

Curriculum Vitae

Bart De Schutter

June 20, 2010

Contact address:

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Date of birth: Oct. 18, 1968

Nationality: Belgian

Marital status: Married

Brief educational and work record

- Dec. 2006–now:** Full professor, Chair: Hybrid Control and Intelligent Transportation Systems, Delft Center for Systems and Control, Faculty of Mechanical, Maritime and Materials Engineering, Delft University of Technology (TU Delft), Delft, The Netherlands
Currently coaching 1 associate professor and 2 assistant professors; supervising 6 PhD students, 4 postdocs, and 1 senior technician; co-supervising 2 PhD students and 2 postdocs
Currently coordinator of the European FP7 STREP project “Hierarchical and distributed model predictive control of large-scale complex systems (HD-MPC)”
- Jan. 2004–Nov. 2006:** Associate professor, Delft Center for Systems and Control, Faculty of Mechanical, Maritime and Materials Engineering, TU Delft
Supervised 7 PhD students, 2 postdocs, and 2 senior technical staff; co-supervised 2 PhD students
- Oct. 2000–Sept. 2005:** Research fellow, SISTA research group, Department of Electrical Engineering, K.U.Leuven, Leuven, Belgium
- Feb. 2000–Dec. 2003:** Associate professor, Control Systems Engineering group, Faculty of Information Technology and Systems, TU Delft
Supervised 5 PhD students
- Aug. 1998–Jan. 2000:** Assistant professor, Control Lab/Control Systems Engineering group, Faculty of Information Technology and Systems, TU Delft
Supervised 3 PhD students
- Oct. 1996–July 1998:** Postdoc, SISTA research group, Department of Electrical Engineering, K.U.Leuven, funded by an FWO¹ grant

¹FWO: Fund for Scientific Research—Flanders

- Feb. 1, 1996:** Obtained PhD degree at the Faculty of Applied Sciences of K.U.Leuven
 Topic: “Max-algebraic System Theory for Discrete Event Systems”
 Grade: summa cum laude and congratulations from the PhD examination committee (i.e., the highest possible distinction)
 PhD thesis advisor: prof.dr.ir. B. De Moor
- Feb. 1993–Sept. 1996:** PhD student and researcher, SISTA research group, Department of Electrical Engineering, K.U.Leuven, funded by an NFWO² grant
- Aug. 1992–Aug. 1997:** Instructor at Memento, a student coaching office in Leuven, Belgium (during the evenings)
- Apr. 1992–Jan. 1993:** Military service as a computer specialist and system manager in Brussels, Belgium
- Sept. 1991–Mar. 1992:** PhD student, SISTA research group, Department of Electrical Engineering of K.U.Leuven, funded by an IWONL³ grant
- Oct. 1986–July 1991:** BSc and MSc student in electrotechnical-mechanical engineering at K.U.Leuven
 Specialization: control theory
 MSc thesis: “Design and simulation of neural controllers”
 Final grade: summa cum laude

Short list of scientific performances

- 1 book
- 68 international journal papers
- 17 contributions to books
- 213 international conference papers
- h-index: 12 (ISI)
- 11 postdocs supervised
- 19 PhD students supervised (8 ongoing; 11 successfully graduated, of whom 2 cum laude)
- 26 MSc theses supervised
- 28 project acquisitions as main (local) applicant (total amount: ± k€ 3 720)
 Of these projects 6 are European, 13 national, 4 TU Delft, and 5 contract research
- 5 project acquisitions as (local) co-applicant (1 European, 4 national)
- 2 personal PhD grants (4 year each) and 1 personal postdoc grant (3 year) acquired
- 3 scientific awards

²NFWO: Belgian National Fund for Scientific Research

³IWONL: Belgian Institute for the Advancement of Scientific Research in Industry and Agriculture

Acquired projects and grants (as main (local) applicant)

1. “Highly-complex and networked control systems (HYCON2)”, European 7th Framework Network of Excellence, 2010–2014 (net budget for group: k€ 125)
2. “Hierarchical and distributed model predictive control of large-scale systems (HD-MPC)”, European 7th framework STREP project, 2008–2011 (k€ 125)
I am the coordinator of this project
3. “Model-based predictive control for intelligent water management – Towards real-life implementation”, funded by the BSIK⁴ research program on Next Generation Infrastructures (NGI) (k€ 125)
4. “Literatuurstudie coördinatie in verkeersmanagement (Literature survey on coordination in traffic management)”, project for DVS⁵, Dutch Ministry of Transport, Public Works and Water Management, 2009 (k€ 125)
5. “Externe experttoets Praktijkproef Verkeersmanagement Amsterdam (Evaluation by external experts of the Practical Test Traffic Management Amsterdam)”, participation in an expert evaluation for DVS, Dutch Ministry of Transport, Public Works and Water Management, 2009 (k€ 125)
6. “Real-time monitoring, surveillance and control of road networks under adverse weather conditions”, European COST Action TU0702, 2008–2012
7. “Intelligent model-based predictive control methods for flood and water management”, project funded by the BSIK-TU Delft research program on Next Generation Infrastructures (NGI), 2008–2010 (k€ 125)
8. “Modeling and control of transportation networks and logistic systems”, project funded by Faculty of Mechanical, Maritime and Materials Engineering (3mE) of TU Delft, 2007–2009 (k€ 125)
9. “Model-based traffic flow control for sustainable mobility”, project in the Shell/TU Delft Sustainable Mobility program, 2006–2010 (k€ 125)
10. NWO⁶ Van Gogh grant for cooperation with Supélec, Rennes, France, 2006 (k€ 125)
11. Evaluation of the feasibility study “Verkeersverwachting” (Traffic Forecast) proposed by Rups Adviseurs voor Innovatie, Schiedam, The Netherlands, Sept. 2005 (k€ 125)
12. “Integrated model predictive control” and “Decentralized Control”, subprojects in the BSIK-TRANSUMO ATMA project, 2004–2009 (k€ 125)
13. “Decentralized traffic control and management with intelligent vehicles” and “Design and communication aspects”, subprojects in the BSIK-TRANSUMO IV project, 2004–2009 (k€ 125)
14. “Multi-agent coordination and intelligent control of infrastructure networks”, project in the BSIK-NGI program, 2004–2012 (k€ 125)
15. “HYbrid CONtrol: Taming Heterogeneity and Complexity of Networked Embedded Systems (HYCON)”, European 6th Framework Network of Excellence, 2004–2009 (k€ 125)
16. “Adaptive learning for multi-agent coordination and control”, and “Reasoning under uncertainty”, projects in the BSIK-ICIS CDM cluster, 2004–2009 (k€ 125)
17. “Network-wide traffic management — Multi-agent control strategies for integrated control of freeway and urban traffic networks”, Traffic Research Centre Delft project, 2004–2006 (k€ 125)

⁴BSIK: “Besluit Subsidies Investerings Kennisinfrastructuur” (Decision on subsidy for investments in the Dutch knowledge infrastructure)

⁵DVS: Centre for Transport and Navigation

⁶NWO: The Netherlands Organization for Scientific Research

18. “Multi-agent control of large-scale hybrid systems”, NWO/STW⁷ VIDI Innovational Research Incentives Program project, 2004–2008 (k€ 125)
19. “Robust coordinated control of freeway and urban traffic networks”, Traffic Research Centre Delft project, 2003–2004 (k€ 125)
20. “Design methodology for fault-tolerant control of advanced driver assistance systems”, TNO-TRAIL project, 2003–2004 (k€ 125)
21. “BOSS scenario evaluatie (Decision support system scenario evaluation)”, project for AVV⁸, Dutch Ministry of Transport, Public Works and Water Management, 2002 (k€ 125)
22. “Modelling, simulation and control of nonsmooth dynamical systems (SICONOS)”, European 5th Framework research project, 2002–2006 (k€ 125)
23. “Development of advanced multi-agent control strategies for multi-class traffic networks”, NWO-CONNEKT subproject, 2002–2006 (k€ 125)
24. “Model predictive control for hybrid systems”, STW project, 2002–2006 (k€ 125)
25. “Fuzzy decision support system for traffic control centers”, project for AVV, Dutch Ministry of Transport, Public Works and Water Management, 1999–2000 (k€ 125)
26. “Advanced control techniques for optimal adaptive traffic control”, TRAIL-AVV project, 1999–2002 (k€ 125)
27. “Traffic congestion problems in Belgium: mathematical models, analysis, simulation, control and actions”, DWTC (Belgian Federal Office for Scientific, Technical and Cultural Affairs) project, 1997–2000 (k€ 125)
28. “ALAPEDES (The Algebraic Approach to Performance Evaluation of Discrete Event Systems)”, European Commission TMR project, 1996–2000 (k€ 125)

Prizes and Awards

- 2009 Andrew P. Sage Best Transactions Paper Award for the paper L. Buşoniu, R. Babuska, and B. De Schutter, “A comprehensive survey of multiagent reinforcement learning,” *IEEE Transactions on Systems, Man, and Cybernetics – Part C: Applications and Reviews*, vol. 38, no. 2, pp. 156–172, March 2008
- Biennial 1998 Richard C. DiPrima Prize (for my PhD thesis, awarded by SIAM⁹)
- R. Stock Prize for PhD theses in Applied Sciences at K.U.Leuven in the period 1996–1998

Educational activities

- Lecturer for the following BSc courses:
 - Control engineering for marine engineers (2008–now)
 - Advanced control systems (2006–2008)
- Evaluator of BSc design projects (1999–2006)
- Lecturer for the following MSc courses:

⁷STW: Dutch Technology Foundation

⁸AVV: Transport Research Centre

⁹SIAM: Society for Industrial and Applied Mathematics

- Modeling and control of hybrid systems (2004–now)
- Optimization in systems and control (1998–now)
- Practical control systems (2002–2004)
- Modeling, identification and simulation (1999–2002)
- Theory of hybrid systems (1999–2000)
- Lecturer for the following Postgraduate lectures and courses:
 - Modeling and control of hybrid systems (DISC¹⁰ course in cooperation with Maurice Heemels (Eindhoven University of Technology), 2002–now (once every 2 years))
 - Model-based predictive traffic control (lecture in the PAO¹¹ course “Dynamic traffic management”, 2005, 2007, 2009)
 - Models of hybrid systems (invited lecture at the 1st HYCON PhD School on “Hybrid Systems”, Siena, Italy, 2005)
- 2007, 2008: Co-organized TRAIL/SIKS postgraduate course on “Multi agent systems: Theory, technology and applications”
- 2006: Initiated MSc student exchange cooperation (within the European Socrates program) with the University of Cagliari, Italy
- 2003: Co-organized DISC Summer School on “Modeling and control of hybrid systems” (Veldhoven, The Netherlands, June 2003)
- Sept. 2000–Nov. 2003: MSc contact person for the Control Lab/Control Systems Engineering group, TU Delft
- 1993–1996: Ombudsman for the students of the 2nd technical year Electrical Engineering at K.U.Leuven

Research and other academic activities

- Main research interests: Large-scale transportation networks (in the wide sense of the word), infrastructure networks, multi-level control, multi-agent systems, discrete-event systems, hybrid systems, traffic control, and optimization
- Sept. 2004–now: Associate editor for *Automatica*
- July 2004–now: Editor for the *IEEE Transactions on Intelligent Transportation Systems*
- General (co-)chair of the 4th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS 2012), Eindhoven, The Netherlands, 2012
- Program co-chair of the 8th IEEE International Conference on Networking, Sensing and Control (ICNSC 2011), Delft, the Netherlands, 2011
- Program chair of the 2008 IEEE Intelligent Vehicle Symposium (IV’08), Enschede, The Netherlands, 2008
- Program co-chair of the 8th IEEE Conference on Intelligent Transportation Systems (ITSC 2005), Vienna, Austria, 2005
- Member of national organizing committee of the 11th IFAC Symposium on Control in Transportation Systems (CTS 2006), Delft, The Netherlands, 2006

¹⁰DISC: Dutch Institute of Systems and Control

¹¹PAO: Foundation Postacademic Education

- Member of the international program committee of among others
 - American Control Conference (ACC) in 2005
 - IEEE Conference on Automation Science and Engineering (CASE) in 2009
 - IEEE Conference on Decision and Control (CDC) in 2004 and 2008
 - IEEE Conference on Intelligent Transportation Systems (ITSC) in 2004, 2006, 2007, 2009, and 2010
 - IEEE Intelligent Vehicles Symposium (IV) in 2007 and 2010
 - IEEE International Conference on Networking, Sensing and Control (ICNSC) in 2006, 2007, and 2010
 - IFAC Symposium on Control in Transportation Systems (CTS) in 2006 and in 2009 (**as IPC chair**)
 - International Conference on Hybrid Systems: Computation and Control (HSCC) in 2007 and 2008
 - International Embedded and Hybrid Systems Conference (IEHSC) in 2005
 - International Workshop on Discrete Event Systems (WODES) in 2002, 2004, 2008, and 2010
 - Workshop on Distributed Estimation and Control in Networked Systems (NecSys) in 2009 and 2010
- Jan. 2006–June 2008, Jan. 2010–now: Vice-chair of the IFAC Technical Committee on Transportation Systems
- 2003–now: Member of the IFAC Technical Committee on Transportation Systems
- 2006–now: Member of the IFAC Technical Committee on Discrete Event and Hybrid Systems
- 1996–2004: Reviewer for *Mathematical Reviews*
- Reviewed manuscripts and book proposals for Princeton University Press, SIAM, and Springer
Reviewer for several journals and conferences

Executive activities

- Jan. 2008–now: Member of the Board of Governors of the IEEE Intelligent Transportation Systems Society
- March 2005–now: Member of the management team of the Delft Center for Systems and Control (DCSC)
- Nov. 2003–Dec. 2008: Chair of the DCSC ICT coordination group

Additional information

- Attended language courses at the CLT (Center for Modern Languages) in Leuven:
 - Italian from Sept. 1999 up to June 2006
 - Spanish from Oct. 1993 to June 1999
 - German from Oct. 1991 to June 1993
- Oct. 20, 1990: participated in GMAT test (worldwide admission test for MBA studies)
Score: verbal 96 %, quantitative 99 %, global 99 %

- 1989–1990: responsible for sponsoring and publicity for lectures organized by Student Branch of IEEE-Leuven
- Computer skills: extensive experience with several computer operating systems (Windows, Unix, and Linux), Linux system management, and setting up and maintaining web sites
Programming languages: Basic, Pascal, Fortran, C, Cobol, Perl, and Matlab
Software: Matlab, L^AT_EX, emacs, MS Office, OpenOffice
- Hobbies: swimming, squash, cycling, and learning languages
- Languages: fluent in Dutch, French, and English; good knowledge of German, Spanish, and Italian