and Torben Knudsen (Aau). Opponents: Rafael Wisniewski (Chair), Hamid RezaKarimi (Univ. in Agder, No).
22. Tobias Gybel Hovgaard: *Power management for energy systems.* Supervisors: John Bagterp Jørgensen, Lars Finn Sloth Larsen (Danfoss), Mogens Blanke (Dtu-EE). Opponents: Manfred Morari (Zurich), Tommy Mølbak (Dong).
23. Knud Abildgaard Kragh: *Performance Enchancement and Load Reduction on Wind Turbines Using Inflow Measurements.* Supervisor: Morten Harvig Hansen. Opponents: Vasilis A. Riziotis - National Technical University of Athens, Dr. Ervin Bossanyi - Garrad Hassan. (Chair: nkp).
24. Ivan Bergquist Sønderby (Risø): *Low-order aeroelastic models of wind turbines for controller design.* Supervisor: Morten Harvig Hansen. Opponents: Vasilis A. Riziotis - National Technical University of Athens, Stoyan Kanev - Energy research Center of the Netherlands. (Chair: nkp).
25. Maryamsadat Tahavori (Aau): *Modeling, Optimization and Control of Hydraulic Networks.* Supervisors: Rafael Wiesnewsky (es, aau), Carsten Skovmose Kallesœ (Grundfos), John Josef Leth (es, aau). Opponent Jan Dimon (es, aau), Jan Tommy Gravdahl (Teknisk Kybernetik, NTNU), nkp.
26. Martin Evans (Worcester College, Oxford University) : *Multiplicative Robust and Stochastic MPC with Application to Wind Turbine Control.* Supervisors: Basil Kouvaritakis (University of Oxford) and Mark Cannon (University of Oxford). Opponents: Stephen Duncan (University of Oxford), nkp.
27. Seyed Ehsan Shafiei (Aau): *Control Methods for Energy Management of Refrigeration Systems.* Supervisors: Jakob Stoustrup (Aau), Henrik Rasmussen (Aau), Rafael Wisniewski (Aau), Palle Andersen (Aau) and Roozbeh Izadi-Zamanabadi (Danfoss). Opponents: Brian Rasmussen, Tom S. Pedersen (Aau, chairman) and nkp.
28. Giuseppe Tommaso Constanzo (DTU-Wind energy): *Demand side management in the smart grid: A direct load control approach.* Supervisor: Henrik W. Bindner (DTU-Wind energy). Opponents: Sebastian Lehnhoff (Oldenburg) and Peter Palensky (TU-delft).
29. Maria Lourdes Gala Santos (University of Strathclyde, Scotland, UK): *Aerodynamics and Wind-Field Models for Wind Turbine Control.* Supervisor: William Leithead, (University of Strathclyde, Scotland, UK). Internal examiner: Alasdair McDonald (University of Strathclyde, Scotland, UK). External examiner: nkp.
30. Emerson Guest: Active filter solutions for reducing harmonic emission by wind power plants. Tonny Wederberg Rasmussen (Dtu-EE)and Kim Høj Jensen (Siemens Gamesa Renewable Energy). Censor: nkp, Torbjörn Thiringer (Chalmers) and Nenad Mijatovic (Dtu-EE). Defense: 20.6.2019.

Teaching Activities

On master level:

- **(02421) Stochastic adaptive Control** (every fall since 1986-2020 except 98, 10 ECTS). Stochastic systems, system identification and control.

- **(02443) Stochastic simulation** (86-94, 96, 02, 5 ECTS, 50%) Simulation of systems described by deterministic and stochastic difference and differential equations, queing systems.
- **(4211) Static and dynamic optimization**(fall 97,99-2019, 5 ECTS, 50 %). Optimization on static and dynamic problems under restrictions or limitations

Internet based courses:

- **Time serie analysis** (2005) in collaboration with H. Madsen.

On Ph.D. level (often as jointly responsible):

- **Advanced system identification** (1992), Guest lecturer Prof. Lennart Ljung Linköping, Sweden
- **Advanced adaptive control**(1993). Guest lecturer Prof. Michel Gevers, Belgium
- **Advanced system identification** (1995)
- **Advanced system identification** (1998)
- Course in **Stochastic control** applied to **Wind Turbines** given at Federal Unversity of Pernambuco (UFPE), Recife, Brazil. (2001)
- **Advanced system identification** (2001)
- **Advanced system identification** (2002)
- **Model Predictive Control** (2004)
- **Advanced system identification** (2004)
- **Advanced system identification** (2005)
- **Advanced system identification** (2006)
- **Model Predictive Control** (2007)
- **Advanced system identification** (2007 at Risø and DTU)
- **Advanced system identification** (2007 at IMM)
- **(31323) Statistical Change Detection** F08 at DTU-electro
- **(31321) Passivity in nonlinear control** 2008 at DTU-electro
- **Advanced system identification** (2008 at IMM)
- **(31323) Statistical Change Detection for Fault Diagnosis and Signal Processing** 2009 at DTU-electro.
- **(02904) Advanced system identification** (2009- at DTU-Compute).

M.Sc. (Co)supervison

1. Gudjon Johnsson: *Self tuning controller for linear systems.* No. 1, Institute of Mathematical Statistics and Operations Research, 1983.
2. Søren Sørensen: *Active adaptive controllers.* No. 19, Institute of Mathematical Statistics and Operations Research, 1984.
3. Niels C. Nolsøe: *Multivariate adaptive controllers.* no. 20, Institute of Mathematical Statistics and Operations Research, 1986.
4. Asger Batting Clausen: Adaptive ekstremumsøger. nr. 17, Institute of Mathematical Statistics and Operations Research, 1987. English title: Adaptive extremum control.
5. Torben Schmidt: Adaptive PID-regulatorer. nr. 18, Institute of Mathematical Statistics and Operations Research, 1987. English title: Adaptive PID-controllers.
6. Kjeld Hansen and Thomas Kierulf: Prediktion af pollental. nr. 5, Institute of Mathematical Statistics and Operations Research, 1988. English title: Prediction of pollen counts.
7. Torben Ibsen: Robust regulering af vindmølle. nr. 18, Institute of Mathematical Statistics and Operations Research (i samarbejde med Risø), 1988. English title: Modelling and control of wind turbines.

8. Jens Parkum: Selective forgetting. nr. 23, Institute of Mathematical Statistics and Operations Research, 1988.

9. Henning T. Sørensen: Identifikation og adaptive regulering af fjernvarmesystemer. nr. 10, Institute of Mathematical Statistics and Operations Research, 1988. English title: Identification and adaptive control of a district heating system.

10. Jesper Pedersen: CAE af adaptive reguleringssystemer. nr. 27, Institute of Mathematical Statistics and Operations Research, 1988. English title: CAE of adaptive control systems.

11. Helge Didriksen: Modellering og styring av skip. nr. 16, Institute of Mathematical Statistics and Operations Research, 1989. English title: Modelling and control of ships.

12. Torben Mønsted Schmidt: Ikke lineær regulering af en benzinmotor. nr. 19, Institute of Mathematical Statistics and Operations Research, 1989. English title: Non-linear control of a combustion engine.

13. Bent Georg Thygesen: Deltamodellering. nr. 23, Institute of Mathematical Statistics and Operations Research, B. 321, DK-2800 Lyngby, 1990. English title: Delta modelling.

14. Zolt Barota: Robust adaptive control. nr. 14, Institute of Mathematical Statistics and Operations Research, 1990.

15. Henrik Bechmann: Adaptiv styring af en benzinmotors tændvinkel. nr. 31, Institute of Mathematical Statistics and Operations Research, 1991. English title: Adaptiv control of the spark advance angle in a combustion engine.

16. Søren Lykke Christensen: Kontrolsystem til vind/diesel-anlæg. nr. 43, Institute of Mathematical Statistics and Operations Research (i samarbejde med Risø), 1991. English title: Control system for a Wind/Diesel power plant.

17. Caroline H. Clausen: Adaptive control of a flexible robot arm. nr. 44, Institute of Mathematical Statistics and Operations Research, 1991.

18. Bibi Klingenberg: Adaptive pitch control for wind turbines. nr. 29, Institute of Mathematical Statistics and Operations Research (i samarbejde med Risø), 1991.

19. Lars Rosenløv Jensen: Modellering og regulering af sfærisk robot. nr. 32, Institute of Mathematical Statistics and Operations Research, 1991. English title: Modelling and control of a robot.

20. Henrik Rosenø: Amazonas og økologisk modellering af lobo reservoir. nr. 39, Institute of Mathematical Statistics and Operations Research, 1991. English title: Amazonas and ecological modelling of the Lobo reservoir.

21. Morten Rostgaard: Adaptive autopiloter til skibe. nr. 35, Institute of Mathematical Statistics and Operations Research, 1991. English title: Adaptive autopilots for ships.

22. Per Andersen and Jens R. Baungaard: Konstruktion, modellering og regulering af en fleksibel robotarm. nr. 33, Institute of Mathematical Statistics and Operations Research, 1992. English title: Construction, modelling and control of a flexible robot arm.

23. Tom Bjerre: Generel prædiktiv kontrol af energisystemer. nr. 6, Institute of Mathematical Statistics and Operations Research, 1992. English title: Genral predictive control of energy systems.

24. Hannes K. Gunnarsson: Adaptiv robotstyring. nr. 23, Institute of Mathematical Statistics and Operations Research, 1992. English title: Adaptive robot control.

25. Ole Haagensen: Modellering i simulink. nr 37, Institute of Mathematical Statistics and Operations Research, 1992. English title: Modelling in Simulink.

26. B. Poulsen: Ikke-lineær regulering af benzinmotor. nr. 30, Institute of Mathematical Statistics and Operations Research, 1992. English title: Non linear control of a combustion engine.

27. Nicolai Andersen: Modellering og regulering af fleksibel robotarm. nr. 28, Institute of Mathematical Statistics and Operations Research, 1993. English title: Modelling and control of a flexi:ble robot arm.

28. Henrik Kjær Jørgensen: Adaptive pitch control of wind turbine. nr.27, Institute of Mathematical Statistics and Operations Research (i samarbejde med Risø), 1993.

29. Kia Rahimzadeh and Roozbeh Zamanabadi: Control by using neural nets. no.29, Institute of Mathematical Statistics and Operations Research, 1993.

30. Ma Xin: Modelling and control of a wind turbine. nr. 25, Institute of Mathematical Statistics and Operations Research (i samarbejde med Risø), 1993.

31. Henrik Bøjer: Adaptive control of temperature in a green house. nr. 43, Institute of Mathematical Statistics and Operations Research, 1994.

32. Lars Henrik Hansen: Modelling and control of a cooling process by neural net. nr. 6, Institute of Mathematical Statistics and Operations Research, 1994.

33. S. T. Juliusson: CACE of adaptive control systems. nr 48, Department of Mathematical Modelling, 1994.

34. Morten Bach Lauritsen: Robust adaptive control. nr. 8, Institute of Mathematical Statistics and Operations Research, 1994.

35. Per Østergaard: Pitch control of a wind turbine. nr. 27, Department of Mathematical Modelling (in cooperation with Risø)., 1994.

36. Morten Lund Overgaard: Control of flexibel robot arm with two joints. nr. 20, Institute of Mathematical Statistics and Operations Research, 1994.

37. Uffe Høgsbro Thygesen: Observers for a generator shaft. nr. 16, Institute of Mathematical Statistics and Operations Research, 1994.

38. Christian Henriksen: Modelling and control of underwater towed vehicle. imm-eks-1995-2, Department of Mathematical Modelling, 1995.

39. Hans Erik Sederberg-Olsen: Ship control. nr. 8, Department of Mathematical Modelling, 1996.

40. Michael Bliksted Larsen: Sensor fusion ved hjælp af kalmanfiltrering (Sensor fusion with Kalman filters). nr. 14, Department of Mathematical Modelling, 1996.

41. Lisbeth Skøde Rasmussen: Robust control of a flexible robot arm. nr. 7, Department of Mathematical Modelling, 1996.

42. Homayoun Bahmanpour: Modelling and control of wind turbines. nr. 26, Department of Mathematical Modelling (in cooperation with Risø)., 1996.

43. Christian Johansen: Modelling and control of a cooling plant. nr. 31, Department of Mathematical Modelling, 1996. In collaboration with IAU (Dtu-EE)and Danfoss.

44. Amir Dadkhah: Prediction using artificial neural networks. nr. 34, Department of Mathematical Modelling, 1996.

45. Søren Ljungholm: Active suspention control. imm-eks-1997-6, Department of Mathematical Modelling, 1997.

46. Gitte Nørrelykke: GPC-control under coonstraints. nr. 23, Department of Mathematical Modelling, 1997.

47. Martin Bak: Sensor fusion using Kalman filters. Master's thesis, Department of Mathematical Modelling, 1997.

48. Michala Mulvad-Thimm: Theoretical and experimental comparizon of Kalman filtering and the DD2 filtering). Master's thesis, Department of Automation/Department of Mathematical Modelling, The Technical University of Denmark, 2000.

49. Morten Keller Caspersen: Control of a flexible robot arm. Master's thesis, Department of Automation/Department of Mathematical Modelling, The Technical University of Denmark, 2000.

50. Nicolai Hansson: Wave length identification. Master's thesis, Department of Automation/Department of Mathematical Modelling, The Technical University of Denmark, 2001. in Cooperation with Ole Ravn (Ørsted Automation).

51. Ole Horsbøl: Bumpless transfer og regulering af vindmøller (Bumpless transfer and control of wind turbines). Master's thesis, Informatics and Mathematical Modelling, The Technical University of Denmark in collaboration with Risø, 2003.

52. Daniel Eggart: Neural network control. Master's thesis, Informatics and Mathematical Modelling, The Technical University of Denmark, 2003.

53. Andrea Monteriu: Fault-tolerant methods for sensor fusion. Master's thesis, (Automation) Ørsted.DTU, The Technical University of Denmark, 2003.

54. Mette Hense Søndergård and Christina Dyhr Jensen: Estimation and control of a cement mill. Master's thesis, (Automation) Ørsted.DTU, The Technical University of Denmark, 2003. Principal supervisor: Jan Jantzen (Ørsted).
55. Max Abildgaard: Control of small unmanned aerial vehicle. Master's thesis, (Automation) Ørsted.DTU, The Technical University of Denmark, 2004. cosupervisor: Jan Jantzen, Ørsted.
56. Thomas Hanefeld Sejerø: An Estimation Framework For Nonlinear Systems. Master's thesis, (Automation) Ørsted.DTU, The Technical University of Denmark, 2004. Principal supervisor: Ole Ravn (Ørsted).
57. Jan Henningsen: Active Fault Diagnose in Control Systems. Master's thesis, (Automation) Ørsted.DTU, The Technical University of Denmark, 2004. Principal supervisor: Hans Henrik Niemann, (Orsted).
58. Gunnar Thorison: Motion Control for Mobile Robots. Master's thesis, (Automation) Ørsted.DTU, The Technical University of Denmark, 2004. Principal supervisor: Nils Andersen (Dtu-EE). Cosupervisor Ole Ravn (Dtu-EE).
59. Peter B. Andersen: Load Alleviation on Wind Turbine Blades using Variable Airfoil Geometry. Supervisors: Jens Nørkær, Christian Bak (Risø, VEA), Mac Gaunaa (Risø VEA).
60. Devon Veronica Evelyn Yates: Adaptive Filtering and Control for an ASVC. Cosupervisors: Tonny Rasmussen, Ørsted, Henrik Madsen, IMM
61. Anders Juul Refslund Petersen and Nicolaj Fogt: Sensor unit for Initial Measurements. Main supervisor: Nils Andersen, Ørsted, Automation
62. Allan Juul Larsen and Thomas Stampe Mogensen: Individual pitch control of wind turbine. Cosupervisor: Henrik Bindner, Risø. Censor: Morten Rostgaard.
63. Michael Lundgren and Henrik Parbo: Active fault diagnoses applied on a wind turbine. Supervisors: Hans Henrik Niemann (DTU EE), nkp. Censor: Roozbeh Izadi-Zamaanabad (Danfoss).
64. Imad Abdallah: Advanced Load Alleviation for Wind Turbines using Adaptive Trailing Edge Geometry: Sensoring Techniques. Supervisor: Ilmar Santos (MEK, DTU), Christian Bak (Risø). Censor: Klaus K. Thomsen (Niro).
65. Sven Creutz Thomsen: Nonlinear Control of a Wind Turbine. Censor: Pierre Vadstrup
66. Mikkel Ask Buur Bækgaard: Active model diagnosis applied on a wind turbine. Censor: Rozbeh
67. Keld Hammerum: A Fatigue Approach to Wind Turbine Control. Medvejleder: Per Bratz (Vestas). Censor: Torben Knudsen (Aau).
68. Amin Hashemolhosseini: Winch control on a tugboat. Supervisor: Jan Jantzen (Ørsted). Cosupervisor: Bugge T. Jensen (Force Technology). Censor: Tommy Mølbak (Dong energy).
69. Trausti Björgvinsson and Ragnar Ingi Jonsson: Automatic diagnosis of health and welfare based on measurements of motion patterns. Supervisor: Mogen Blanke (Ørsted). Cosupervisor Søren Højgård (Faulum). Censor: Roozbeh Izadi-Zamanabadi (Danfoss).
70. Lars Christian Henriksen: Model Predictive Control of a Wind Turbine. Cosupervisor: Morten Hansen (Risø). Censor: Torben Knudsen (Aau)
71. Juan Jose Garcia Quirante: Control of Wind Turbines for Power Regulation and Load Reduction. Cosupervisors: Sven C. Thomsen, Kenneth Thomsen (Siemens). Censor: Morten Rostgaard.
72. Thomas Emil Juul Eilersen: Signal processering i digital vejesystem (Signal processing in a digital weight system). Supervisor: Ole Ravn, Ørsted. Censor: Morten Rostgaard.

— 2008 —

73. Thomas Madsen Almdal: Estimation Based Navigation for Mobile Robots. Supervisor: Ole Ravn, DTU elektro. Censor: Morten Rostgaard.
74. Mattias Wallin: Charging Strategies for plug-in hybrid vehicles Cosupervisor: Henrik Madsen, Henrik Bindner (Risø), Oliver Gerhke (Risø). Censor: Morten Rostgaard.
75. Anders Thavlov: Dynamic Optimization of Power Consumption. Supervisor: Henrik Madsen. Cosupervisor: Henrik Bindner (Risø). Censor: Anders Milhøj, KU.
76. Enis Bayramoglu: Localization for Mobile Robots Using Vision with other Sensors. Supervisor: Nils A. Anderse, DTU-electro, Cosupervisor: Ole Ravn (Dtu-EE). Censor: Allan Theill Sørensen.
77. Martin Bruun Helms: *IMU error modelling.* Cosupervisor: Anna Jensen. Censor: Morten Rostgaard.

78. Agnieszka Roczek: Optimization of Material Layup for Wind Turbine Blade Trailing Edge Panels. Supervisor: Kim Branner (Risø), Find Mølholdt Jensen (Risø). Censor: Jens Jakob Wedel-Heinen (Vestas).
79. Dina Friesel: INS navigation. Cosupervisor: Mikael Bliksted Larsen (Sonardyne.) Censor: Magnus Nørgaard (Widex).
80. Martin Juhl Jørgensen: Advanced Kalman filter techniques in adided INS. In colaboration Mikael Bliksted Larsen, Sonardyne INC. Censor: Morten Rostgaard (Price Waterhouse.)
81. Nimalendiran Kailasanathan and Alan P. Rajendram: Control of Spray Drying Plant, Modelling and Optimal Control Design. Supervisor: Hans Henrik Niemann (DTU EE), Christer Utzen GEA Niro. Censor: Palle Andersen, AAU.
82. Baldur Bjanarson and Ørvar Sveinsson: Wind farm controller - Optimization of power production. Supervisors: Hans Henrik Niemann (DTU EE) and nkp.
83. Jon Kristinn Sigurdsson: Modelling and control of a Hydro Power Plant. Censor: Morten Rostgaard Stender (Price Waterhouse.).
84. Barry Dolan: Wind Turbine Modelling, Control and Fault Detection. Cosupervisor: Hans Henrik Niemann (DTU EE), Peter Odgaard (KK-eletronics). Censor: Jan Jantzen (Samsø academy).
85. Lars Norbert Petersen: Control of a Spray Drying Plant, Mdelling, State Estimation and Model Predictive Control. Supervisor: Hans Henrik Niemann (DTU EE), Crister Utzen (Gea Niro). Censor: Palle Andersen, Aau.
86. Jesper Schou: Stochastic Modeling and Application of Inertial Navigation Sensors. Cosupervisors: Nils A. Andersen (DTU EE), Mikael B. Larsen (Sonardyne). Censor: Morten Rostgaard Stender (Price Waterhouse.),
87. Aleksander Gosk: Model Predictive Control of a Wind Turbine. Supervisors: Niels Kjølstad Poulsen, Henrik Niemann (DTU EE) and Peter Fogh Odgaard, KK-electronic. Censor: Jan Jantzen (Samsø academy).
88. Melissa Barroso Montes: Optimal control of wind turbine in strong wind conditions. Main supervisor: Wen Zhong Shen (DTU-MEK), Co supervisors: Peter Fogh Odgaard (KK-electronic), Henrik Niemann (Dtu-EE), Niels Kjølstad Poulsen. Censor: Henrik Hassing (Force technology).
89. Leo Emil Sokoler: Second-Order Cone Programming for Probabilistic MPC in Power Production Management. Supervisor: John Bagterp Jørgensen, Henrik Madsen, Tommy Møbak (Dong), Kristian Edlund (Dong). Censor: Jørgen Knudsen (2Control).
90. Anders Bahnsen: Estimation of Electric Current in Three-phase Cables. Cosupervisor: Peter Johansen (Jomitek). Censor: Birgitte Bak-Jensen (Aau).
91. Martin Klauco: Model Predictive Control of Wind Turbines. Cosupervisor: Hans Henrik Niemann (DTU EE), Mahmood Mirzaei. Censor: Per Bratz, Grundfos.
92. Sergi Rotger Griful: Modelling and control of an inverted pendulum turbine. Cosupervisor: Hans Henrik Niemann (DTU EE), Mahmood Mirzaei, Fabio Caponetti (DTU EE). Censor: Anders La Cour Harbo, Aau.
93. Esben Møller Barnkop: Modelling and control of spray drying process. Supervisor: Hans Henrik Niemann, DTU EE. Coupervisor: Christer Utzen (Gea), Lars Norbert Petersen (GEA Niro). Censor: Palle Andersen (Aau).
94. Flavia-Dalia Frumosu: Dynamic stability of rotors considering parameter uncertainty. Supervisor: Murat Kulahci, Henning Hartmann (Lloyd's Register ODS). Censor: Morten Rostgaard Stender (Price Waterhouse.)
95. Kasper Trolle Borup: Modelling and Nonlinear Control of a 2-DOF Wind Turbine. Supervisor: Roberto Galeazzi (Dtu-EE), Hans Henrik Niemann (Dtu-EE). Censor: Anders la Cour (Aau).
96. Kim Lynge Sørensen: Nonlinear Repetitive Control of Wind Turbines - A passivity based Approach to Wind Turbine Control. Supervisor: Roberto Galeazzi (Dtu-EE), Hans Henrik Niemann (Dtu-EE). Censor: Anders LaCour (Aau).
97. Giulia Prando: Model Order Selection in System Identification: New and Old Techniques. Supervisors: Lennart Ljung (University of Linköping), Tianshi Chen (University of Linköping), nkp, Allesandro Chiuso (University of Padua). Censor: Torben Knudsen (Aau).

98. Kenneth Marx Hoe: Modelling and Control of Water Supply Network. Supervisors: Ole Ravn (DTU EE), Carsten Kallecœe (Grundfos), nkp. Censor: Morten Rostgaard (Price Waterhouse).

99. Mikkel Rønde Jensen: Fault diagnose applied on a wind turbine. Supervisors: Hans Henrik Niemann (Dtu-EE), nkp. Censor: Jan Jantzen (Samsø academy).

— 2015 —

100. Simon Kirkeby Wessel: Power optimization of wind farms by curtailment of upwind turbines. Supervisors: Lasse Engbo, mmir, nkp, Lars Henrik Hansen (Dong). Censor: Anders LaCour-Harbo (Aau).

101. Jimmie Louis Borch: Subsea navigation and 3D high resolution mapping. Supvisors: nkp, Mikael Bliksted Larsen (Sonardyne), Martin Juhl Jørgensen (Sonardyne), Jens Christian Andersen (Dtu-EE). Censor: Morten Rostgaard (Price Waterhouse).

102. Panagiotis Fykiris and Panagiotis Vavatsikos: Modelling and control of a river system. Supervisors: hhn, nkp and Anna Katrine Falk (DHI). Censor: Jan Jantzen (Samsø academy).

103. Einar Bjarni Pedersen and Hannes Rnar Herbertsson: Modelling and Control of a Sewer Network. Supervisors: hhn, nkp and Anna Katrine Falk (DHI). Censor: Jan Jantzen (Samsø academy).

— 2016 —

104. Anders Værgman Cronberg: Modelling and simulation of 2-stroke marine diesel engines. Master's thesis, DTU-Compute, 2016. Cosupervisor: Hans Henrik Niemann, Elbert Hendricks (Dtu-EE)and Kim Jensen (Man Diesel).

105. Robert Miklos: Model predictive control of a spray dryer. Master's thesis, DTU-electro, 2016. Supervisors: Hans Henrik Niemann (Dtu-EE), Niels Kjølstad Poulsen, Christer Utzen (Gea) and Lars Norbert Petersen (Gea).

106. Martin Rygaard Hermansen: Process monitoring in spray dryers. Master's thesis, DTU-Electro, 2016. Supervisors: Hans Henrik Niemann, Niels Kjøilstad Poulsen, Christer Utzen (Gea) and Lars Norbert Petersen (Gea).

107. Damianos Tranos: State estimation on non-linear autonomous guided vehicles. Master's thesis, DTU-Compute, 2016. Cosupervisor: Ole Ravn (Dtu-EE).

— 2017 —

108. Daniel Abildgaard Rasmussen: Human behaviour of track pilot. Master's thesis, DTU-Compute, 2017. Supervisor: Anders Stockmarr, nkp, Jimmie Beckerlee (Force technology), Bugge Torben Jensen (Force technology). 29/08/2016 - 07/02/2017.

109. Kim Kofoed Nielsen: Modelling and control of a float zone silicon crystal growth. Master's thesis, DTU-Compute, 2017 Supervisor: nkp, jbj, Nicolai Hanssing (Topsil), Cico Werner (Topsil). Censor: Morten Rostgaard Stender (Price Waterhouse).

110. Daniel Kenji Pedersen: Modelling and control of wastewater systems. Master's thesis, DTU-Electro, 2017. Supervisors: hhn, nkp, dtra, Anne Katrine Falk (DHI). Censor: Lars Henriksen (Claas)

111. Martin Folmer Andersen: Fault-Tolerant Control of Wind Turbines. Supervisor: hhn, nkp, mmir. Censor: Karsten H. Andersen (Dong).

112. Niclas Brok: Numerical Optimization of Control-related Trajectories of Wind Turbines. Supervisor: hm, nkp. Censor: Anders Milhøj (KU)

113. Lars Nyrup Drejer: Predictive control in urban drainage networks. Supervisor: nkp,hhn. Censor: Carsten Skovmose Kallesøe (Grundfos).

114. Bardur Isleifsson: Subsea Robotic Laser Initial SLAM. Supervisor: nkp, Mikael Bliksted Larsen (Sonardyne) and Martin Juhl Jørgensen (Sonardyne). Censor: Anders la Cour (Aau).

115. Iman Shekarforoush: Model Predictive Control of Export Cable Temperature. Supervisor: nkp, Arana Aristi (Dong), Jan Lorenz and Zeni (Dong). Censor: Anders la Cour(Aau).

116. Søren Krogh Andersen: Distributed Localization of Multi-agent Systems in GPS Denied Environment. Supervisor: Roberto Galeazi (Dtu-EE), nkp. Censor: Lars Henriksen.

— 2018 —

117. Stefan Rethmeir: Hybrid Acoustic Inertial Navigation. Supervisors: nkp, Mikael Bliksted Larsen (Sonardyne), Martin Juhl Jørgensen (Sonardyne). Censor: Anders la Cour (Aau).

118. Allessandra Bellina: Model predictive speed control of spark-ignited engine during gear shifting phases. Supervisor: Roberto Galeazzi (Dtu-EE), nkp, Richard Arvidsson (Volvo), Maria Elena Valcher (University of Padova). Censor: Carsten Skovmose Kallesøe (Grundfos/Aau).

119. Halte Bested Møller: Precision navigatiom for mobile robots. Supervisors: Nils Aksel Andersensen (Dtu-EE), nkp, Censor: Lars Henriksen (Claas).

120. Johs Kirkelund Madsen and Kristoffer Baldur Nørregård Hansen Diagnosis and Monitoring of Faults in Fan Applications. Supervisors: Hans Henrik Niemann (Dtu-EE), nkp. Censor: Lars Henriksen (Claas).

121. Benjamin Riis Støvring: Positioning of sensor particle in fermentations tanks. Supervisors: Jonas Bisgaard Støvring (Freesensor), nkp. Censor: Anders la Cour (Aau).

122. Zeinab Ziakooshkghazi: Glucose Control for Patients with Diabetes. Supervisors: nkp, Tinna Björk Aradòttir. Censor: Zheng-Hua Tan (Aau).

123. Loïc Arnaud Foulon: Model Predictive Path Control for Ships Navigation. Supervisors: Mogens Blanke (Dtu-EE), Søren Hansen (Dtu-EE). Hans Henrik Niemann (Dtu-EE) and nkp. Censor: Karsten H Andersen (Ørsted).

124. Signe Munch: System identification applied on a spray dryer. Supervisors: Hans Henrik Niemann (Dtu-EE), nkp, Lars Norbert (Gea) and Robert Miklos (Gea, DTU-EE). Censor: Torben Green (Danfoss).

— 2019 —

125. Martin Sciødt: Optimal Control of Wind Turbines. Supervisors: Niclas Brok, nkp, Henrik Madsen. Censor: Anders Milhøj (University of Copenhagen).

126. Frederik Svane Hansen: Optimal Control of Wind Turbines, Model Predictive Control using Spectral Methods. Supervisors: Niclas Brok, nkp, Henrik Madsen. Censor: Anders Milhøj (University of Copenhagen).

127. Jeppe Friberg: Model predictive control for optimal Torque Disturbance Rejection. Supervisors: Ole Ravn (Dtu-EE)and nkp. Censor: Morten Rostgaard.

128. Sarah Ellinor Engell: Dose Guidance for New Generation Insulin in Diabetes. Supervisors: nkp, Tinna Björk Aradòttir (Novo), Henrik Bengtsson (Novo). Censor: Zheng-Hua Tan (Aau). Defence: 28.6.2019.

— 2020 —

129. Kasper Schønberg: Stochastic Adaptive Control of Sewer System. Supervisor: Henrik Madsen, Jan Lorenz Svensen, Hans Henrik Niemann (Dtu-EE), nkp.

130. Rasmus Riis Nielsen: Stochastic Model Predictive Control applied to Urban Drainage. Supervisor: Jan Lorenz Svensen, Hans Henrik Niemann (Dtu-EE), nkp. Censor: Carsten Kallesøe.

131. Jose Maria Garrachn Ruiz. Supervisor: Roberto Galeazzi (Dtu-EE), Mikael Bliksted Larsen (Sornardyne Inc), Martin Juul Jørgensen (Sornardyne Inc). Defended: 22.7.2020.

132. Ragnar Palsson: Dose Guidance for New Long Acting Insulin in Diabetes. Supervisor: Tinna Björk Aradòttir (Novo), Sarah Ellinor Engell (Novo), nkp. Censor: Zheng-Hua Tan (Aau).

— 2022 —

133. Yuhao Jiang: Modelling and Control of a Wind Turbine. Supervisor Hans Henrik Niemann (Dtu-EE), nkp. Censor: Jan Jantzen. Defended: 27.7.22.

134. Andy Dünnweber Hansen (S174372): Enhanced calibration of underwater pointcloud imaging and navigation systems. Supervisor: Uffe H. Thygesen, nkp, Mikael Bliksted Larsen (Sonardyne Ltd.), Martin Griffenholm (Sonardyne Ltd.). Censor: Anders Lacour-Harboe (Aau). Defended: 16.8.22.

— 2023 —

— 2024 —

— 2025 —

— 2026 —

B.Sc. (Co)supervison

1. Jan Najvarek: Neural networks in control. Dept. of Automation, Tech. Univ. of Brno, Czech republic, IAU and IMM, 1995.
2. Igor Beroun: Neural network in adaptive control. from Dept. of Automation, Tech. Univ. of Brno, Czech republic, IAU and IMM, 1995.
3. Dina Friesel: Modelling and control of mobile robots. Cosupervisor: Sven Creutz Thomsen and Ole Ravn (Ørsted). Censor: Morten Rostgaard (Price Waterhouse.)
4. Søren Damsgaard: Heat Exchange Control of Refrigeration System. Supervisor: Hans Henrik Niemann (Dtu-EE), Roozbeh Izadi-Zamanabadi (Danfoss). Opponent: Palle Andersen, (Aau).
5. Salim Serhan and Jimmie Borch: INS Navigation. Trajectory optimization for Doppler Velocity Log Calibration. Cosupervisor: Mikael Bliksted Larsen, Martin Juhl Jørgensen (Sonardyne). Censor: Morten Rostgaard (Price Waterhouse).

— 2017 —

6. Audrius Stankus: Neural Network in control of hydraulic system. Supervisors: nkp, Ole Ravn (Dtu-EE), Morten Brask, Kasper Mortensen (Bosch Rexroth). Censor: Roozbeh (Danfoss).

— 2022 —

7. Mikkel Petersen (S184007): Heat conduction through insulated walls. Supervisor: Mads Peter Sørensen, nkp, Francesco D'Ettorre. Censor: Anne Katrine Falk (DHI). Defendted: 1.9.22.

— 2023 —

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— 2026 —