Curriculum vitae – Sigurd Skogestad

PERSONAL INFORMATION

Family name, First name: Skogestad, Sigurd

Date of birth: *14.08.1955*

Sex: Male

Nationality: Norwegian

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URL for personal web site:http://folk.ntnu.no/skoge/

EDUCATION

1987	PhD in Chemical Engineering California Institute of Technology, USA
1978	M.S. (Siv. Ing.) in Chemical Engineering Norwegian University of Science and Technology, NTNU (former NTH), Norway

CURRENT AND PREVIOUS POSITIONS

1979	Military Service, Norwegian Defence Research Center (FFI)
1980-1983	Research Engineer, Norsk Hydro's Research Center, Porsgrunn, Norway
1983-1987	PhD student and Research Assistant, California Institute of Technology, USA
1987-present	Professor in Chemical Engineering, NTNU, Norway
2015-present	Director of SFI SUBPRO (PhD program with funding of more than 35 millIon NOK/year

FELLOWSHIPS AND AWARDS

1979	*Instilling* awarded for the *Siv.ing* degree (result communicated to the Norwegian King)
1983	Fullbright Fellowship (travel grant) awarded for graduate studies at Caltech
1983	*Utdanninsstipend* awarded from Univ. of Trondheim for graduate studies at Caltech
1989	*Ted Peterson Best Paper Award* by the CAST division of AIChE (The American Institute of Chemical Engineers)
1990	*George S. Axelby Outstanding Paper Award* by the Control System Society of IEEE (The Institute of Electrical and Electronic Engineers)
1992	*O. Hugo Schuck Best Paper Award* by the American Automatic Control Council
2006	*Best paper award* for paper published in 2004 in *Computers and chemical engineering*

MOBILITY

1994-1995	Visiting Professor, Departments of Chemical Engineering and Mechanical Engineering, University of California, Berkeley, USA.
2001-2002	Visiting Professor, Departments of Chemical Engineering, University of California, Santa Barbara, USA (5 months).

SUPERVISION OF GRADUATE STUDENTS AND RESEARCH FELLOWS

- 40 completed PhD theses as main supervisor. Currently supervising 4 PhDs
- 178 completed MS theses as main supervisor.

TEACHING ACTIVITIES (In addition to PhD courses)

1987- present	Process Control Course, NTNU (except 2003-2009)
2002- present	Advanced Process Control Module, NTNU
2009-2017	Separation Technology, distillation, absorption and extraction part (50%), NTNU
1998-2018	Prosessteknikk (Material and energy balances), NTNU (except 2004-2017)

INSTITUTIONAL RESPONSIBILITIES AND OTHER SERVICES

2019	Invited Guest Editor – Processes, special issue on Real-time Process Optimization with Simple Control Structures, Economic MPC or Machine Learning
2018	International Program Committee Chair- IFAC OOGP conference
2016	National organizing committee Chair – IFAC DYCOPS conference
1999-2009	Head of Department of Chemical Engineering, NTNU
1987-	Committee member for several conferences

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

1988	Elected Member to the Norwegian Academy of Tehnical Sciences (NTVA)
1991	Elected member to Det Kongelige Norske Vitenskapers Selskab
2008-2014	Member of International Federation of Automatic Control (IFAC) Technical Board
2011	Elected member of Process Automation Hall of Fame, Delaware, USA
2012	Elected Fellow of American Institute of Chemical Engineers (AIChE)
2014	Elected Fellow of International Federation of Automatic Control (IFAC)
2015	Elected member to *The Norwegian Academy of Science and Letters*, Oslo
2015	Honorary member of *Norwegian Society of Automatic Control*
2015-2023	Director of SUBPRO SFI (center for research-based innovation in subsea production and processing at NTNU).

Track record

About 230 international journal publications and 330 conference publications
H-index (ISI): 44 (2018).
H-index (Google scholar): 68 (2018)
Author of 2 international text books. (1) S. Skogestad and I. Postlethwaite, ``Multivariable feedback control - analysis and design," Wiley (1996); 2nd Edition (2005). (2) S. Skogestad, ``Chemical and energy process engineering", CRC Press (2009).
No. of citations to book Multivariable feedback control: 8381 (Google scholar, 2018)

Recent Publications

2019

1. J Straus, S Skogestad. A new termination criterion for sampling for surrogate model generation using partial least squares regression. Computers & Chemical Engineering 121, 75-85
2. J Straus, D Krishnamoorthy, S Skogestad, On Combining self-optimizing control and extremum seeking control – Applied to an ammonia reactor case study. Journal of Process Control (In-Press)
3. D Krishnamoorthy, B Foss, S Skogestad, A Primal decomposition algorithm for distributed multistage scenario model predictive control. Journal of Process Control (In-Press)

2018

4. CJ Backi, JT Gravdahl, S Skogestad. Simple method for parameter identification of a nonlinear Greitzer compressor model. IFAC-PapersOnLine 51 (13), 198-203
5. CJ Backi, BA Grimes, S Skogestad. A Control-and Estimation-Oriented Gravity Separator Model for Oil and Gas Applications Based upon First-Principles. Industrial & Engineering Chemistry Research 57 (21), 7201-7217
6. CJ Backi, D Krishnamoorthy, A Verheyleweghen, S Skogestad. Combined nonlinear moving horizon estimation and model predictive control applied to a compressor for active surge control. 2018 IEEE Conference on Control Technology and Applications (CCTA), 1552-1557
7. CJ Backi, D Krishnamoorthy, S Skogestad. Slug handling with a virtual harp based on nonlinear predictive control for a gravity separator. IFAC-PapersOnLine 51 (8), 120-125
8. CJ Backi, S Skogestad. Virtual inflow estimation with simplified tuning using cascaded and Kalman-like least squares observers. Computer Aided Chemical Engineering 43, 1153-1158
9. H Bonnowitz, J Straus, D Krishnamoorthy, E Jahanshahi, S Skogestad. Control of the Steady-State Gradient of an Ammonia Reactor using Transient Measurements. Computer Aided Chemical Engineering 43, 1111-1116
10. P Daoutidis, JH Lee, I Harjunkoski, S Skogestad, M Baldea, C Georgakis. Integrating operations and control: A perspective and roadmap for future research. Computers & Chemical Engineering 115, 179-184

11. C Grimholt, S Skogestad. Optimal PI and PID control of first-order plus delay processes and evaluation of the original and improved SIMC rules. Journal of Process Control 70, 36-46
12. C Grimholt, S Skogestad. Optimization of fixed-order controllers using exact gradients. Journal of Process Control 71, 130-138
13. IJ Halvorsen, I Dejanovic, Z Olujic, S Skogestad. Dividing wall columns for natural gas liquefaction plants. CHEMICAL ENGINEERING TRANSACTIONS / Brunazzi, Elisabetta ; Sorensen, Eva (eds). AIDIC (ISBN: 978-88-95608-66-2). Conference Distillation and Absorption 2018, Firenze, Italy, 16-19.9.2018
14. S Jia, X Qian, X Yuan, S Skogestad. Control structure comparison for three-product Petlyuk column. Chinese Journal of Chemical Engineering 26 (8), 1621-1630
15. D Krishnamoorthy, MA Aguiar, B Foss, S Skogestad A Distributed Optimization Strategy for Large Scale Oil and Gas Production Systems. 2018 IEEE Conference on Control Technology and Applications (CCTA), 521-526
16. D Krishnamoorthy, B Foss, S Skogestad. Steady-state real-time optimization using transient measurements. Computers & Chemical Engineering 115, 34-45
17. D Krishnamoorthy, B Foss, S Skogestad. A distributed algorithm for scenario-based model predictive control using primal decomposition. IFAC-PapersOnLine 51 (18), 351-356
18. D Krishnamoorthy, E Jahanshahi, S Skogestad. Feedback Real-Time Optimization Strategy Using a Novel Steady-state Gradient Estimate and Transient Measurements. Industrial & Engineering Chemistry Research 58 (1), 207-216
19. D Krishnamoorthy, E Jahanshahi, S Skogestad. Gas-lift Optimization by Controlling Marginal Gas-Oil Ratio using Transient Measurement.s IFAC-PapersOnLine 51 (8), 19-24
20. D Krishnamoorthy, E Suwartadi, B Foss, S Skogestad, J Jäschke. Improving scenario decomposition for multistage mpc using a sensitivity-based path-following algorithm. IEEE control systems letters 2 (4), 581-586
21. D Krishnamoorthy, M Thombre, S Skogestad, J Jäschke. Data-driven Scenario Selection for Multistage Robust Model Predictive Control. IFAC-PapersOnLine 51 (20), 462-468
22. A Reyes-Lúa, CJ Backi, S Skogestad. Improved PI control for a surge tank satisfying level constraints. IFAC-PapersOnLine, 51 (4): 835-840
23. A Reyes-Lúa, C Zotica, T Das, D Krishnamoorthy, S Skogestad. Changing between Active Constraint Regions for Optimal Operation: Classical Advanced Control versus Model Predictive Control. Computer Aided Chemical Engineering 43, 1015-1020
24. A Reyes-Lúa, C Zotica, S Skogestad. Optimal operation with changing active constraint regions using classical advanced control. IFAC-PapersOnLine 51 (18), 440-445
25. Alejandro Regalado-Méndez, Juan Mentado-Morales, Carlos Estrada Vázquez, Gerardo Martínez-Villa, Mario E Cordero, Luis G Zárate, Sigurd Skogestad, Ever Peralta-Reyes. Modeling and Hydraulic Characterization of a Filter-Press-Type Electrochemical Reactor by Using Residence Time Distribution Analysis and Hydraulic Indices. International Journal of Chemical Reactor Engineering 16 (10)
26. J Straus, S Skogestad. Surrogate model generation using self-optimizing variables. Computers & Chemical Engineering 119, 143-151
27. J Straus, S Skogestad. Self-Optimizing Control in Chemical Recycle Processes. IFAC-PapersOnLine 51 (18), 536-541
28. B Sun, S Skogestad, J Lu, W Zhang. Dual SIMC-PI Controller Design for Cascade Implement of Input Resetting Control with Application. Industrial & Engineering Chemistry Research 57 (20), 6947-6955
29. A Torgashov, S Skogestad, D An. A Rigorous Model for Evaluating Moving Window Soft Sensors for Industrial Distillation Processes. CHEMICAL ENGINEERING 69. DOI: 10.3303/CET1869082
30. L Ye, S Skogestad. Dynamic self-optimizing control for unconstrained batch processes. Computers & Chemical Engineering 117, 451-468

2017

31. Backi, Christoph Josef; Skogestad, Sigurd. A Simple Dynamic Gravity Separator Model for Separation Efficiency Evaluation Incorporating Level and Pressure Control. 2017 American Control Conference; 2017-05-24 - 2017-05-26
32. Backi, Christoph Josef; Skogestad, Sigurd. A Simple Dynamic Gravity Separator Model for Separation Efficiency Evaluation Incorporating Level and Pressure Control. American Control Conference (ACC) 2017 s. 2823-2828
33. Backi, Christoph Josef; Skogestad, Sigurd. Virtual inflow monitoring for a three phase gravity separator. Proceedings of the IEEE Conference on Control Applications 2017 s. 1499-1504

34. Bisgaard, Thomas; Skogestad, Sigurd; Abildskov, Jens; Huusom, Jakob Kjøbsted. Optimal operation and stabilising control of the concentric heat-integrated distillation column (HIDiC). Computers and Chemical Engineering 2017 ;Volum 96. s. 196-211
35. L Ye, Y Cao, S Skogestad Global Self-Optimizing Control for Uncertain Constrained Process Systems IFAC-PapersOnLine 50 (1), 4672-4677
36. Jahanshahi, Esmaeil; Backi, Christoph Josef; Skogestad, Sigurd. Anti-slug control based on a virtual flow measurement. Flow Measurement and Instrumentation 2017 ;Volum 53. s. 299-307
37. E Jahanshahi, S Skogestad Nonlinear control solutions to prevent slugging flow in offshore oil production Journal of Process Control 54, 138-151
38. P Jienkulsawad, S Skogestad, A Arpornwichanop. Control structure design of a solid oxide fuel cell and a molten carbonate fuel cell integrated system: Top-down analysis Energy Conversion and Management 152, 88-98, 2017
39. Krishnamoorthy, Dinesh; Foss, Bjarne Anton; Skogestad, Sigurd. Gas-lift Optimization under Uncertainty. 27th European Symposium on Computer Aided Process Engineering; 2017-10-02 - 2017-10-05; Computer Aided Chemical Engineering, Vol. 40, 1753-1758
40. Krishnamoorthy, Dinesh; Foss, Bjarne Anton; Skogestad, Sigurd. Model predictive control under structural uncertainty. AIChE Annual meeting; 2017-10-29 - 2017-11-03
41. Krishnamoorthy, Dinesh; Straus, Julian; Skogestad, Sigurd. On combining self-optimizing control and extremum seeking control - applied to ammonia reactor case study. AIChE Annual meeting 2017; 2017-10-29
42. Kristoffersen, Torstein Thode; Holden, Christian; Skogestad, Sigurd; Egeland, Olav. Control-Oriented Modelling of Gas-Liquid Cylindrical Cyclones. American Control Conference (ACC) 2017 ;Volum 2017-May. s. 2829-2836
43. S Pedersen, E Jahanshahi, Z Yang, S Skogestad. Comparison of Model-Based Control Solutions for Severe Riser-Induced Slugs, Energies, 2017 - mdpi.com
44. Thongchai Rohitatisha Srinophakun, Niaon Prajimtis, Thanawat Upienpong, Sigurd Skogestad. Passive Controller Design of Mass Exchanger Network. King Mongkut's University of Technology North Bangkok International Journal of Applied Science and Technology. Volume 10, Issue 1
45. J Straus, S Skogestad. Use of Latent Variables to Reduce the Dimension of Surrogate Models, Computer Aided Chemical Engineering 40, 445-450
46. J Straus, S Skogestad. Variable reduction for surrogate modelling, Proceedings of Foundations of Computer-Aided Process Operations
47. J Sulc, S Skogestad. A systematic approach for airflow velocity control design in road tunnels. Control Engineering Practice 69, 61-72, 2017
48. Ohrem, Sveinung Johan; Holden, Christian; Jahanshahi, Esmaeil; Skogestad, Sigurd. L1 Adaptive Anti-Slug Control. American Control Conference 2017; 2017-05-24 - 2017-05-26
49. Soltesz, Kristian; Grimholt, Chriss; Skogestad, Sigurd. Simultaneous design of proportional-integral-derivative controller and measurement filter by optimisation. IET Control Theory & Applications 2017 ;Volum 11.(3) s. 341-348
50. J Straus, S Skogestad Economic NMPC for heat-integrated chemical reactors Process Control (PC), 2017 21st International Conference on, 309-314

Recent Invited Presentations

2019 Plenary speaker, Process Systems Engineering (PSE) Asia, Bangkok
2018 Keynote speaker, CUHK Shenzhen-TBSI International Workshop on Machine-learning for Industrial Intelligence, Shenzhen, China.
2018 Keynote speaker, 1st International workshop on Advanced Methods for Control and Estimation of Dynamic systems, Shanghai, China
2018 Plenary speaker, IEEE 22nd International Conference on System Theory, Control and Computing Sinaia, Romania.
2018 Keynote speaker, 28th European Symposium on Computer Aided Process Engineering, Graz
2017 Plenary speaker, 6th IFAC Symposium on Advanced control of Industrial Processes, Taipei, Taiwan
2017 Invited Talk at the XV Simposio CEA de Ingenieria de Control: University of Salamanca, Spain
2017 Invited Talk at The Norwegian Academy of Sciences and Letters (DNVA) Oslo
2017 Invited Plenary speaker, IFAC advanced control of industrial processes(AdCONIP), Teipei, Taiwan
2017 Invited Plenary speaker at 21st International conference on Process Control, High Tatras, Slovak Republic.