

# Curriculum vitae Inger Klein

Born in Stockholm, Sweden March 13, 1964.

## Degrees:

**Master of Science 1987** (Applied Physics and Electrical Engineering), Linköping Institute of Technology, Linköping, Sweden.

I. Klein and A.-M. Vösu: *Error location in power networks – A study of parameter estimation methods*. Master thesis, Technical Report LiTH-ISY-EX-0842, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1987.

**Licentiate of Technology 1990** (Automatic Control), Linköping Institute of Technology, Linköping, Sweden.

I. Klein: *Planning for a class of sequential control problems*. Licentiate thesis 234, Department of Electrical Engineering, Linköping, Sweden, May 1990.

**Doctor of Philosophy 1993** (Automatic Control), Linköping Institute of Technology, Linköping, Sweden.

I. Klein: *Automatic Synthesis of Sequential Control Schemes*. PhD thesis, Linköping University, Linköping, Sweden, 1993. Linköping Studies in Science and Technology, Dissertations No. 305.

## Employments:

**1995-:** Lecturer in Automatic Control, Linköping Institute of Technology, Linköping, Sweden.

**1993-1995** Research Assistant (Forskarassistent) in Automatic Control, Linköping Institute of Technology, Linköping, Sweden. (temporary on leave 1994-01-24 – 1994-10-01)

**1994** System engineer, Satellite Systems Engineering, Saab Ericsson Space AB, Linköping, Sweden.

**1986-1993** Teaching Assistant (Amanuens, assistent, doktorandtjänst), Division of Automatic Control, Dept. of EE, Linköping Institute of Technology, Linköping, Sweden.

**25/6–3/8 1984, 24/6–2/8 1985** Försvarets Forskningsanstalt, Linköping, Sweden.

14/6-5/8 1982 AB Nyhems Mekaniska, Halmstad, Sweden.

**Membership of Conference Committees:**

**1994** Member of the Programme Committee for SIMS'94, the 36th Simulation Conference Applied Simulation in Industry, Stockholm, Sweden.

**2000** Member of the Scientific Programme Committee of WODES 2000, the 5th Workshop on Discrete Event Systems, Ghent, Belgium.

**Awards:**

**1991** The Saab-Scania Aerospace award to young scientists 1991.

**1992** Chosen as "Best Pedagogue 1991/92" by the students of Applied Physics and Electrical Engineering, Linköping Institute of Technology, Linköping, Sweden.

**Publications, Conference Proceedings and Technical Reports:**

- [1] I. Klein. Planning for a class of sequential control problems. Technical Report LiTH-ISY-I-1007, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1989.
- [2] C. Bäckström and I. Klein. Planning in polynomial time. In *Proceedings of the Ninth Annual Workshop and Meeting of the Swedish AI Society, Dept. of Computer and Systems Sciences, The Royal Institute of Technology and the University of Stockholm, Sweden*, 1990.
- [3] I. Klein. Planning for a class of sequential control problems. Licentiate thesis 234, Department of Electrical Engineering, Linköping, May 1990.
- [4] C. Bäckström and I. Klein. Planning in polynomial time. In G Gottlob and W Nejdl, editors, *Expert Systems in Engineering: Principles and Applications. International Workshop.*, pages 103–118, Vienna, Austria, September 1990. Springer. Published as volume 462 of Lecture Notes in Artificial Intelligence.
- [5] C. Bäckström and I. Klein. Planning in polynomial time. In Mary L Emrich et al., editors, *Methodologies for Intelligent systems: Selected Papers*, pages 125–129, Knoxville, Tennessee, Oct 1990. International Center for the Application of Information Technology. Paper presented at the ISMIS'90 conference.
- [6] I. Klein and C. Bäckström. Planning in polynomial time: The SAS-PUBS class. Technical Report LiTH-ISY-I-1139, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1990. Report LiTH-ISY-I-1372 is a revised version.

- [7] C. Bäckström and I. Klein. Planning in polynomial time: The SAS-PUBS class. Technical Report LiTH-IDA-R-90-16, August 1990.
- [8] I. Klein and C. Bäckström. Planning in polynomial time: The SAS-PUS class. Technical Report LiTH-ISY-I-1229, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1991.
- [9] C. Bäckström and I. Klein. Parallel non-binary planning in polynomial time: The SAS-PUS class. Technical Report LiTH-IDA-R-91-11, April 1991.
- [10] I. Klein and C. Bäckström. On the planning problem in sequential control. Technical Report LiTH-ISY-I-1252, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1991. Presented at CDC-91.
- [11] I. Klein and C. Bäckström. On the planning problem in sequential control. Technical Report R-91-37, November 1991.
- [12] C. Bäckström and I. Klein. Parallel non-binary planning in polynomial time. In *Proceedings of the 12th International Joint Conference on Artificial Intelligence*, pages 268–273, Sydney, Australia, Aug 1991.
- [13] C. Bäckström and I. Klein. Planning in polynomial time: the SAS-PUBS class. *Computational Intelligence*, 7(3):181–197, August 1991.
- [14] I. Klein and C. Bäckström. On the planning problem in sequential control. In *Proceedings of the 30th Conference on Decision and Control*, pages 1819–1823, Brighton, England, 1991. IEEE.
- [15] C. Bäckström and I. Klein. Parallel non-binary planning in polynomial time. Technical Report LiTH-ISY-I-1371, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992. Presented at IJCAI-91.
- [16] C. Bäckström and I. Klein. Planning in polynomial time: The SAS-PUBS class. Technical Report LiTH-ISY-I-1372, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992. Published in *Computational Intelligence 1991*, Vol.7 pp. 181-197.
- [17] I. Klein. Reachability for a class of sequential control problems. Technical Report LiTH-ISY-I-1434, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992.
- [18] I. Klein and P. Lindskog. Automatic creation of sequential control schemes in polynomial time. Technical Report LiTH-ISY-I-1430, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992.

- [19] I. Klein. *Automatic Synthesis of Sequential Control Schemes*. PhD thesis, Linköping University, Linköping, Sweden, 1993. Linköping Studies in Science and Technology, Dissertations No. 305.
- [20] I. Klein and P. Lindskog. Automatic creation of sequential control schemes in polynomial time. Technical Report LiTH-ISY-I-1522, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1993. Presented at CDC-93.
- [21] I. Klein and P. Lindskog. Automatic creation of sequential control schemes in polynomialtime. In *Proceedings of the 32nd Conference on Decision and Control*, pages 211–216, San Antonio, Texas, 1993. IEEE.
- [22] I. Klein, P. Jonsson, and Bäckström C. Tractable planning for an assembly line. Technical Report LiTH-ISY-R-1717, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1995.
- [23] I. Klein and P. Lindskog. Automatic synthesis of control programs for an assembly line. In *Proceedings of Robotikdagarna 1995*, number LiTH-IKP-R-859, pages 119–128, Linköping University, Linköping, Sweden, 1995.
- [24] I. Klein, P. Jonsson, and Bäckström C. Tractable correct planning for an assembly line. Technical Report LiTH-ISY-R-1746, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1995.
- [25] I. Klein, P. Jonsson, and Bäckström C. Tractable planning for an assembly line. Technical Report LiTH-ISY-R-1792, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1995. Presented at EWSP-95.
- [26] I. Klein, P. Jonsson, and Bäckström C. Automatic synthesis of control programs for an assembly line. Technical Report LiTH-ISY-R-1806, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1995. Presented at Robotikdagarna 1995.
- [27] L. Ljung, R. Germundsson, J. Gunnarsson, I. Klein, J. Plantin, and J.-E. Strömberg. Hybrid and discrete systems in automatic control - some new (lunköping) approaches. Technical Report LiTH-ISY-R-1843, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1996. Presented at Reglermöte 96.
- [28] I. Klein, P. Jonsson, and Bäckström C. Automatic synthesis of control programs for an assembly line. Technical Report LiTH-ISY-R-1883, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1996. Presented at CDC-96.

- [29] I. Klein, P. Jonsson, and C. Bäckström. Tractable planning for an assembly line. In M. Ghallab and A. Milani, editors, *New Directions in AI Planning: EWSP'95—3rd European Workshop on Planning*, Frontiers in AI and Applications, pages 313–324, Assisi, Italy, September 1995. IOS Press.
- [30] I. Klein, P. Krus, and A. Törne, editors. *The Cohsy Project - Complex Heterogeneous Systems*, Technical Report LiTH-ISY-I-1920, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1996.
- [31] I. Klein, P. Jonsson, and C. Bäckström. Automatic synthesis of control programs in polynomial time for an assembly line. In *Proceedings of the 35th Conference on Decision and Control*, Kobe, Japan, 1996. IEEE.
- [32] I. Klein, P. Jonsson, and C. Bäckström. Efficient planning for a miniature assembly line. *Artificial Intelligence in Engineering*, 13(1):69–81, September 1998.
- [33] Magnus Larsson, Inger Klein, D. Lawesson, and U. Nilsson. The need for fault isolation in object-oriented control systems. Technical Report LiTH-ISY-R-2098, Department of Electrical Engineering, Linköping University, SE-581 83 Linköping, Sweden, Feb 1999.
- [34] Magnus Larsson, Inger Klein, D. Lawesson, and U. Nilsson. Model based fault isolation for object-oriented control systems. Technical Report LiTH-ISY-R-2205, Department of Electrical Engineering, Linköping University, SE-581 83 Linköping, Sweden, Nov 1999.
- [35] Magnus Larsson, Inger Klein, D. Lawesson, and U. Nilsson. Fault isolation in object oriented control systems. In *4th IFAC Symposium On Fault Detection Supervision and Safet for Technical Processes*, Budapest, Hungary, Jun 2000.
- [36] Inger Klein, P. Jonsson, and C. Bäckström. Efficient planning for a miniature assembly line. Technical Report LiTH-ISY-R-2288, Department of Electrical Engineering, Linköping University, SE-581 83 Linköping, Sweden, Aug 2000.
- [37] D. Lawesson, U. Nilsson, and Inger Klein. Model-checking based fault isolation in UML. Technical Report LiTH-ISY-R-2336, Department of Electrical Engineering, Linköping University, SE-581 83 Linköping, Sweden, Feb 2001.
- [38] D. Lawesson, U. Nilsson, and Inger Klein. Model-checking based fault isolation in UML. In *12th International Workshop on Principles of Diagnosis (DX-01)*, Mar 2001.
- [39] Anna Hagenblad and Inger Klein. Teaching control theory using problem based learning. Technical Report LiTH-ISY-R-2343, Department of Electrical Engineering, Linköping University, SE-581 83 Linköping, Sweden, Apr 2001.

- [40] Anna Hagenblad and Inger Klein. Teaching control theory using problem based learning. In *12th EAEEIE Annual Conference on Innovations in Education for Electrical and Information Engineering*, Nancy, France, May 2001.
- [41] D. Lawesson, U. Nilsson, and Inger Klein. Fault isolation using process algebra models. In *13th International Workshop on Principles of Diagnosis (DX-02)*, pages 172–178, May 2002.
- [42] D. Lawesson, U. Nilsson, and Inger Klein. Fault isolation using process algebra models. In *Workshop on ModelChecking and Artificial Intelligence (MoChArt-2002)*, Lyon, France, July 2002.
- [43] D. Lawesson, U. Nilsson, and Inger Klein. Fault isolation using process algebra models. In *13th International Workshop on Principles of Diagnosis (DX-02)*, pages 172–178, Semmering, Austria, May 2002.
- [44] D. Lawesson, U. Nilsson, and Inger Klein. Model-checking based fault isolation using automatic abstraction. Technical Report LiTH-ISY-R-2493, Department of Electrical Engineering, Linköping University, SE-581 83 Linköping, Sweden, Feb 2003.
- [45] Anna Hagenblad, Fredrik Gustafsson, and Inger Klein. A comparison of two methods for stochastic fault detection: the parity space approach and principal component analysis. In *Proceedings of SYSID*, Aug 2003.
- [46] Dan Lawesson, Ulf Nilsson, and Inger Klein. Model-checking based fault isolation using automatic abstraction. In *Fourteenth International Workshop on Principles of Diagnosis (DX-03)*, pages 113–118, Washington, D.C., USA, June 2003.
- [47] Dan Lawesson, Ulf Nilsson, and Inger Klein. Fault isolation using automatic abstraction to avoid state space explosion. In *Workshop on Model Checking and Artificial Intelligence (MoChArt-03)*, Acapulcoi, Mexico, Aug 2003.

### **Supervised master theses projects:**

P. Sandeberg. Fellokalisering i t-format kraftnät. Technical Report LiTH-ISY-EX-0888, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1988. ABB Relays.

S. Engström. Ensning av positionsuppfattning mellan flera samverkande flygplan. Technical Report LiTH-ISY-EX-0972, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1989. Saab-Scania Flydivisionen.

M. Bergström. Modellbygge för dimensionering av attitydreferens. Technical Report LiTH-ISY-EX-1028, Department of Electrical Engineering, Linköping Uni-

versity, Linköping, Sweden, 1991. Saab Military Aircraft.

P. Bergström. Automatic climate control system –a study of different methods to control the hvac units in a light rail car. Technical Report LiTH-ISY-EX-1075, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1991. ABB Traction.

M. Koebe. Modelling av en raffineringsprocess. Technical Report LiTH-ISY-EX-1235, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992. Braviken.

F. Linder. Identifiering i frekvensplanet. Technical Report LiTH-ISY-EX-1251, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992. Saab Military Aircraft.

K. Danehorn. Stötkontakt mellan kula och stativ i centrifugalseparator. Technical Report LiTH-ISY-EX-1193, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1992. Alfa Laval Separation AB.

D. Ericsson. Programoptimering för elförkopplingsmaskin ima 600. Technical Report LiTH-ISY-EX-1393, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1993. Ericsson Telecom.

C. Johnson. Programvarustyrdd simuleringsmodell för bränslesystemet i provflygplan jas39 gripen. Technical Report LiTH-ISY-EX-1217, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1993. FMV.

J. Håkegård. Modelling av industriell process lämpad för automatisk planering. Technical Report LiTH-ISY-EX-1400, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1994. ISY.

N. Johansson and M. Strömsöe. Quality driven channel selection and power control in PDC. Technical Report LiTH-ISY-EX-1532, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1995. ISY.

F. Russian. Automatic Generation of Control Programs for an Assembly Line. Technical Report LiTH-ISY-EX-1620, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1995. ISY.

M. Stern. Suggestion for an altitudemeter for an autonomous miniature helicopter. Technical Report LiTH-ISY-EX-1603, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1996. ISY.

B. Nordström. Development of CC-varistorprotection. Technical Report LiTH-ISY-EX-1644, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 1996. ISY.

C. Coulombel. A High Level Fault Isolation Procedure for an Industrial Robot. Technical Report LiTH-ISY-EX-2007, Department of Electrical Engineering, Lin-

köping University, Linköping, Sweden, 1998. ISY.

L. Källgren. Real-time replanning of mission routes based upon threats. Technical Report LiTH-ISY-EX-3126, Department of Electrical Engineering, Linköping University, Linköping, Sweden, 2001. ISY.