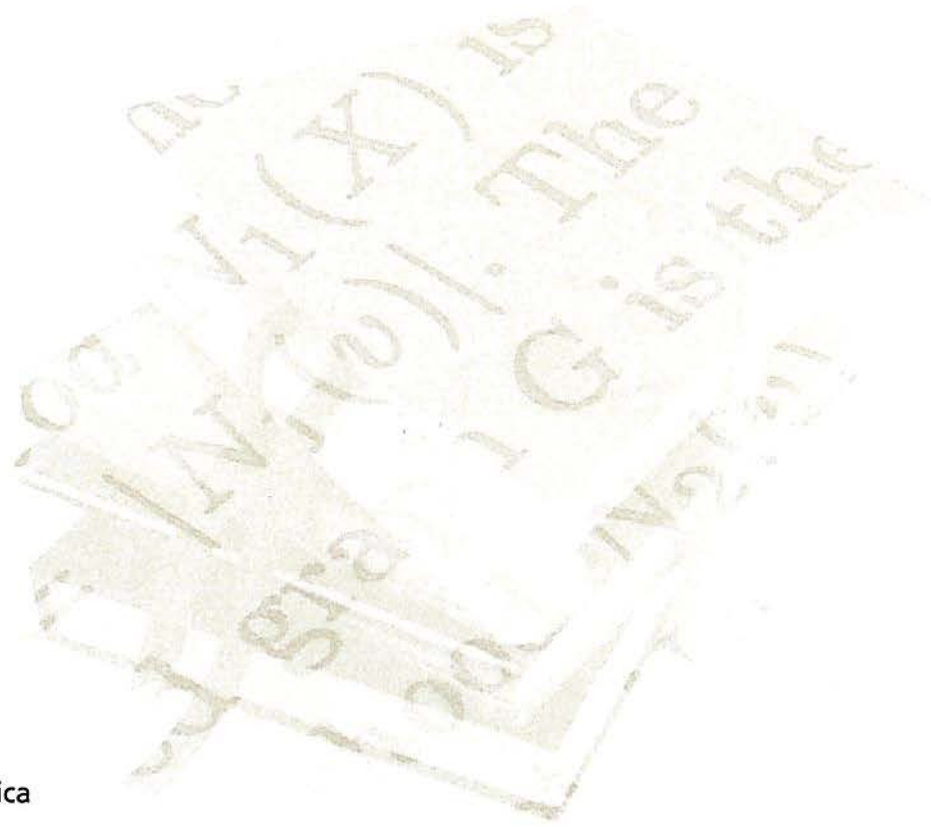
CWI

Curricula vitae of senior researchers

April 2011



Centrum Wiskunde & Informatica

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Curricula vitae of senior researchers

April 2011

Centrum Wiskunde & Informatica (CWI) is het nationale onderzoeksinstituut op het gebied van wiskunde en informatica. CWI maakt deel uit van de Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO). Het CWI is lid van het European Research Consortium for Informatics and Mathematics (ERCIM) en het World Wide Web Consortium (W3C). Het Benelux Kantoor van W3C is in het CWI gehuisvest.

Algemeen directeur

Prof.dr. J.K. Lenstra

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Krzysztof Apt

Career

1987 – 1996	Researcher AP5 – Logic and Language
1997 – 2008	Scientific staff member PNA1 – Algorithms, Combinatorics and Optimization
2008 –	CWI Fellow PNA1 – Algorithms, Combinatorics and Optimization

Research

Krzysztof Apt published four books and more than fifty journal articles, in computer science, mathematical logic and, more recently, economics. His former research dealt with semantics, verification and design of programming languages, logic and constraint programming, deductive databases and non-monotonic reasoning. His current research is concerned with game theory and multi-agent systems. Apt is the founder of the *ACM Transactions on Computational Logic*, member of Academia Europea and member of the council of the European Association for Theoretical Computer Science (EATCS).

Selected academic activities

2007 –	Member science council Council of the European Association for Theoretical Computer Science (EATCS)
2007 –	Member board of directors TARK (Theoretical Aspects of Rationality and Knowledge)
2007 –	Member advisory board Computing Research Repository
2007 –	Member advisory board Book series Text in Logic and Games
2006 –	Member Academia Europaea
2004 –	Member advisory board Logical Methods in Computer Science
2004 –	Member advisory board Computing Research Repository
2001 –	Editor *Theory and Practice of Logic Programming*
2000	Founder *ACM Transactions on Computational Logic*
2000 –	Area editor *ACM Transactions on Computational Logic*
2000 – 2005	Editor-in-chief *ACM Transactions on Computational Logic*
1989 –	Editor *Journal of Logic and Computation*

Selected publications

K.R. Apt, E.R. Olderog, F.S. de Boer. Verification of Sequential and Concurrent Programs, Springer, 2009.

K.R. Apt, M. Wallace. Constraint Logic Programming Using ECLiPSe, Cambridge University Press, 2007.

K.R. Apt. The many faces of rationalizability. *The B.E. Journal of Theoretical Economics 7*, 1–39, 2007.

K.R. Apt. Principles of Constraint Programming, Cambridge University Press, 2003.

K.R. Apt. The role of commutativity in constraint propagation. 2000.

Farhad Arbab

Career

1983	Visiting assistant professor, Computer Science Department, University of California, LA
1984 – 1989	Assistant professor Computer Science Department, University of California, Los Angeles
1990 –	Scientific staff member SEN3 – Foundations of Software Engineering
2004 – 2006	Adjunct professor School of Computer Science, University of Waterloo, Canada
2004 –	Professor of Computer Science, Leiden University

Research

Arbab works on formal models for software (component and service) composition and is a leader in the coordination models and languages field of concurrency. He is the creator and the principal developer of the IWIM model and the Manifold language in the 1990's, and their successor, Reo, since 2000. Reo is a language for coordinated composition of concurrent components and distributed services. Reo allows arbitrary user-defined channels as primitives; arbitrary mix of synchrony and asynchrony; and relational constraints between input and output. This makes Reo more expressive than, e.g., dataflow models, workflow models, and Petri nets. As such, Reo is a promising model for programming of multi-core systems and applications in systems biology. Tool support for Reo consists of a set of Eclipse plug-ins called the Eclipse Coordination Tools (ECT). ECT incorporates compositional models for specification and verification of QoS properties of interaction protocols and workflow models, through translation of Reo into Markov Chains. ECT tools for graphical animation, simulation, and model checking (e.g., through Vereofy, mCRL2, and CADP) have been used in case studies to analyze workflow and business process models for their logical correctness and compliance.

Selected awards and honors

2009	Bronzen Achievement Award Trust4All

Selected academic activities

2008	Organizer NWO I-science workshop on data mining, distributed computing and visualization for astronomy (IsFast 2008)
2007	Organizer IPA Springschool
2004 – 2009	Member program committee NWO Global Computer Science (GLANCE)

Selected publications

C. Krause, Z. Maraikar, A. Lazovik, F. Arbab. Modeling dynamic reconfiguration in Reo using high-level replacement systems. *Science of Computer Programming 76*, 23–36, 2011.

S. Meng, F. Arbab. A model for web service coordination in long-running transactions. *Proceedings of International Symposium on Service-Oriented System Engineering 2010 (5)*, 2010.

F. Arbab. Elements of interaction. *Proceedings of Complex Systems Design & Management 2010 (1)*, 1–28, 2010.

N. Kokash, B. Changizi, F. Arbab. A semantic model for service composition with coordination time delays. *Proceedings of International Conference on Formal Engineering Methods 2010, Lecture Notes in Computer Science*, 2010.

Joost Batenburg

Career

2002 – 2006	PhD student MAS2/PNA5
2010 – 2015	Scientific staff member/tenure track MAC2 – Scientific Computing and Control Theory
2010 –	Full professor University of Antwerp

Research

My research interests include:

- Inverse problems in image reconstruction
- Discrete tomography and other subjects in tomographic imaging
- Electron tomography for imaging at the nanometer scale, downto atomic resolution
- Applications of tomography in materials science and medical imaging
- Combinatorial optimization
- Modern optimization heuristics, evolutionary algorithms
- GPU computing for large-scale scientific computing
- Image processing and computer vision

Selected awards and honors

2010	Vidi Innovational Research Grant NWO
2007	FWO Postdoctoral Fellowship
2007	C.J. Kok Prize
2006	Philips Mathematics Prize
2006	FWO Visiting Postdoctoral Fellowship

Selected academic activities

2010	Organizer Lorentz Workshop: Modeling with Images in the Life Sciences
2009 –	Vice-chairman IAPR Technical Committee on Discrete Geometry

Selected publications

S. van Aert, K.J. Batenburg, M.D. Rossell, R. Erni, G. Van Tendeloo. Three-dimensional atomic imaging of crystalline nanoparticles. *Nature*, 2011.

A. Stolk, K.J. Batenburg. An algebraic framework for discrete tomography. *SIAM Journal on Discrete Mathematics 24*, 1056–1079, 2010.

K.J. Batenburg, W. Van Aarle, J. Sijbers. A semi-automatic algorithm for grey level estimation in tomography. *Pattern Recognition Letters*, 2010.

K.J. Batenburg, J. Sijbers. Optimal threshold selection for tomogram segmentation by projection distance minimization. *IEEE Transactions on Medical Imaging 28*, 676–686, 2009.

K.J. Batenburg, J. Sijbers. Adaptive thresholding of tomograms by projection distance minimization. *Pattern Recognition 42*, 2297–2305, 2009.

K.J. Batenburg. A network flow algorithm for reconstructing binary images from discrete X-rays. *Journal of Mathematical Imaging and Vision 27*, 175–191, 2007.

K.J. Batenburg. An evolutionary algorithm for discrete tomography. *Discrete Applied Mathematics 151*, 36–54, 2005.

Rob van den Berg

Career

1985 – 1986	Postdoc at IMA, University of Minnesota
1986 – 1988	System engineer Philips Telecommunication and Data Systems
1988 –	Scientific staff member PNA2 – Probability and Stochastic Networks
1990 – 1991	Postdoctoral Fellowship Cornell University
2003 –	Full professor VU University Amsterdam

Research

Van den Berg's research involves the rigorous mathematical treatment of random spatial processes. In two papers Van den Berg extended classical sharp-transition results in percolation to a large class of dependent models including the well-known two-dimensional contact process (versions of which serve as models of vegetation patterns). More recently (in a paper which will appear in the *Annals of Probability*), Van den Berg and his PhD student Kiss extended an important result in first-passage percolation by Benjamini, Kalai and Schramm. Van den Berg, in cooperation with other researchers, also obtained new results for mathematical models of forest-fires (and related processes which are believed to exhibit self-organized criticality), invasion percolation, frozen percolation and other growth models. Moreover, new correlation-like inequalities of a combinatorial nature were obtained.

Selected awards and honors

2008	NWO Open Competition
2005	NWO Open Competition

Selected academic activities

2010	Co-organizer ESF Conference, EURANDOM, TUE
2007	Co-organizer Arbeitsgemeinschaft Percolation Oberwolfach

Selected publications

J. van den Berg. Sharpness of the percolation transition in the two-dimensional contact process. *Annals of Applied Probability 21*, 374–395, 2011.

J. van den Berg, M.R. Hilario, A.E. Holroyd. Escape of resources in a distributed clustering process. *Electronic Communications in Probability 15*, 40, 2010.

J. van den Berg, Y. Peres, V. Sidoravicius, M.E. Vares. Random spatial growth with paralyzing obstacles. *Annales de l'Institut Henri Poincaré – Probability and Statistics = Probabilities and Statistics 44*, 1173–1187, 2008.

J. van den Berg. Approximate zero-one laws and sharpness of the percolation transition in a class of models including 2D Ising percolation. *Annals of Probability 36*, 1880–1903, 2008.

J. van den Berg, R.M. Brouwer. Self-organized forest-fires near the critical time. *Communications in Mathematical Physics 67*, 265–277, 2006.

Joke Blom

Career

1976 – 1996	Researcher NW – Numerieke Wiskunde
1997 – 2006	Scientific staff member MAS1 – Nonlinear PDEs: Analysis and Scientific Computing
2007 – 2008	Scientific staff member MAS3 – Multiscale Modelling and Nonlinear Dynamics
2009 –	Scientific staff member MAC4 – Life Sciences

Research

My research area is scientific computing; for the last 10 years focused on mathematical problems in the life sciences, in particular systems biology and medicine. The mathematical research includes multiscale modelling, analytical and numerical topics (diffusion-reaction systems at the macroscopic and mesoscopic level, hybrid ODE/PDE systems), and parameter estimation (parameter identification, model discrimination and optimal experimental design).

Selected academic activities

2009	Organizer Workshop Experimental Design in Systems Biology: Data analysis and Parameter Identification
2008	Organizer Workshop Numerical Modelling of Complex Dynamical Systems
2007	Organizer International Workshop Spatial Fluctuations in Cell Biology
2007 – 2010	Member science council NISB

Selected publications

J.G. Blom, M.R.H. Mandjes. Traffic generated by a semi-Markov additive process. *Probability in the Engineering and Informational Sciences*, 1–7, 2011.

M. Ashyraliyev, K. Siggens, H. Janssens, J.G. Blom, M. Akam, J. Jaeger. Gene circuit analysis of the terminal gap gene huckebein. PLoS Computational Biology 5, e1000548, 2009.

M. Ashyraliyev, Y. Fomekong Nanfack, J.A. Kaandorp, J.G. Blom. Systems biology: Parameter estimation for biochemical models. *FEBS Journal 276*, 886–902, 2009.

M. Ashyraliyev, J.G. Blom, J.G. Verwer. On the numerical solution of diffusion-reaction equations with singular source terms. *Journal of Computational and Applied Mathematics 216*, 20–38, 2008.

M. Dobrzynski, J. Vidal Rodríguez, J.A. Kaandorp, J.G. Blom. Computational methods for diffusion-influenced biochemical reactions. *Bioinformatics 23*, 1969–1977, 2007.

Frank de Boer

Career

1985 – 1989	PhD student AP1 – Computational models
2001 – 2008	Scientific staff member SEN3 – Foundations of Software Engineering
2003 – 2007	Associate professor LIACS, Leiden University
2008 –	Full professor LIACS, Leiden University
2008 –	Group leader SEN3 – Foundations of Software Engineering

Research

My research on the development and application of formal methods covers and integrates a broad range of programming/modelling languages: object-oriented languages, coordination languages, constraint languages, agent-oriented languages, software product lines and enterprise architectures. I have directed and coordinated research on object-oriented languages and coordination languages and their integration in the international context of various EU projects. Further I have initiated and structured research on formal methods for software product lines in a IP FP7 EU project. My work on design and implementation of agent-oriented languages as described in "Agent Programming in 3APL" by K. Hindriks, F.S. de Boer, W. van der Hoek, J.J.C. Meyer in Autonomous Agents and Multi-Agent Systems has become a standard reference for agent programming languages in the agent community. Its follow-up 2APL is available via SourceForge. This line of work has resulted in 6 PhD theses under my supervision and involves close collaboration on the national level with Utrecht University and the Technical University of Delft. My investigation into the logical foundations of enterpise architectures formed the very basis of the book "Enterprise Architecture at Work: Modelling, Communication and Analysis" by M. Lankhorst et al., Springer 2009. The Archimate modeling language itself has become a standard in enterprise architectures.

Selected awards and honors

2008	Forum-Architectuurprijs 2008
2008	Bronzen Achievement Award Trust4All
2008	Best paper Pacific Rim International Conference

Selected publications

I. Grabe, F.S. de Boer. Automated deadlock detection in synchronized reentrant multithreaded call-graphs. *Proceedings of 36th Conference on Current Trends in Theory and Practice of Computer Science 2010, Lecture Notes in Computer Science 5901*, 200–211, 2010.

F.S. de Boer, Mahdi, E.B. Johnsen. Dating concurrent objects: Real-time modeling and schedulability analysis. *Proceedings of International Conference on Concurrency Theory 2010, Lecture Notes in Computer Science 6269*, 1–18, 2010.

K.R. Apt, E.R. Olderog, F.S. de Boer. Verification of Sequential and Concurrent Programs, Springer, 2009.

C. Pierik, F.S. de Boer. A proof outline logic for object-oriented programming. *Theoretical Computer Science 343*, 413–442, 2005.

E. Abraham, F.S. de Boer, W.P. de Roever, M. Steffen. An assertion-based proof system for multithreaded Java. *Theoretical Computer Science 331*, 251–290, 2005.

Sander Bohte

Career

1998 – 2002	PhD student SEN4 – Multi-agent and Adaptive Computation
2002 – 2009	Scientific staff member SEN4 – Multi-agent and Adaptive Computation
2010 –	Scientific staff member MAC4 – Life Sciences

Research

I develop computational models to help understand the mechanisms that underly information processing in networks of – mainly – spiking neurons. I have particularly focused on encoding information with timed spikes, supervised neural learning, and general reinforcement learning methods. Recently, we developed a straightforward neural spike coding and decoding framework, where we observe that a spiketrain can be the fractional derivative of a signal. This constitutes both a simple and elegant neural coding paradigm that can account for a number of experimental observations. With Pieter Roelfsema and Arjen van Ooyen, we work on biologically plausible policy gradient reinforcement learning in spiking neurons. Elaborating on the AGREL idea, the research is yielding some surprising results on the (in)sufficiency of standard policy-gradient reinforcement learning. Other machine learning efforts have focused on distributed learning paradigms, mainly within the multi-agent learning paradigm, with such applications as hospital patient scheduling and energy distribution in smart grids.

Selected awards and honors

2004	Veni Innovational Research Grant NWO

Selected academic activities

2008 –	Member editorial board *The Open Artificial Intelligence Journal*
2007 –	Member editorial board *The Open Information Systems Journal*
2005	Guest editor Special Issue of *Information Processing Letters* on Applications of Spiking

Selected publications

S.M. Bohte, J.O. Rombouts. Fractionally predictive spiking neurons. *Advances in Neural Information Processing Systems 23*, 253–261, 2010.

I.B. Vermeulen, S.M. Bohte, S.G. Elkhuizen, J.S. Lameris, P.J.M. Bakker, J.A. La Poutré. Adaptive resource allocation for efficient patient scheduling. *Artificial Intelligence in Medicine 46*, 67–80, 2009.

S.M. Bohte, M.C. Mozer. Reducing spike train variability: A computational theory of spike-timing dependent plasticity. *Neural Computation 19*, 371–403, 2007.

P.J. 't Hoen, S.M. Bohte, J.A. La Poutré. Learning from induced changes in opponent (re)actions in multi-agent games. *Proceedings of the 5th International Joint Conference on Autonomous Agents and Multiagent Systems*, 728–735, 2006.

Peter Boncz

Career

1994 – 1999	PhD student University of Amsterdam
1999 – 2002	Product line architect at Data Distilleries
2002 –	Scientific staff member INS1 – Database Architectures
2008 – 2010	Founder and President of board VectorWise

Research

Senior research scientist at CWI and part-time lecturer (UHD) at VU University Amsterdam, specializing in database system architecture. Architected two database systems, MonetDB and X100 (aka VectorWise). Participated in two successful CWI spin-off companies in large-scale data management: Data Distilleries and VectorWise. Supervised two completed PhD students (Marcin Zukowski and Ying Zhang) with three more in the pipeline. Internationally well-known for work on columnar database systems, XML data processing and architecture-conscious database research. MonetDB and VectorWise are widely regarded as state-of-the-art analytical database systems.

Selected awards and honors

2009	VLDB 10-year Best Paper Award
2006	ICT Regie Award

Selected academic activities

2005 – 2011	Founding member DaMoN steering committee

Selected publications

S. Héman, M. Zukowski, N.J. Nes, L. Sidirourgos, P.A. Boncz. Positional update handling in column stores. *Proceedings of ACM SIGMOD International Conference on Management of Data 2010*, 2010.

R. Cornacchia, S. Héman, M. Zukowski, Arjen P. de Vries, P.A. Boncz. Flexible and efficient IR using array databases. *VLDB Journal 17*, 151–168, 2008.

P.A. Boncz, M.L. Kersten, S. Manegold. Breaking the memory wall in MonetDB. *Communications of the ACM 51*, 77–85, 2008.

W. Alink, R. Bhoedjang, P.A. Boncz, Arjen P. de Vries. XIRAF – XML-based indexing and querying for digital forensics. *Digital Investigation 3*, 50–58, 2006.

M. Zukowski, P.A. Boncz, N.J. Nes, S. Héman. MonetDB/X100 – A DBMS in the CPU cache. *IEEE Data Engineering Bulletin 28*, 17–22, 2005.

P.A. Boncz. Monet: a next-generation database kernel for query-intensive applications. PhD thesis 2002.

P.A. Boncz, S. Manegold, M.L. Kersten. Optimizing main-memory join on modern hardware. *IEEE Transactions on Knowledge and Data Engineering 14*, 709–730, 2002.

P.A. Boncz, S. Manegold, M.L. Kersten. Database architecture optimized for the new bottleneck: Memory access. 1999.

P.A. Boncz, M.L. Kersten. MIL primitives for querying a fragmented world. 1999.

Peter Bosman

Career

2004 – 2008	Scientific staff member/postdoc SEN4 – Multi-agent and Adaptive Computation
2008 – 2010	Scientific staff member/tenure track SEN4 – Multi-agent and Adaptive Computation
2010 –	Scientific staff member SEN4 – Multi-agent and Adaptive Computation

Research

My research concerns the design and application of advanced evolutionary algorithms (EAs) to solve optimization problems that are typically complex and contain uncertainties (e.g. complex simulations). These problems often require taking a black-box optimization (BBO) perspective, i.e. (virtually) nothing is known about the optimization problem at hand. Often, the advanced EAs I study are so-called estimation-of-distribution algorithms (EDAs), in which probabilistic models are built and used to guide the search for better solutions so as to get the most out of previously performed evaluations. I study the design of advanced EAs for both single- and multi-objective optimization problems as well as for optimization problems in the presence of uncertainties, i.e. problems with stochastic and/or dynamically (i.e. over time) changing objectives. Applications include the optimization of patient flows in hospitals, the dynamic routing of vehicles for transportation purposes, dynamic pricing of goods for revenue management and (network design for) energy systems.

Selected awards and honors

2010	Best Paper Genetic and Evolutionary Computation Conference 2010
2009	Best Paper BNAIC 2009 (Benelux Conference on Artificial Intelligence)

Selected academic activities

2009	Chair program committee EDA track at GECCO-2009
2009 –	Member editorial board *International Journal of Applied Metaheuristic Computing* (IJAMC)
2008 –	Project (co)leader BRICKS: national project; "Basic Research in Informatics for Creating the Knowledge Society"
2006	Chair program committee EDA track at GECCO-2006

Selected publications

P.A.N. Bosman. The anticipated mean shift and cluster registration in mixture-based EDAs for multi-objective optimization. *Proceedings of ACM Annual Genetic and Evolutionary Computation Conference 2010*, 351–358, 2010.

A.K. Hutzschenreuter, P.A.N. Bosman, J.A. La Poutré. Evolutionary multiobjective optimization for dynamic hospital resource management. *Proceedings of Evolutionary Multi-Criterion Optimization 2009, Lecture Notes in Computer Science 5467*, 320–334, 2009.

P.A.N. Bosman, J. Grahl. Matching inductive search bias and problem structure in continuous estimation-of-distribution algorithms. *European Journal of Operational Research 185*, 1246–1264, 2008.

P.A.N. Bosman, J.A. La Poutré. Learning and anticipation in online dynamic optimization with evolutionary algorithms: The stochastic case. *Proceedings of the Genetic and Evolutionary Computation Conference*, 1165–1172, 2007.

Harry Buhrman

Career

1997 – 2002	Scientific staff member INS4 – Quantum Computing and Advanced Systems Research
2000 –	Full professor University of Amsterdam
2003 –	Group leader PNA6 – Algorithms and Complexity

Research

Harry Buhrman is head of the research group 'Algorithms and Complexity' at the Centrum Wiskunde & Informatica, which he joined in 1994. Since 2000 he also has a joined appointment as full professor of computer science at the University of Amsterdam. Buhrman's research focuses on quantum computing, algorithms, complexity theory, and computational biology. In 2003 he obtained a prestigious Vici-award and was coordinator of several national and international projects. The unifying theme through the work of Buhrman is the development of new algorithms and protocols, as well as establishing their optimality. One of the highlights in the work of Buhrman is the article co-authored with Richard Cleve (University of Waterloo, Canada) 'Quantum Entanglement and Communication Complexity'. They demonstrated that with quantum entanglement certain communication tasks can be solved more efficiently. This article formed the basis for the area of quantum communication complexity and has implications to fundamental questions in physics. He also co-developed a general method to establish the limitations of quantum computers. He wrote more than 100 scientific publications. Buhrman is editor of several international journals and is member of various advisory and scientific boards, such as the advisory board of the Institute for Quantum Computing (Waterloo, Canada).

Selected awards and honors

2005	Vici Innovational Research Grant NWO

Selected academic activities

2008	Member program committee FOCS 2008
2007 –	Member advisory board Quantum Information Prosessing (CIFAR)
2007 –	Editor *ACM Transactions on Computer Theory*
2006 –	Member advisory board Institute for Quantum Computing Waterloo (IQC)
2006 –	Member QUROPE Governing Board
2005	Member program committee Symposium on Theory of Computation (STOC)
2005 –	Editor *Theory of Computing Systems* (TOCS)
2005 –	Editor *Journal Computational Complexity*
2005 –	Chair program committee Computer Sciences, Lorentz Center

Selected publications

H. Buhrman, R. Cleve, S. Massar, R. de Wolf. Nonlocality and communication complexity. *Reviews of Modern Physics 82*, 665–698, 2010.

H. Buhrman, J.M. Hitchcock. NP-hard sets are exponentially dense unless coNP C NP/poly. *IEEE Conference on Computational Complexity*, 1–7, 2008.

H. Buhrman, R. Spalek. Quantum verification of matrix products. *Proceedings of ACM-SIAM Symposium on Discrete Algorithms 2006 (17)*, 880–889, 2006.

H. Buhrman, M. Christandl, P. Hayden, H. Lo, S.D.C. Wehner. Security of quantum bit string commitment depends on the information measure. *Physical Review Letters 97*, 250501, 2006.

G. Brassard, H. Buhrman, N. Linden, A.A. Methot, A. Tapp, F.P. Unger. Limit on Nonlocality in Any World in Which Communication Complexity Is Not Trivial. *Physical Review Letters 96*, 2006.

H. Buhrman, R. Cleve, M. Laurent, N. Linden, A. Schrijver, F.P. Unger. New limits on fault-tolerant quantum computation. *Proceedings of the 47th Annual IEEE Symposium on Foundations of Computer Science*, 411–419, 2006.

Dick Bulterman

Career

1988 – 1996	Scientific staff member CS – Computer Systems & Telematics
2002 – 2002	Head CST/Group leader – Directie
2003 – 2009	Scientific staff member SEN5 – Distributed and Interactive Systems
2008 –	Full professor VU University Amsterdam
2010 –	Group leader SEN5 – Distributed and Interactive Systems

Research

At CWI, Dick Bulterman heads the Distributed and Interactive Systems group. This group studies models and systems for supporting the capture, transfer and rendering of time-sensitive data across a heterogenous infrastructure. The problems studied include the development of active interfaces for rich social networking systems, the integration of sensor-based data from the "internet of things", the modeling of high-level semantic properties of content, and the development of rendering architectures that allow application-driven, time-constrained synchronization of user interaction across wide area networks. This work has resulted in over 100 publications, two well-received books, several major open-source software publications, and numerous invitations for keynote addresses. He has worked on over a dozen European and US research projects in the past 25 years. During his appointments at CWI, Bulterman has organized major scientific conferences for ACM, IEEE and others. He has been chair of the W3C Synchronized Multimedia working group SYMM since 2004. In 2011, Bulterman was nominated to be Vice-Chair of ACM SigWEB (with elections scheduled for May 2011). Bulterman received a PhD in computer science from Brown University (USA) in 1981. He has held faculty appointments at Brown (1980–1989 and 1993–1994), TU Delft (1986), Univ. Utrecht (1989–1991), UvA (1990–1992) and, more recently, a professorship at the VU University in Amsterdam (2009–present). Bulterman first joined CWI in 1988. In 1998, he was the founder of the CWI spin-off company Oratrix Development BV. In 2002, he rejoined CWI.

Selected awards and honors

2008	Best Paper EuroITV
2008	Best Paper ACM Symposium on Document Engineering
2008	Best Paper ACM International Conference on Multimedia

Selected academic activities

2010 – 2011	Organizer ACM NOSSDAV
2009 – 2012	Principal investigator TA2: Together Anywhere, Together Anytime (EU FP7-IP)
2007	Organizer IEEE International Symposium on Multimedia ISM
2006	Organizer ACM Symposium on Document Engineering DocEng
2006 – 2011	Chairman W3C Synchronized Mulimedia WG (SYMM)

Selected publications

I. Vaishnavi, A. Arefin, D.C.A. Bulterman, K. Nahrstedt, R. Rivas. Eureka: A methodology for measuring bandwidth usage of networked games, environments and applications. *Proceedings of IEEE International Conference on Multimedia and Expo 2010*, 2010.

Jack Jansen, Pablo Cesar, D.C.A. Bulterman. A model for editing operations on active, Temporal multimedia documents. *Proceedings of the 10th ACM symposium on Document engineering*, 27–36, 2010.

B. Gao, Jack Jansen, Pablo Cesar, D.C.A. Bulterman. Beyond the playlist: seamless playback of structured video clips. *IEEE Transactions on Consumer Electronics 56*, 1495–1501, 2010.

Pablo Cesar

Career

2005 – 2007	Scientific staff member/postdoc SEN5 – Distributed and Interactive Systems
2008 – 2011	Scientific staff member/tenure track SEN5 – Distributed and Interactive Systems

Research

Pablo Cesar is a tenure track researcher in the Distributed and Interactive Systems research group at CWI. He received his PhD from the Helsinki University of Technology in 2006. He has (co)authored over 40 articles (conference papers and journal articles) about multimedia systems and infrastructures, social media sharing, interactive media, multimedia content modeling, and user interaction. He is involved in standardization activities (e.g., SMIL from W3C) and has been active in a number of European projects such as Passepartout, SPICE, iNEM4U, and TA2. He is co-editor of the book "Social Interactive Television: Immersive Shared Experiences and Perspectives" and has given tutorials about multimedia systems in prestigious conferences such as ACM Multimedia and the WWW conference.

Selected awards and honors

2008	Best Paper EuroITV 2008
2008	Best Paper ACM International Conference on Multimedia, October 2008

Selected academic activities

2010 –	Member working group Future Media Internet Architecture Think Tank (European Commission)
2009 –	Member editorial board Springer *Multimedia Tools and Applications*
2007 –	Member editorial board *ACM Computers and Entertainment*
2006 –	Member working group SYMM from W3C

Selected publications

R. Kernchen, Pablo Cesar, S. Meissner, M. Boussard, K. Moessner, C. Hesselman, I. Vaishnavi. Intelligent multimedia presentation in ubiquitous multidevice scenarios. *IEEE MultiMedia 17*, 52–63, 2010.

Pablo Cesar, D.C.A. Bulterman, Jack Jansen. Leveraging the user impact: an architecture for secondary screens usage in an interactive television environment. *ACM Multimedia Systems Journal 15*, 127–142, 2009.

Pablo Cesar, D.C.A. Bulterman, Jack Jansen, D. Geerts, H. Knoche, W. Seager. Fragment, tag, enrich, and send: Enhancing the social sharing of videos. *ACM Transactions on Multimedia Computing 5*, 19, 2009.

Pablo Cesar, K. Chorianopoulos. The evolution of TV systems, content, and users towards interactivity. *Foundations and Trends in Human-Computer Interaction 2*, 279–373, 2009.

Pablo Cesar, D. Geerts, K. Chorianopoulos (editors). Social Interactive Television: Immersive Shared Experiences and Perspectives. IGI Global Publishing. 2009.

Ronald Cramer

Career

2004 –	Group leader PNA5 – Cryptology
2004 –	Full professor Leiden University

Research

Cryptology: foundations, mathematical aspects, applications. Computational number theory and geometry, algorithms, discrete mathematics.

Selected awards and honors

2006	Vici Innovational Research Grant NWO
2005	Membership De Jonge Akademie
1998	Christiaan Huygens Prijs

Selected academic activities

2005	Lecturer Dutch National Master's Program in Mathematics

Recent publications

R.J.F. Cramer, D. Hofheinz, E. Kiltz. A twist on the Naor-Yung paradigm and its application to efficient CCA-secure encryption from hard search problems. *Proceedings of IACR Theory of Cryptography Conference 2010*, 2010.

R.J.F. Cramer, I.B. Damgard. Amortized complexity of zero knowledge protocols. *Proceedings of Annual IACR CRYPTO 2009 (29), Lecture Notes in Computer Science 5677*, 177–191, 2009.

I. Cascudo, H. Chen, R.J.F. Cramer, Ch. Xing. Asymptotically good ideal linear secret sharing schemes with strong multiplication over any fixed finite field. *Proceedings of Annual IACR CRYPTO 2009 (29), Lecture Notes in Computer Science 5677*, 466–486, 2009.

R.J.F. Cramer (editors). Public Key Cryptography – PKC 2008. *International Workshop on Practice and Theory in Public Key Cryptography, Lecture Notes in Computer Science 4939*, 1–397 Springer, 2008.

R.J.F. Cramer, V. Daza, J.L. Gracia, J. Jimenez Urroz, G. Leander, J. Marti-Farre, C. Padro. On codes, matroids and secure computation from linear secret sharing schemes. *IEEE Transactions on Information Theory 54*, 2644–2657, 2008.

Daan Crommelin

Career

1998 – 2002	PhD student, Royal Netherlands Meteorological Institute (KNMI) and Mathematics Department, Utrecht University
2003 – 2006	Postdoc and Courant Instructor, Courant Institute of Mathematical Sciences, New York University
2006 –	Scientific staff member MAC1 – Dynamical Systems and Numerical Analysis

Research

Daan Crommelin works in the group Computational and Stochastic Dynamics at CWI. His research focuses on stochastic methods for multiscale dynamical systems, estimation of stochastic models and applications in atmosphere-ocean science. Recent research topics include stochastic parameterization of subgrid scale processes in numerical models, estimation of Markov processes from multiscale data, and analysis of metastability in atmospheric datasets using hidden Markov models.

Selected academic activities

2009	Organizer Workshop Mathematical challenges in climate science
2008	Member program committee Dynamics Days Europe 2008
2007	Organizer Minisymposium on Nonlinear Low-Frequency Variability in Atmosphere, Ocean and the Climate System
2006	Organizer Minisymposium on Dynamical Systems Theory and ULFV in the Atmosphere

Selected publications

D.T. Crommelin, E. Vanden-Eijnden. Data-based inference of generators for Markov jump processes using convex optimization. *Multiscale Modeling and Simulation 7*, 1751–1778, 2009.

A.J. Majda, C. Franzke, D.T. Crommelin. Normal forms for reduced stochastic climate models. *Proceedings of the National Academy of Sciences of the United States of America 106*, 3649–3653, 2009.

D.T. Crommelin, E. Vanden-Eijnden. Subgrid-scale parameterization with conditional Markov chains. *Journal of the Atmospheric Sciences 65*, 2661–2675, 2008.

A.J. Majda, C. Franzke, A. Fischer, D.T. Crommelin. Distinct metastable atmospheric regimes despite nearly Gaussian statistics: A paradigm model. *National Academy of Sciences USAProceedings of the National Academy of Sciences of the United States of America*, 8309–8314, 2006.

D.T. Crommelin, E. Vanden-Eijnden. Reconstruction of diffusions using spectral data from timeseries. *Communications in Mathematical Sciences 4*, 651–668, 2006.

Ute Ebert

Career

1980 – 1987	Study of Physics at University Heidelberg, Germany. Fellow of Studienstiftung des Deutschen Volkes
1987 – 1988	Minerva-Fellowship at Hebrew University Jerusalem
1988 – 1994	PhD student and teaching assistant, Universität Essen
1994 – 1998	Postdoc at Instituut Lorentz, Leiden University
1998 – 2001	Project leader MAS1 – Dynamical Systems and Numerical Analysis
2002 –	Full professor of Physics at Eindhoven University of Technology (0.2 fte.)
2002 –	Group leader MAC3 – Multiscale Modelling and Nonlinear Dynamics

Research

Ute Ebert and her collaborators presently focus on multiscale plasma modeling, in particular, on the dynamics of sparks and lightning. Her CWI group concentrates on modeling and on the numerical and analytical aspects of calculations on multiple scales (from single electron dynamics up to the macroscopic discharge channel trees). This research is embedded in multidisciplinary projects together with applied plasma physics and power electrical engineering at TU Eindhoven and with an international network of geophysicists where Ebert also contributes to planning and interpreting experiments and observations.

Selected awards and honors

2006	Membership Koninklijke Hollandsche Maatschappij der Wetenschappen
2004	Minerva Prijs (FOM)

Selected academic activities

2011	Co-organizer Gaseous Electronics Conference (GEC)
2010	Organizer European workshop EM Coupling of the Atmosphere with Near-Earth Space E-CANES
2009 – 2014	Member program board STW program Building in Transient Plasmas
2009 – 2014	Member program board FOM program Active Control of MHD Modes in Burning Plasmas
2008	Member review committee Research Unit Physics of Microplasmas at Univ. Bochum, Germany
2008	Guest editor Cluster Issue on 'Streamers, Sprites and Lightning' in *J. Phys. D*
2005 – 2010	Member steering committee Research School CPS

Selected publications

Ute Ebert, F. Brau, G. Derks, W. Hundsdorfer, C.-Y. Kao, C. Li, A. Luque, B.J. Meulenbroek, S. Nijdam, V. Ratushna, L. Schäfer, S. Tanveer. Multiple scales in streamer discharges, with an emphasis on moving boundary approximations. *Nonlinearity 24*, C1–C26, 2011.

Ute Ebert, S. Nijdam, C. Li, A. Luque, T.M.P. Briels, E.M. van Veldhuizen. Review of recent results on streamer discharges and their relevance for sprites and lightning. *Journal of Geophysical Research 115*, A00E43, 1–13, 2010.

C. Li, Ute Ebert, W. Hundsdorfer. 3D hybrid computations for streamer discharges and production of runaway electrons. *Journal of Physics D: Applied Physics 42*, 202003, 2009.

A. Luque, Ute Ebert. Emergence of sprite streamers from screening-ionization waves in the lower ionosphere. *Nature Geoscience 2*, 757–760, 2009.

Ute Ebert, W. van Saarloos. Front propagation into unstable states: universal algebraic convergence towards uniformly translating pulled fronts. *Physica D, Nonlinear Phenomena 146*, 1–99, 2000.

Jan van Eijck

Career

1984 – 1987	Senior lecturer Computational Linguistics, Tilburg University
1987 – 1989	Senior researcher, SRI International, Cambridge, UK
1989 – 2003	Project leader INS0 – Standardization and Knowledge Transfer
1990 –	Professor Computational Linguistics, Utrecht University
1997 – 2002	Scientific Director, Dutch Research School in Logic (OzsL)
2004 –	Scientific staff member SEN1 – Software Analysis and Transformation

Research

Jan van Eijck does research in applications of logic in linguistics and in formal theories of communication. His current interests are the logic of knowledge and communication, epistemic model checking, and computational semantics with functional programming.

Selected awards and honors

2006	NIAS Fellowship

Selected academic activities

2009	Organizer Amsterdam Colloquium, Workshop on natural logic
2008	Co-organizer Lorentz Workshop – Logic and information security
2006	Co-organizer Lorentz Workshop – Games, action and social software

Selected publications

D.J.N. van Eijck, H. Kamp. Discourse representation in context. *Handbook of Logic and Language, Second Edition*, 2011.

D.J.N. van Eijck. The language of social software. *Synthese 177*, 2010.

D.J.N. van Eijck, C. Unger. Computational semantics with functional programming. Cambridge University Press. 2010.

J. van Benthem, D.J.N. van Eijck, B. Kooi. Logics of communication and change. *Information and Computation 204*, 1620–1662, 2006.

Serge Fehr

Career

2004 – 2006	Scientific staff member/postdoc PNA5 – Cryptology
2007 –	Scientific staff member PNA5 – Cryptology

Research

Theory and mathematical foundations of cryptology, with an emphasis on information-theoretic and quantum cryptography, but also including the design and analysis of multi-player protocols, zero-knowledge proofs, and public-key cryptography.

Selected awards and honors

2008	NWO Open Competition
2005	Veni Innovational Research Grant NWO

Recent publications

S. Fehr, D. Hofheinz, E. Kiltz, H. Wee. Encryption schemes secure against chosen-ciphertext selective opening attacks. *Proceedings of IACR Eurocrypt 2010, Lecture Notes in Computer Science 6110*, 381–402, 2010.

S. Fehr. Quantum cryptography. *Foundations of Physics 40*, 494–531, 2010.

N.J. Bouman, S. Fehr. Sampling in a quantum population, and applications. *Advances in Cryptology – CRYPTO 2010*, 724–741, 2010.

I.B. Damgard, S. Fehr, C. Luneman, L. Salvail, C. Schaffner. Improving the security of quantum protocols via commit-and-open. *Advances in Cryptology*, 408–427, 2009.

S. Fehr, C. Schaffner. Composing quantum protocols in a classical environment. *Proceedings of Theory of Cryptography Conference 2009 (TCC), Lecture Notes in Computer Science 5444*, 350–367, 2009.

Jason Frank

Career

2000 – 2006	Scientific staff member MAS1 – Dynamical Systems and Numerical Analysis
2007 –	Group leader MAC1 – Dynamical Systems and Numerical Analysis
2010 –	Full professor University of Amsterdam

Research

Jason Frank's research is in the fields of numerical analysis and dynamical systems. It addresses algorithms for simulation of ordinary and partial differential equations, with applications to weather prediction, climate, oceanography, and most recently energy science. His research focuses on the dynamical properties of numerical methods, such as conservation laws and symmetries, and the meaning of these for simulation. This subject is addressed in the field geometric numerical integration. Current research combines statistics with numerical simulations, understanding how numerical methods influence the statistics of the simulation data, how simulations can be corrected to produce consistent statistics, and how one can treat uncertainty in simulations. Specific topics:

- The statistical mechanics of discretizations, and the statistical accuracy of numerical methods.
- Thermostat closures for PDE models
- The Hamiltonian particle-mesh method, a Lagrangian-based discretization for geophysical fluids.
- Multisymplectic discretizations and their properties.
- Discrete local (energy) conservation laws, group velocity, and spurious numerical reflections on nonuniform grids.
- Symplectic and multisymplectic methods for ferromagnetic waves.

Selected awards and honors

2002	Veni Innovational Research Grant NWO

Selected academic activities

2011 –	Member program board Mathematics Cluster NDNS+
2008 –	Member editorial board *SIAM Journal on Scientific Computing*

Selected publications

S. Dubinkina, J.E. Frank. Statistical relevance of vorticity conservation with the Hamiltonian particle-mesh method. *Journal of Computational Physics 229*, 2634–2648, 2010.

S. Dubinkina, J.E. Frank, B.J. Leimkuhler. Simplified modelling of a thermal bath, with application to a fluid vortex system. *Multiscale Modeling and Simulation 8*, 1882–1901, 2010.

S. Dubinkina, J.E. Frank. Statistical mechanics of Arakawa`s discretizations. *Journal of Computational Physics 227*, 1286–1305, 2007.

J.E. Frank, B.E. Moore, S. Reich. Linear PDEs and numerical methods that preserve a multi-symplectic conservation law. *SIAM Journal on Scientific Computing 28*, 260–277, 2006.

Bert Gerards

Career

1984 – 1989	Assistant professor Tilburg University
1989 – 1996	Scientific staff member BS1 – Combinatorial Optimization and Algorithmics
1997 – 2005	Group leader PNA1 – Algorithms, Combinatorics and Optimization
1999 – 2009	Professor Eindhoven University of Technology
2005 – 2009	Leader Scientific Cluster PNA – Probability, Networks and Algorithms
2008 – 2012	Professor University of Waterloo
2009 –	Scientific staff member PNA1 – Algorithms, Combinatorics and Optimization
2010 – 2012	Professor Maastricht University

Research

I work in combinatorial optimization, an area on the interface of mathematics and computer science that seeks to find efficient algorithms for discrete computational problems. My main research interest is the structure of minor closed classes of matroids. With Jim Geelen and Geoff Whittle, I work on generalizing Robertson and Seymour's Graph Minor Theory to matroids. Two of our main targets are the conjectures by Robertson and Seymour that any minor-closed property can be tested in polynomial time for matroids representable over a fixed finite field and that the matroids representable over a fixed finite field are well-quasi-ordered by minors. Understanding structure may also help in reaching our third major target: Rota's conjecture.

Selected awards and honors

2003	Fulkerson Prize

Selected academic activities

2010	Organizer Workshop on Graphs and Matroids
2008	Co-organizer Workshop on Graphs and Matroids
2008 – 2010	Member advisory board Lorentz Center
2007	Member program committee Eurocomb 2007
2007	Co-organizer ADONET-CIRM School on Graphs and Algorithms
2005 – 2007	Chair steering committee MPS Conference on Integer Programming and Combinatorial Optimization
2003 – 2007	Co-editor *Mathematical Programming A*
2003 – 2006	Member-at-large council of the Mathematical Programming Society
2002 – 2005	Member steering committee MPS Conference on Integer Progamming and Combinatorial Optimization
2001 – 2005	Member of the board Landelijk Netwerk Mathematische Besliskunde
1999 – 2007	Editor *SIAM Journal on Discrete Mathematics*

Selected publications

J. Geelen, B. Gerards, G. Whittle. Tangles, tree-decompositions, and grids in matroids. *Journal of Combinatorial Theory – Series B 99*, 657–667, 2009.

J. Geelen, B. Gerards, B. Reed, P.D. Seymour, A. Vetta. On the odd-minor variant of Hadwiger's conjecture. *Journal of Combinatorial Theory – Series B 99*, 20–29, 2009.

J. Geelen, B. Gerards. Excluding a group-labelled graph. *Journal of Combinatorial Theory – Series B 99*, 247–253, 2009.

J. Geelen, B. Gerards, G. Whittle. Excluding a planar graph from GF(q)-representable matroids. *Journal of Combinatorial Theory – Series B 97*, 971–998, 2007.

M. Chudnovski, J. Geelen, B. Gerards, L. Goddyn, M. Lohman, P.D. Seymour. Packing non-zero A-paths in group-labeled graphs. *Combinatorica 26*, 521–532, 2006.

Peter Grünwald

Career

1999 –	Scientific staff member PNA6 – Algorithms and Complexity
2008 –	Full professor Leiden University

Research

Peter Grünwald's research interests lie where statistics, computer science and information theory meet: theories of learning from data. More specifically, he mainly works on (1) the minimum description length (MDL) principle and its variants – he is author of the comprehensive book The Minimum Description Length Principle, MIT Press, June 2007; (2) statistical algorithms for and analysis of the realistic situation in which 'all models are wrong, yet some are useful' – from 2005 to 2010 he headed the NWO Vidi project called 'learning when all models are wrong'. Recently, he has started working on (3) the risky but sometimes inevitable use of statistics in the courtroom. In his current Vici project 'safe statistics', (1), (2) and (3) all play a significant role.

Selected awards and honors

2010	Vici Innovational Research Grant NWO
2010	Van Dantzig Prijs
2005	Vidi Innovational Research Grant NWO

Selected academic activities

2010	Program Chair International Conference on Uncertainty in Artificial Intelligence UAI
2008 –	Member steering committee PASCAL II Network of Excellence
2008 – 2010	Member NWO Reviewing Committee Veni Innovation Grant Proposals
2007	Guest editor *EURASIP Journal on Bioinformatics and Systems Biology on Information-theoretic Methods for Bioinformatics*
2006	Member program committee AAAI 2006
2004 – 2008	Member steering committee PASCAL Network of Excellence
2004 – 2008	Coordinator PASCAL Conference and Workshop Organization Program

Selected publications

R.D. Gill, P.D. Grünwald. An algorithmic and a geometric characterization of coarsening at random. *Annals of Statistics 36*, 2409–2422, 2008.

Tim van Erven, P.D. Grünwald, S. de Rooij. Catching up faster in Bayesian model selection and model averaging. 2008.

P.D. Grünwald. The minimum description length principle, MIT Press, 2007.

P.D. Grünwald, J. Langford. Suboptimal behavior of Bayes and MDL in classification under misspecification. *Machine Learning 66*, 119–149, 2007.

T. Roos, H. Wettig, P.D. Grünwald, P. Myllymaki, H. Tirri. On discriminative Bayesian network classifiers and logistic regression. *Machine Learning 59*, 267–296, 2005.

Lynda Hardman

Career

1992 – 1996	Scientific staff member AA3 – Interoperable multimedia systems
1997 – 2010	Group leader INS2 – Interactive Information Access
2009 –	Full professor University of Amsterdam
2011 –	Leader Scientific Cluster INS – Information Systems

Research

Hardman was head of the Interactive Information Access research group for the duration of the evaluation period. Current research interests include creating linked-data driven, user-centric applications for exploring media content and investigating user-centric interaction design in the context of developing technologies. Her current main research project is Fish4Knowledge, investigating user interfaces for exploring repositories of fish videos for biologists. Previous projects include EventMedia within the PetaMedia network of excellence, K-Space NoE and MultimediaN/E-Culture. She is part-time professor of multimedia interaction at the University of Amsterdam, in the Informatics Institute.

Selected academic activities

2010	Organizer Summer School on Multimedia Semantics SSMS 2010
2010	Keynote lecture ICSC 2010
2008	Guest editor *ERCIM News*: The Future Web
2008	Program Chair International Conference on Digital Media Technologies (SAMT '08)
2008 – 2009	Guest editor Special Issue on AI and Cultural Heritage, *IEEE Intelligent Systems*, Vol. 24, nr. 2
2007 –	Member Information and Communication Panel for ERC Starting Independent Researchers Grants
2007 – 2008	Guest editor *ACM Multimedia Systems* Journal on Canonical Processes of Media Production
2006 –	Member editorial board *New Review of Hypermedia and Multimedia* (NRHM)
2006 –	Member editorial board *Journal of Web Semantics*

Selected publications

R. Arndt, R. Troncy, S. Staab, Lynda Hardman. COMM: A core ontology for multimedia annotation. *Handbook on Ontologies*, 2009.

A.K. Amin, S. Townsend, Jacco van Ossenbruggen, Lynda Hardman. Fancy a drink in Canary Wharf? A user study on location-based mobile search. *Proceedings of IFIP TC13 International Conference on Human-Computer Interaction 2009 (12), Lecture Notes in Computer Science 5726*, 736–749, 2009.

Lynda Hardman, Z. Obrenovic, F.-M. Nack, Brigitte Kerhervé, Kurt Piersol. Canonical processes of semantically annotated media production . *ACM Multimedia Systems Journal 14*, 327–340, 2008.

S. Bocconi, F.-M. Nack, Lynda Hardman. Automatic generation of matter-of-opinion video documentaries. *Journal of Web Semantics 6*, 139–150, 2008.

A.K. Amin, Jacco van Ossenbruggen, Lynda Hardman, A. van Nispen. Understanding cultural heritage experts' information seeking needs. *Proceedings of the 8th ACM/IEEE joint Conference on Digital Libraries*, 2008.

Ivan Herman

Career

1988 –	Scientific staff member SEN5 – Distributed and Interactive Systems

Research

My principal work is related to the Semantic Web. The Semantic Web's goal is to extend the current Web towards an environment where not only documents but also all kinds of Data can be published, integrated, and used for various applications. To achieve this large scale data integration, this "Web of Data", such diverse fields have to be called upon as database technologies, mathematical logic, knowledge representation, programming APIs, or user interfaces. Also, in order to achieve a really widespread adoption, the standardization of the relevant technologies is absolutely necessary.

As a member of the Word Wide Web Consortium team, and in my role of Semantic Web Activity Lead, I coordinate all the Semantic Web related standardization activities related to the Semantic Web. This requires a general overview of the field as a whole, and I am instrumental in paving the future evolution of this technology. Additionally, I work on particular technologies within the area, eg, the logical foundation of Semantic Web (RDF), its adaptation and usage in hypertext technologies like HTML (RDFa), or on the ways to bind relational database technologies to RDF.

Selected academic activities

2012	Organizer International World Wide Web Conference, 2012
2010	Organizer W3C Workshop – RDF Next Steps
2008	Organizer International World Wide Web Conference, 2008
2008 –	Member Semantic Web Science Association
2006 –	Member International World Wide Web Conference Committee (IW3C2)

Selected publications

B. Adida, M. Birbeck, I. Herman. Semantic annotation and retrieval: Web of hypertext – RDFa and microformats. *Semantic Web Handbook*, 2010.

B. Adrian, H. Jörn, I. Herman, M. Sintek, A. Dengel. Epiphany: Adaptable RDFa generation linking the web of documents to the web of data. *Knowledge Engineering and Knowledfge Management by the Masses*, 2010.

I. Herman. OWLRL – RDFS and OWL 2 RL generator service. 2008.

V. Kashyap, K.-H. Cheung, D. Doherty, M. Samwald, M.S. Marshall, J. Luciano, S. Stephens, I. Herman, B. Hookway. Semantic web and beyond computing for human experience. *Ontology-Based Data Integration For Biomedical Research, Semantic Web And Beyond Computing for Human Experience 6*, 2008.

I. Herman, M.S. Marshall, et al. An ontology-based approach for data integration - an application in biomedical research. *Semantic Web, Semantic Web And Beyond Computing for Human Experience 6*, 97–122, 2008.

D. Berrueta, E.J. Labra, I. Herman. XSLT+SPARQL : Scripting the semantic web with SPARQL embedded into XSLT stylesheets. 2008.

I. Herman. pyRdfa – RDFa distiller and parser. 2007.

A. Ruttenberg, T. Clark, W. Bug, M. Samwald, O. Bodenreider, D. Doherty, H. Chen, K. Forsberg, Y. Gao, V. Kashyap, J. Kinoshita, J. Luciano, M.S. Marshall, C. Ogbuji, J. Rees, S. Stephens, E. Wu, D. Zaccagninni, T. Hongsermeier, E. Neumann, I. Herman, K.-H. Cheung. Advancing translational research with the Semantic Web. *BMC Bioinformatics 8*, 1–16, 2007.

Willem Hundsdorfer

Career

1984 –	Scientific staff member MAC3 – Multiscale Modelling and Nonlinear Dynamics

Research

Willem Hundsdorfer does research in the field of numerical mathematics with applications in scientific computing. The focus is on time stepping methods for partial differebtial equations and large systems of ordinary differential equations. Applications concern streamer propagations for electrical discharges.

Selected academic activities

2009	Co-organizer NUMDIFF 12
2008	Co-organizer Workshop Numerical Modelling of Complex Dynamical Systems
2007 –	Editor *Applied Numerical Mathematics*

Selected publications

C. Li, Ute Ebert, W. Hundsdorfer. Spatially hybrid computations for streamer discharges with generic features of pulled fronts: I. Planar fronts. *Journal of Computational Physics 229*, 200–220, 2010.

W. Hundsdorfer, V. Savcenco. Analysis of a multirate theta-method for stiff ODEs. *Applied Numerical Mathematics 59*, 693–706, 2009.

W. Hundsdorfer, A. Mozartova, M.N. Spijker. Stepsize conditions for boundedness in numerical initial value problems. *SIAM Journal on Numerical Analysis 47*, 3797–3819, 2009.

W. Hundsdorfer, S.J. Ruuth. IMEX extensions of linear multistep methods with general monotonicity. *Journal of Computational Physics 225*, 2016–2042, 2007.

V. Savcenco, W. Hundsdorfer, J.G. Verwer. A multirate time stepping strategy for stiff ODEs. *BIT : Numerical Mathematics 47*, 137–155, 2007.

Stratos Idreos

Career

1997 – 2003	Diploma in Computer Engineering, Technical University of Crete
2002 – 2005	Teaching and Research assistant, Intelligent Systems Laboratory, Technical University of Crete
2003 – 2005	Master in Computer Engineering, Technical University of Crete
2005 – 2009	PhD student INS1 – Database Architectures
2009 – 2010	Research staff, EPFL, Switzerland
2009	Research intern, Microsoft Research, Redmond, USA
2010 – 2015	Scientific staff member/tenure track INS1 – Database Architectures
2010	Research intern, IBM Research, San Jose

Research

Adaptive Indexing, database architectures, column-store query processing, scientific data management.

Selected awards and honors

2010	"Distinguished Scientist Excelling in Research Abroad" from the Hellenic Ministry of National Defense
2005	Best Student Paper Award. In 9th European Conference on Research and Advanced Technology for Digital Libraries (ECDL), Vienna, Austria, September 2005

Selected publications

S. Idreos, I. Alagiannis, R. Johnson, A. Ailamaki. Here are my data files. Here are my queries. Where are my results? *Proceedings of Biennial Conference on Innovative Data Systems 2011*, 2011.

S. Idreos, M.L. Kersten, S. Manegold. Self-organizing tuple reconstruction in column-stores. *Proceedings of the ACM SIGMOD International Conference on Management of Data*, 297–308, 2009.

S. Idreos, M.L. Kersten, S. Manegold. Database cracking. *Proceedings of the Biennial Conference on Innovative Data Systems Research (CIDR)*, 68–78, 2007.

S. Idreos, M.L. Kersten, S. Manegold. Updating a cracked database. *Proceedings of the ACM SIGMOD International Conference on Management of Data*, 413–424, 2007.

S. Idreos, C. Tryfonopoulos, M. Koubarakis. Distributed evaluation of continuous equi-join queries over large structured overlay networks. *Proceedings of the 22nd IEEE International Conference on Data Engineering*, 43–54, 2006.

Martin Kersten

Career

1985 – 2010	Group leader INS1 – Database Architectures
1997 – 2010	Leader Scientific Cluster INS – Information Systems
2000 – 2009	Group leader INS0 – Standardization and Knowledge Transfer
2011 –	CWI Fellow INS1 – Database Architectures

Research

The research focus is database architectures, query optimization and their use in scientific databases. He is an architect of the MonetDB system, a world-wide renowned open-source column store for data warehouses. He has been (co-) founder of several successful CWI spin-offs.

Selected awards and honors

2011	CIDR 2011, the most intuitive "Gong Show" idea
2010	CWI Fellow
2009	VLDB 10-year Best Paper Award
2009	Best Paper Runner Up SIGMOD 2009

Selected academic activities

2009	Program chair International Conference on Extending Database Technology EDBT
2008	Program chair International Conference on Data Engineering
2006	Chair International Conference on Very Large Data Bases VLDB
2005	Organizer International Conference on Very Large Data Bases VLDB
2005	Co-organizer International Conference on Multimedia and Expo ICME

Recent publications

L. Sidirourgos, M.L. Kersten, P.A. Boncz. SciBORQ: Scientific data management with Bounds On Runtime and Quality. *Proceedings of the biennial Conference on Innovative Data Systems Research 2011*, 2011.

R.A. Goncalves, M.L. Kersten. The data cyclotron query processing scheme. *Proceedings of International Conference on Extending Database Technology 2010 (EDBT 13)*, 75–86, 2010.

P.W. Frey, R.A. Goncalves, M.L. Kersten, J. Teubner. A spinning join that does not get dizzy. *Proceedings of International Conference on Distributed Computing Systems 2010 (ICDCS 30)*, 283–292, 2010.

M. Ivanova, M.L. Kersten, N.J. Nes, R.A. Goncalves. An architecture for recycling intermediates in a column-store. *ACM Transactions on Database Systems 35*, 2010.

P. Svensson, P.A. Boncz, M. Ivanova, M.L. Kersten, N.J. Nes, D. Rotem. Emerging database systems in support of scientific data. *Scientific Data Management: Challenges, Technology, and Deployment*, 235–277, 2010.

Gunnar Klau

Career

1997 – 2001	PhD Computer Science (Max Planck Institute for Informatics), Saarbrücken
2001 – 2004	University assistant at Vienna University of Technology
2001	Postdoc at Mitsubishi Electric Research Laboratories, Cambridge, USA
2002 – 2003	Postdoc at Zuse Institut Berlin
2004 – 2008	Assistant professor Freie Universität Berlin
2004 – 2008	Member of the DFG Center Matheon, Berlin
2008 – 2009	Scientific staff member LS – Life sciences
2010 –	Group leader MAC4 – Life Sciences

Research

Gunnar Klau is leader of the group Life Sciences. His research focuses on combinatorial algorithms and mathematical models for the analysis of biological and biomedical data, amongst others, for cancer research.

Selected awards and honors

2008	Outstanding Paper Award ISMB (Intelligent Systems for Molecular Biology), Toronto July 2008

Selected academic activities

2011	Member of program committee WABI '11 – 11th Workshop on Algorithms in Bioinformatics
2011	Member of program committee SEA '11 – 10th International Symposium on Experimental Algorithms
2010	Scientific editor *ERCIM News*, 82
2010	Member of program committee ESA '10 – 18th Annual European Symposium on Algorithms
2010	Co-organizer CWI-NKI workshop 2010
2010 – 2011	Member panel of experts Agence Nationale de la Recherche

Selected publications

I. Wohlers, F.S. Domingues, G.W. Klau. Towards optimal alignment of protein structure distance matrices. *Bioinformatics 26*, 2273–2280, 2010.

E. Althaus, G.W. Klau, O. Kohlbacher, H.P. Lenhof, K. Reinert. Integer linear programming in computational biology. *Lecture Notes in Computer Science 5760*, 199–218, 2009.

G.W. Klau. A new graph-based method for pairwise global network alignment. *BMC Bioinformatics 10*, 2009.

S. Boecker, S. Briesemeister, G.W. Klau. Exact algorithms for cluster editing: Evaluation and experiments. *Algorithmica*, 1–19, 2009.

M. Dittrich, G.W. Klau, A. Rosenwald, T. Dandekar, et al. Identifying functional modules in protein-protein interaction networks: An integrated exact approach. *Bioinformatics 24*, 223–231, 2008.

Paul Klint

Career

1972 – 1996	CS – Computer Systems & Telemathics
1997 –	Group leader SEN1 – Software Analysis and Transformation
2002 –	Leader Scientific Cluster SEN – Software Engineering

Research

Klint's research area is software engineering with particular emphasis on generic programming language technology (how to create language-parameteric methods that apply to all programming languages?), domain-specific languages (how to create dedicated languages that make software development in a specific domain more effective?), analysis and renovation of software (how to understand and improve existing software?), and open source development (how to create communities of programmers?). He is an active opinion leader on intellectual property rights (IPR) and on software and technology transfer and has also been involved in the creation of startup companies.

Selected academic activities

2008 –	Member working group ERCIM EVOL
2006 –	Visiting professor / researcher University London
2006 –	Treasurer European Association for Programming Languages and Systems
2006 –	Editor *Science of Computer Programming* 55(1-2)
2005 –	Member steering committee ETAPS
2005 – 2009	Member scientific directorate Schloss Dagstuhl
2005 –	Member program committee NWO Jacquard Research Programme
2005 –	Member program board Lorentz Center Leiden
2005 –	Chair advisory board Informatica (ACI)
2005 – 2008	Chair organization Informaticaonderzoek Platform Nederland (IPN)
2005 – 2006	President organization European Association for Programming Languages and Systems
2005 – 2006	Member board of directors Institute for Programming and Algorithms (IPA)

Selected publications

P. Klint, T. van der Storm, J.J. Vinju. EASY meta-programming with Rascal. *Proceedings of the Summer School on Generative and Transformational Techniques in Software Engineering 2009, Lecture Notes in Computer Science 6491*, 222–289, 2011.

P. Klint, T. van der Storm, J.J. Vinju. On the impact of DSL tools on the maintainability of language implementations. *Proceedings of Workshop on Language Descriptions, Tools and Applications 2010*, 2010.

W.J. Fokkink, P. Klint, B. Lisser, Y.S. Usenko. Automated translation and analysis of a ToolBus script for auctions.

Proceedings 3rd Symposium on Fundamentals of Software Engineering – FSEN'09, Lecture Notes in Computer Science 5961, 308–323, 2009.

P. Klint, J.J. Vinju, T. van der Storm. Language design for meta-programming in the software composition domain. *Proceedings of the 8th International Conference on Software Composition 2009, Lecture Notes in Computer Science 5634*, 1–4, 2009.

J.A. Bergstra, P. Klint. The software invention cube: A classification scheme for software inventions. *Journal of Intellectual Property Rights 13*, 293–300, 2008.

Barry Koren

Career

1987 – 1996	Scientific staff member NM – Numerical Mathematics
1997 – 2009	Group leader MAS2 – Scientific Computing and Control Theory
2002 – 2008	Full professor Delft University of Technology
2008 –	Full professor Leiden University
2010 –	Leader Scientific Cluster MAC – Modelling, Analysis and Computing

Research

Numerical mathematics, particularly computational fluid dynamics, with as current topics: (i) development of computational method for simulation of wind-farm aerodynamics (for Energy Research Centre of the Netherlands), (ii) development of computational tools for modelling, control and mitigation of instabilities (edge localized modes) in tokamak plasmas (for International Thermonuclear Experimental Reactor), and (iii) development of immersed-boundary method for fluid-structure-interaction problems.

Selected awards and honors

2008	Phd student won ECCOMAS Award for Best PhD Thesis
2006	MSc student won Best MSc Award

Selected academic activities

2010	Visiting professor University of Nice - Sophia-Antlpolis, Department of Mathematics
2010 –	Member Management Team CWI
2009 –	Member advisory boards Lorentz Center
2008 –	Vice-chairman CFD Committee ECCOMAS
2007 –	Member editorial board *Journal of Computational Physics*
2003 –	Member editorial board *Mathematics and Computers in Simulation*

Selected publications

J.J. Kreeft, B. Koren. A new formulation of Kapila's five-equation model for compressible two-fluid flow, and its numerical treatment. *Journal of Computational Physics 229*, 6220–6242, 2010.

B. Koren, C. Vuik (editors). Advanced Computational Methods in Computational Science and Engineering, Springer, 2009.

J.A.S. Witteveen, B. Koren, P.G. Bakker. An improved front tracking method for the Euler equations. *Journal of Computational Physics 224*, 712–728, 2007.

J. Wackers, B. Koren. Multigrid solution for the steady RANS equations. Journal of Computational Physics 226, 1784–1807, 2007.

G. Carpentieri, B. Koren, M.J.L. van Tooren. Adjoint-based aerodynamic shape optimization on unstructured meshes. *Journal of Computational Physics 224*, 267–287, 2007.

Fons Kuijk

Career

1983 – 2001	Scientific staff member PNA4 – Signals and Images
2000 – 2002	Advisor Philips Research Lab, Computer Graphics
2001 – 2003	Director R&D Epictoid B.V.
2001 – 2003	Project member FD – Financial Department
2004 – 2005	Scientific staff member FD – Financial Department
2005 – 2007	Director R&D CharToon Software B.V.
2007 – 2007	Scientific programmer MAS2 – Scientific Computing and Control Theory
2008 –	Scientific staff member SEN5 – Distributed and Interactive Systems
2008 –	W3C Office

Research

Fons Kuijk is part of the research group Distributed and Interactive Systems, active in the project Ta2 (Together Anywhere, Together Anytime). His research interests include User Centric Media, Multi Modal Interfaces, Computer Graphics, Image Processing and Hardware Architectures.

Selected academic activities

1988	Organizer Eurographics Workshop on Graphics Hardware
1987	Organizer Eurographics Workshop on Graphics Hardware
1987 – 1989	Editor of series *Advances In Computer Graphics Hardware*

Selected publications

R.L. Guimarães, A.A.M. Kuijk. A pan/zoom tool for telling stories with photos. 2009.

A.A.M. Kuijk, R.L. Guimarães, Pablo Cesar, D.C.A. Bulterman. Adding dynamic visual manipulations to declarative multimedia documents. *Proceedings of ACM Symposium on Document Engineering 2009*, 2009.

A.A.M. Kuijk, R.L. Guimarães, Pablo Cesar, D.C.A. Bulterman. From photos to memories: A user-centric authoring tool for telling stories with your photos. *Proceedings of International User Centric Media Conference 2009*, 2009.

G. Caenen, G. Frederix, A.A.M. Kuijk, E.J. Pauwels, B.A.M. Schouten. Show me what you mean! PARISS: A CBIR-interface that learns by example. *Proceedings of Visual 2000: Fourth International Conference on Visual Information Systems*, 257–268, 2000.

A.A.M. Kuijk. On a layered object-space based architecture for interactive raster graphics. PhD thesis, 1996.

A.A.M. Kuijk. Architectures for human-computer communication, 395–404, 1996.

Monique Laurent

Career

1988 – 1997	CNRS researcher (at Ecole Normale Supérieure, Paris, from 1992)
1997 – 2005	Scientific staff member PNA1 – Algorithms, Combinatorics and Optimization
2005 –	Group leader PNA1 – Algorithms, Combinatorics and Optimization
2009 – 2014	Full professor at Tilburg University

Research

Monique Laurent does research in combinatorial optimization. Beside journal articles she published one book and several extensive expository articles. In the recent years she is in particular interested in the use of semidefinite programming and algebraic techniques to design efficient approximations for hard combinatorial problems and, more generally, for polynomial optimization problems, where objective and constraints are polynomial functions.

Selected awards and honors

2003	Vidi Innovational Research Grant NWO

Selected academic activities

2010	Member organizing committee Trimester program on Modern Trends in Optimization and Its Application (IPAM – UCLA)
2010	Co-organizer Oberwolfach Seminar on Semidefinite Optimization: Theory, Algorithms and Applications
2010	Co-organizer International Workshop on High Performance Optimization Techniques
2009	Co-organizer Oberwolfach Seminar on New Trends in Algorithms for Real Algebraic Geometry
2007 –	Associate editor *SIAM Journal on Discrete Mathematics*
2001 –	Associate editor *SIAM Journal on Optimization*
2001 –	Associate editor *Mathematics of Operations Research*

Selected publications

M. Laurent. Sums of squares, moment matrices and optimization over polynomials. *Emerging Applications of Algebraic Geometry, The IMA Volumes in Mathematics and its Applications 149*, 157–270, 2009.

J.B. Lasserre, M. Laurent, P. Rostalski. Semidefinite characterization and computation of zero-dimensional real radical ideals. *Foundations of Computational Mathematics 8*, 607–647, 2008.

N. Gvozdenovic, M. Laurent. Computing semidefinite programming lower bounds for the (fractional) chromatic number via block-diagonalization. *SIAM Journal on Optimization 19*, 592–615, 2008.

M. Laurent. Strengthened semidefinite programming bounds for codes. *Mathematical Programming 109*, 239–261, 2007.

E. de Klerk, M. Laurent, P. Parrilo. A PTAS for the minimization of polynomials of fixed degree over the simplex. *Theoretical Computer Science 361*, 210–225, 2006.

Jan Karel Lenstra

Career

1969 – 1989	Researcher BS1 – Combinatorial Optimization and Algorithmics
1976	PhD, University of Amsterdam
1983 –	Professor University of Tilburg, Erasmus University, Eindhoven University of Technology, Georgia Institute of Technology
1997 – 2001	Scientific staff member PNA1 – Algorithms, Combinatorics and Optimization
1999 – 2002	Dean of Mathematics and Computer Science, Eindhoven University of Technology
2003 –	General Director – CWI

Research

Combinatorial optimization, in particular computational complexity, design and analysis of approximation algorithms and local search methods.

Selected awards and honors

2004	INFORMS Fellow
2003	IFORS Distinguished Lecturer
1997	EURO Gold Medal
1996	Harold Larnder Memorial Prize
1994	Paul Naor Lecturer

Selected academic activities

2009 –	Chair Committee on Mathematics in Primary Education of KNAW
2008 –	Member of the board Council for Sciences and Engineering of KNAW (Royal Netherlands Academy of Arts and Sciences)
2002 –	Editor-in-chief *Operations Research Letters*
1999 – 2001	Chair Royal Dutch Mathematical Society
1993 – 1998	Editor-in-chief *Mathematics of Operations Research*
1992 – 1995	Chair Mathematical Programming Society
1987 – 1993	Founding chair Landelijk Netwerk Mathematische Besliskunde

Selected publications

K.M.J. De Bontridder, B.V. Halldórsson, M.M. Halldórsson, C.A.J. Hurkens, J.K. Lenstra, R. Ravi, L. Stougie. Approximation algorithms for the test cover problem. *Mathematical Programming Series B 98*, 477–492, 2003.

D.P. Williamson, L.A. Hall, J.A. Hoogeveen, C.A.J. Hurkens, J.K. Lenstra, S.V. Sevast'janov, D.B. Shmoys. Short shop schedules. *Operations Research 45*, 288–294, 1997.

E.H.L. Aarts, J.K. Lenstra (editors). Local Search in Combinatorial Optimization. Wiley, Chichester. 1997.

J.K. Lenstra, D.B. Shmoys, É. Tardos. Approximation algorithms for scheduling unrelated parallel machines. *Mathematical Programming 46*, 259–271, 1990.

E.L. Lawler, J.K. Lenstra, A.H.G. Rinnooy Kan, D.B. Shmoys (editors). The Traveling Salesman Problem; A Guided Tour of Combinatorial Optimization. Wiley, Chichester. 1985.

M.A.H. Dempster, M.L. Fisher, L. Jansen, B.J. Lageweg, J.K. Lenstra, A.H.G. Rinnooy Kan. Analysis of heuristics for stochastic programming: results for hierarchical scheduling problems. *Mathematics of Operations Research 8*, 525–537, 1983.

E.L. Lawler, J.K. Lenstra, A.H.G. Rinnooy Kan. Generating all maximal independent sets; NP-hardness and polynomial-time algorithms. *SIAM Journal on Computing 9*, 558–565, 1980.

R.L. Graham, E.L. Lawler, J.K. Lenstra, A.H.G. Rinnooy Kan. Optimization and approximation in deterministic sequencing and scheduling: A survey. *Annals of Discrete Mathematics 5*, 287–326, 1979.

J.K. Lenstra, A.H.G. Rinnooy Kan, P. Bruckner. Complexity of machine scheduling problems. *Annals of Discrete Mathematics 1*, 343–362, 1977.

Robert van Liere

Career

1985 – 1999	Scientific staff member SEN1 – Software Analysis and Transformation
2000 – 2010	Group leader INS3 – Visualization and 3D User Interfaces
2004 –	Professor Eindhoven University of Technology
2011 –	Scientific staff member SEN1 – Software Analysis and Transformation

Research

Robert van Liere's research interests involve scientific visualization, virtual reality, and human-computer interaction. He has published more than 75 journal and conference papers in this area. From 2005, he has been advisor of 5 PhD students. Robert is Associate Editor of the journal *Computers & Graphics*, has has served on numerous program committees, and has been involved in the organization of various workshops. He is a member of the IEEE and EUROGRAPHICS and has been on the EUROGRAPHICS Executive Committee from 2002 till 2008.

Selected awards and honors

2010	Best paper award (3DUI 2010)
2009	Best paper award (VRST 2009)

Selected academic activities

2008	Organizer Eurographics Symposium on Virtual Environments EGVE
2008 –	Associate editor Elsevier *Computers & Graphics*
2007	Organizer Workshop Knowledge Assisted Visualization KAV
2007	Organizer Eurographics Symposium on Virtual Environments EGVE
2005 – 2008	Member program committee NWO-VIEW
2004 – 2008	Member assessment committee NWO-EW Informatica (BCI)
2003 – 2007	Member assessment committee NWO Molecuul tot Cel

Selected publications

L. Liu, J.-B. Martens, R. van Liere. Revisiting path steering for 3D manipulation tasks. *International Journal of Human-Computer Studies 69*, 170–181, 2011.

F.A. Smit, R. van Liere, B. Fröhlich. A programmable display layer for virtual reality system architectures. *IEEE Transactions on Visualization and Computer Graphics 16*, 28–42, 2010.

M. Chen, D.S. Ebert, R. van Liere, H. Hagen, R. Laramee, K.L. Ma, G. Scheuermann. Data, information, and knowledge in visualization. *IEEE Computer Graphics and Applications 29*, 12–19, 2009.

A. Broersen, R. van Liere, et al. Automated, feature-based image alignment for high-resolution imaging mass spectrometry of large biological samples. *Journal of the American Society for Mass Spectrometry 19*, 823–833, 2008.

K.J. Kruszynski, J.A. Kaandorp, R. van Liere. A computational method for quantifying morphological variation in scleractinian corals. *Coral Reefs 24*, 831–840, 2007.

Marie-Colette van Lieshout

Career

1989 – 1990	Junior staff member BS6 – Image analysis
1990 – 1994	Seconded BS4 – Image analysis and spatial stochastics
1994 – 1997	Lecturer University of Warwick
1997 –	Scientific staff member PNA2 – Probability and Stochastic Networks
2007 – 2011	Associate professor Eindhoven University of Technology

Research

Van Lieshout and her co-authors worked on stochastic geometry and its applications. The main strands of work were: development of new summary statistics for inhomogeneous, marked space time point processes with application to the assessment of earthquake risks, introduction and study of a new class of sequential point processes with a view to depth map calculation and tracking of objects in video data, the use of Gibbsian modifications of polygonal Markov fields and their discrete counterparts combined with new and efficient simulation methods for image segmentation.

Selected academic activities

2008 –	Associate editor *Bernoulli*

Selected publications

M.N.M. van Lieshout. Spatial point process theory. *Handbook of Spatial Statistics, Handbooks of Modern Statistical Methods*, 263–282, 2010.

M.N.M. van Lieshout. Applications of stochastic geometry in image analysis. *New Perspectives in Stochastic Geometry*, 427–450, 2010.

M.N.M. van Lieshout. Depth map calculation for a variable number of moving objects using Markov sequential object processes. *IEEE Transactions on Pattern Analysis and Machine Intelligence 30*, 1308–1312, 2008.

M.N.M. van Lieshout, T. Schreiber. Perfect simulation for length-interacting polygonal Markov fields in the plane. *Scandinavian Journal of Statistics 34*, 615–625, 2007.

M.N.M. van Lieshout. A J-function for marked point patterns. *Annals of the Institute of Statistical Mathematics 58*, 235–259, 2006.

Stefan Manegold

Career

1997 – 2003	PhD student INS1 – Database Architectures
2003 – 2010	Scientific staff member INS1 – Database Architectures
2011 –	Group leader INS1 – Database Architectures

Research

Stefan Manegold is a tenured researcher and leader of the database architectures group at CWI Amsterdam, the Netherlands. He received his PhD from the University of Amsterdam, The Netherlands, in 2002 and his Masters (Diplom) in Computer Science from the Technical University of Clausthal, Germany, in 1994. Manegold's research work comprises database architectures, query processing algorithms, and data management on modern hardware, as well as leveraging column-store database technology for efficient and scalable XML/XQuery processing, with a particular focus on optimization, performance, benchmarking, and testing. Manegold has co-authored more than 40 scientific publications, and recently received the VLDB 2009 10-year Best Paper Award together with his co-authors Peter Boncz and Martin Kersten. Stefan Manegold is a core member of the development team of the open-source column-oriented database system MonetDB, co-founder of MonetDB B.V., and co-founder of the DaMoN workshop series (co-located with SIGMOD since 2005). Manegold played a driving role in establishing the ACM SIGMOD Repeatability and Workability Evaluation, serving a committee member in 2008, co-chair in 2009 & 2010, and advisor in 2011.

Selected academic activities

2010	Co-organizer Repeatability & Workability Evaluation for ACM SIGMOD 2010
2009	Program chair Demonstration Programm of EDBT 2009
2008	Tutorial organizer Seminar Performance Evaluation in Database Research: Principles and Experience (at ICDE)
2007	Co-organizer Workshop ExpDB (with SIGMOD 2007)
2005	Organizer SIGMOD/DaMoN

Selected publications

G. Goetz, S. Idreos, H. Kuno, S. Manegold. Benchmarking adaptive indexing. *Proceedings of TPC Technology Conference on Performance Evaluation & Benchmarking 2010 (2)*, 2010.

S. Manegold, M.L. Kersten, P.A. Boncz. Database architecture evolution: Mammals flourished long before dinosaurs became extinct. *International Conference on Very Large Data Bases*, 2009.

S. Idreos, M.L. Kersten, S. Manegold. Self-organizing tuple reconstruction in column-stores. *Proceedings of the ACM SIGMOD International Conference on Management of Data*, 297–308, 2009.

R. Abdel Kader, P.A. Boncz, S. Manegold, M. van Keulen. ROX: Run-time optimization of XQueries. *ACM SIGMOD International Conference on Management of Data*, 2009.

L. Sidirourgos, R.A. Goncalves, M.L. Kersten, N.J. Nes, S. Manegold. Column-store support for RDF data management: not all swans are white. *International Conference on Very Large Data Bases*, 2008.

P.A. Boncz, M.L. Kersten, S. Manegold. Breaking the memory wall in MonetDB. *Communications of the ACM 51*, 77–85, 2008.

S. Idreos, M.L. Kersten, S. Manegold. Database cracking. *Proceedings of the Biennial Conference on Innovative Data Systems Research (CIDR)*, 68–78, 2007.

P.A. Boncz, T. Grust, M. van Keulen, S. Manegold, J. Rittinger, J. Teubner. MonetDB/XQuery: A fast XQuery processor powered by a relational engine. *Proceedings of ACM SIGMOD International Conference on Management of Data 2006*, 2006.

Rob van der Mei

Career

1996 – 1999	Senior staff member at AT&T Labs, USA
1996	Postdoc at Rutgers University and Columbia University, USA
2000 – 2002	Senior staff member and consultant at KPN Research
2003 – 2004	Senior researcher and consultant at TNO ICT
2003 –	Full professor at VU University Amsterdam
2004 – 2009	Scientific staff member PNA2 – Probability and Stochastic Networks
2006 – 2009	Group leader PNA2 – Probability and Stochastic Networks
2010 –	Leader Scientific Cluster PNA – Probability, Networks and Algorithms

Research

My research interests include performance modeling and analysis of communication networks and distributed ICT systems, queueing theory, stochastic scheduling, grid computing, logistics, planning of ambulance services and revenue management.

Selected academic activities

2011	Organizer Performance-2011
2010	Organizer International Teletraffic Congress ITC
2010	Co-organizer Study Group Mathematics with Industry SWI
2009 –	Member executive board Dutch Mathematics cluster Stochastics – Theoretical and Applied Research (STAR)
2009 –	Chairman ICT Innovatie Platform Vitale ICT Infrastructuren
2008 –	Founder National Knowledge Network on Pricing and Revenue Management (PreMa)
2007	Organizer Workshop on Performance of E-commerce Services: Where Users meet Vendors
2007 –	Secretary Executive Board Royal Dutch Mathematical Society
2006	Organizer EURO-NGI Workshop on Performance Models for Efficient Resource Sharing
2005 – 2009	Associate editor *Performance Evaluation*
2005 – 2009	Associate editor *AEUE Journal on Electronics and Communications*

Selected publications

G.J. Hoekstra, R.D. van der Mei. Effective load for flow-level performance modeling of wireless LANs. *Computer Communications 33*, 1972–1981, 2010.

M. Jonckheere, R.D. van der Mei, W. van der Weij. Stability and throughput for two-layered queueing networks. *Performance Evaluation 67*, 28–42, 2010.

M.A. Dobber, R.D. van der Mei, G.M. Koole. Dynamic load balancing and job replication in a global-scale grid environment. *IEEE Transactions on Parallel and Distributed Systems 20*, 207–218, 2009.

R.D. van der Mei, E.M.M. Winands. Polling models with renewal arrivals: a new method to derive heavy-traffic asymptotics. *Performance Evaluation 64*, 1029–1040, 2007.

R.D. van der Mei. Towards a unifying theory on branching-type polling systems in heavy traffic. *Queueing Systems 57*, 29–46, 2007.

Roeland Merks

Career

1998	Guest researcher, Tokyo University
1999 – 2003	PhD student Computational Science, University of Amsterdam, "Branching Growth in Stony Corals: a modelling approach". Promotor: Prof. Dr. P.M.A. Sloot
2003 – 2005	Postdoc Indiana University Bloomington
2005 – 2008	Postdoc/Marie Curie Fellow/Young Leader, VIB Dept. Plant Systems Biology and Ghent University
2008 – 2012	Scientific staff member/tenure track MAC4 – Life Sciences

Research

Merks' research focuses on cell-based modeling of plant development and angiogenesis. He heads the "core modeling" group of the Netherlands Consortium for Systems Biology (NCSB). The group (1 postdoc, 2 PhD, 1 technician, 2 MSc students, 2 postdoc vacancies) works on plant development, angiogenesis, gut microbiota metabolism, epigenetics, and lignin polymerization in close collaboration with members of experimental and theoretical groups within NCSB and elsewhere. In 2010 Merks was awarded an NWO Vidi (Interdisciplinary-ALW) to further develop his work on angiogenesis, focusing on the interactions between endothelial cells and the extracellular matrix.

Selected awards and honors

2010	Vidi Innovational Research Grant NWO
2008	Marie Curie European Reintegration Grant
2005	Marie Curie Intra-European Fellowship (EIF)

Selected academic activities

2010 –	Member management team Netherlands Institute for Systems Biology
2008 – 2013	Member advisory board NCSB – Interne Advies Raad

Selected publications

Roeland M.H. Merks, M.A. Guravage, D. Inze, G.T.S. Beemster. VirtualLeaf: an open source framework for cell-based modeling of plant tissue growth and development. *Plant Physiology 155*, 1–11, 2010.

K. Wabnik, J. Kleine-Vehn, J. Balla, M. Sauer, S. Naramoto, V. Reinöhl, Roeland M.H. Merks, W. Govaerts, J. Friml. Emergence of tissue polarization from synergy of intracellular and extracellular auxin signaling. *Molecular Systems Biology 6*, 447, 2010.

F.R.D. van Parijs, K. Morreel, J. Ralph, W. Boerjan, Roeland M.H. Merks. Modeling lignin polymerization. Part 1: simulation model of dehydrogenation polymers. *Plant Physiology 153*, 1332–1344, 2010.

M. Scianna, Roeland M.H. Merks, L. Preziosi, E. Medico. Individual cell-based models of cell scatter of ARO and MLP-29 cells in response to hepatocyte growth factor. *Journal of Theoretical Biology 260*, 151–160, 2009.

Roeland M.H. Merks, E.D. Perryn, A. Shirinifard, J.A. Glazier. Contact-inhibited chemotaxis in de novo and sprouting blood-vessel growth. *PLoS Computational Biology 4*, e1000163–last, 2008.

Niels Nes

Career

1999 –	Scientific staff member INS1 – Database Architectures
2010 –	Head ITF – Information Technology & Facilities

Research

The research focus is database architectures, done through the open source main memory database engine, MonetDB and X100. He has been co-founder of MonetDB B.V. and Vectorwise B.V., successful CWI spin-offs.

Selected awards and honors

2009	Best Paper Runner Up SIGMOD 2009

Selected academic activities

2008 –	Founder Vectorwise B.V.
2008 –	Founder MonetDB B.V.
2003 – 2008	Project (co)leader Facilitating the Advancement of Computational Science

Recent publications

M. Ivanova, M.L. Kersten, N.J. Nes, R.A. Goncalves. An architecture for recycling intermediates in a column-store. *ACM Transactions on Database Systems 35*, 2010.

S. Héman, M. Zukowski, N.J. Nes, L. Sidirourgos, P.A. Boncz. Positional update handling in column stores. *Proceedings of ACM SIGMOD International Conference on Management of Data 2010*, 2010.

P. Svensson, P.A. Boncz, M. Ivanova, M.L. Kersten, N.J. Nes, D. Rotem. Emerging database systems in support of scientific data. *Scientific Data Management: Challenges, Technology, and Deployment*, 235–277, 2010.

M. Ivanova, M.L. Kersten, N.J. Nes, R.A. Goncalves. An architecture for recycling intermediates in a column-store. *ACM SIGMOD International Conference on Management of Data*, 2009.

M. Ivanova, M.L. Kersten, N.J. Nes. Self-organizing strategies for a column-store database. *International Conference on Extending Database Technology*, 2008.

Rudesindo (Sindo) Núñez Queija

Career

1999 – 2008	Project member PNA2 – Probability and Stochastic Networks
2008 –	Associate professor University of Amsterdam
2008 –	Scientific staff member PNA2 – Probability and Stochastic Networks
2010 –	Full professor Korteweg-De Vries Mathematical Institute, University of Amsterdam

Research

Sindo Núñez Queija's main research interests are in stochastic operations research, in particular queueing theory, and applications in the performance analysis of computer communication systems. In the recent past he has worked on (1) stability criteria and optimization for bandwidth sharing network in the context of the PhD dissertation of I.M. Verloop, (2) scaling techniques for multidimensional random Markov processes to investigate the interaction of multiclass communication systems (with M.T.S. Jonkheere and B.J. Prabhu), (3) scalability and efficiency of distributed file sharing systems (with B.J. Prabhu), (4) heavy-traffic scaling for asymmetric fair sharing (discriminatory processor sharing; with I.M. Verloop and U. Ayesta), and (5) analysis of queues with fluctuating and temporary unstable load conditions.

Selected academic activities

2011	Member program committee Performance 2011
2011	Member program committee International Conference on Matrix-Analytic Methods in Stochastic Models
2010	Guest editor *Performance Evaluation*, Vol. 67, Issue 11 (2010)
2010	Chairman technical program committee Performance Evaluation 2010
2009	Volume editor LNCS, volume 5894
2009	Member program committee ACM Sigmetrics & Performance (joint conference)
2009	Guest editor *Annals of Operations Research*, Vol. 170
2009	Chairman technical program committee NET-COOP International Conference on Network Control and Optimization
2009 –	Member algemeen bestuur LNMB (Dutch Network on the Mathematics of Operations Research)
2009 –	Associate editor *Performance Evaluation*
2009 – 2011	Member program committee ITC International Teletraffic Congress 2009–2010–2011
2008 –	Associate editor *Mathematical Methods of Operations Research*
2008 – 2009	Guest editor *Stochastic Performance Models for Resource Allocation in Communication Systems*
2007 – 2010	Member program committee ACM Sigmetrics 2007, 2008, 2010
2006	Guest editor *Queueing Systems*, Vol. 53, nr. 1–2
2005 – 2010	Associate editor *Operations Research Letters*

Selected publications

I.M. Verloop, U. Ayesta, R. Núñez Queija. Heavy-traffic analysis of a multiple-phase network with discriminatory processor sharing. *Operations Research*, 2011.

M. Jonckheere, R. Núñez Queija, B.J. Prabhu. Performance analysis of traffic surges in multi-class communication networks. *Proceedings of International Teletraffic Congress 2010*, 2010.

I.M. Verloop, R. Núñez Queija. Asymptotically optimal parallel resource assignment with interference. *Queueing Systems 65*, 43–92, 2010.

H.-P. Tan, R. Núñez Queija, A.F. Gabor, O.J. Boxma. Admission control for differentiated services in future generation CDMA networks. *Performance Evaluation 66*, 488–504, 2009.

O.J. Boxma, S.F. Foss, J.M. Lasgouttes, R. Núñez Queija. Waiting time asymptotics in the single server queue with service in random order. *Queueing Systems 46*, 35–73, 2004.

Cornelis Oosterlee

Career

2007 – 2009	Scientific staff member MAS2 – Scientific Computing and Control Theory
2007 –	Full professor Delft University of Technology
2010 –	Group leader MAC2 – Scientific Computing and Control Theory

Research

Applied mathematics, numerical analysis, computational science and engineering, numerical methods for partial differential equations and for integral equations, computational finance, economic decision-making applications, other engineering applications.

Selected academic activities

2010	Organizer European Multigrid Conference (EMC)
2010 –	Member innovation committee Platform Wiskunde Nederland
2010 –	Member editorial board *Computing and Visualization in Science* (CVS), Springer
2009	Chair Woudschoten Conference 2009
2008 –	Member editorial board *Journal of Computational Finance* (JCF), Incisive Media
2008 – 2010	Teacher Oxford University
2007	Visiting professor / researcher Hitotsubashi University, Tokyo
2007 – 2009	Member organizing committee Copper Mountain Conference
2003 – 2008	Member editorial board *SIAM Journal on Scientific Computing, Mathematical Modelling and Applied Computing*

Selected publications

C. Rodrigo, F.J. Gaspar, C.W. Oosterlee, I. Yavneh. Accuracy measures and Fourier analysis for the full multigrid algorithm. *SIAM Journal on Scientific Computing 32*, 3108–3129, 2010.

F. Fang, C.W. Oosterlee. Pricing early-exercise and discrete barrier options by Fourier-cosine series expansions. *Numerische Mathematik 114*, 27–62, 2009.

X. Huang, C.W. Oosterlee. Adaptive integration for multi-factor portfolio credit loss models. *Journal of Computational and Applied Mathematics 231*, 506–516, 2009.

S.P. MacLachlan, C.W. Oosterlee. Algebraic multigrid solvers for complex-valued matrices. *SIAM Journal on Scientific Computing 30*, 1548–1571, 2008.

F. Fang, C.W. Oosterlee. A novel pricing method for European options based on Fourier-cosine series expansions. *SIAM Journal on Scientific Computing 31*, 826–848, 2008.

Jacco van Ossenbruggen

Career

1998 –	Scientific staff member INS2 – Interactive Information Access

Research

Ossenbruggen carries out research on semantic web interfaces for cultural heritage and other linked open data and Web-based data integration, in particular on supporting transparency of provenance throughout the data chain. He is currently active in the Fish4Knowledge, Agora and PrestoPrime projects and the EuropeanaConnect Best Practice Network. He obtained his PhD in computer science from the VU University Amsterdam in 2001.

Selected awards and honors

2006	Semantic Web Challenge Prize

Selected academic activities

– 2010	External examiner Aalto University
2009	Guest editor Special Issue on AI and Cultural Heritage, *IEEE Intelligent Systems*, Vol. 24, nr. 2
2007	Organizer International Workshop on Cultural Heritage on the Semantic Web
2007 – 2008	Project leader Bsik BRICKS
2006	Organizer International Workshop on Semantic Web Annotations for Multimedia SWAMM

Selected publications

A. Tordai, Jacco van Ossenbruggen, G. Schreiber, B. Wielinga. Aligning large SKOS-like vocabularies. *Proceedings of European Semantic Web Conference 2010 (7), Lecture Notes in Computer Science 6088*, 198–212, 2010.

M. Hildebrand, Jacco van Ossenbruggen, Lynda Hardman, G. Jacobs. Supporting subject matter annotation using heterogeneous thesauri, a user study in Web data reuse. *International Journal of Human-Computer Studies 67*, 888–903, 2009.

J. Wielemaker, M. Hildebrand, Jacco van Ossenbruggen, G. Schreiber. Thesaurus-based search in large heterogeneous collections. *The Semantic Web - ISWC 2008, Lecture Notes in Computer Science 5318*, 483–498, 2008.

G. Schreiber, A.K. Amin, L. Aroyo, M. van Assem, V. de Boer, Lynda Hardman, M. Hildebrand, Jacco van Ossenbruggen, B. Omelayenko, A. Tordai, J. Wielemaker, B. Wielinga. Semantic annotation and search of cultural-heritage collections: The MultimediaN E-Culture demonstrator. *Journal of Web Semantics 6*, 243–249, 2008.

M. Hildebrand, Jacco van Ossenbruggen, Lynda Hardman. /facet: A Browser for Heterogeneous Semantic Web Repositories. *The Semantic Web - ISWC 2006*, 272–285, 2006.

Eric Pauwels

Career

1999 – 2006	Scientific staff member PNA4 – Signals and Images
2006 – 2009	Group leader PNA4 – Signals and Images
2010 –	Scientific staff member SEN4 – Multi-agent and Adaptive Computation

Research

My current research focuses on two topics. On the one hand, I am working on content-based image retrieval where we are developing mathematically principled methodologies for characterising the geometrical and statistical properties of image models that are directly tied to perceptually relevant visual content. This builds on my earlier interests as it necessitates a multi-disciplinary approach which draws on fields as diverse as PDEs, information theory, data mining and machine learning. As for the latter, we are particularly interested in the application of statistical learning to data-driven or adaptive multimedia processing. The expertise thus developed is being applied to image mining for databases in art and bio-diversity.

The second theme concerns ubiquitous computing and pervasive sensing in heterogeneous sensor networks. There are many applications in which bottom-up processing for a single modality (such as vision) proves to be far too brittle. Robustness can be improved by injecting prior or high-level knowledge (e.g. certain geometric configurations are more likely than others) and/or by incorporating information gleaned from other sensors (e.g. combining information from voice and face recognition modules). I am particularly interested in the characteristics of the underlying computational framework that will give rise to robust and self-organising behaviour of such sensor networks. The aim is to develop methodologies that will allow the network to learn from multiple datastreams, adapt to changes in the environment and self-(re)organise when sensors are added or removed from the network. Again, this gives rise to interesting statistical problems, particularly in Bayesian reasoning, classification and active learning.

Selected academic activities

2008	Organizer International Workshop on Distributed Sensing and Collective Intelligence in Biodiversity Monitoring
2007	Chair working group ERCIM/On Image and Video Understanding
2007	Organizer International Workshop on Content Based Multimedia Indexing CBMI
2006	Organizer EUROPHLUKES Photo-Identification Workshop
2006	Organizer DELOS/MUSCLE Summerschool on Multimedia Digital Libraries
2005	Co-organizer EUROPHLUKES Photo-Identification Workshop
2004 – 2008	Coordinator FP6 Network of Excellence for Multimedia Understanding through Semantics, Computation and Learning (MUSCLE)
2001 – 2003	Coordinator EU-Project FOUNDIT

Recent publications

W. Los, D. Goense, E.J. Pauwels. E-infrastructures and sensor networks for biodiversity research. *Information and Communication Technologies for Biodiversity Conservation and Agriculture*, 35–48, 2010.

P.M. de Zeeuw, E.J. Pauwels, E.B. Ranguelova, D.M. Buonantony, S.A. Eckert. Computer assisted photo identification of Dermochelys coriacea. *Proceedings of International Conference on Pattern Recognition (ICPR) 2010*, 2010.

A.A. Salah, E.J. Pauwels, R. Tavenard, T. Gevers. T-patterns revisited: Mining for temporal patterns in sensor data. *Sensors 10*, 7496–7513, 2010.

E.J. Pauwels, P.M. de Zeeuw, D.M. Buonantony. Leatherbacks matching by automated image recognition. *Advances in Data Mining - Medical Applications, E-Commerce, Marketing and Theoretical Aspects, Lecture notes in artificial intelligence 5077*, 417–425, 2008.

E.J. Pauwels, P.M. de Zeeuw, E.B. Ranguelova. Computer-assisted tree taxonomy by automated image recognition. *Engineering Applications of Artificial Intelligence 22*, 26–31, 2008.

Steven Pemberton

Career

1982 –	Scientific staff member SEN5 – Distributed and Interactive Systems

Research

The principle area of my research is the design of system architectures such that the resulting software is automatically more human-oriented; this includes investigations into the design of programming languages and application environments. I have been involved with the World Wide Web since the beginning and have led or collaborated on the design of several technologies that form part of the fundamental Web architecture, including HTML, XHTML, CSS, XForms and RDFa.

Selected awards and honors

2009	ACM CHI Lifetime Service Award

Selected academic activities

2007 – 2010	Chair working group W3C XHTML2
2006 –	Member program committee Advanced Visual Interfaces (AVI)
2005 –	Member program committee XTech
2005 –	Member editorial board *ACM/interactions*
2000 –	Chair working group W3C FORMS
1998 – 2007	Chair working group W3C HTML
1998 – 2004	Editor-in-chief *ACM/interactions*
1997	Co-organizer SIGCHI Conference on Human Factors in Computing Systems CHI

Selected publications

Steven Pemberton. XHTML™ Modularization 1.1 – Second edition. *W3C Recommendation*, 2010.

Steven Pemberton. XHTML™ 1.1 – Module-based XHTML - Second edition. *W3C Recommendation*, 2010.

Steven Pemberton, et al. XForms 1.1. *W3C Recommendations*, 2009.

Steven Pemberton, et al. RDFa in XHTML: Syntax and processing 1.1. *W3C Recommendations*, 2008.

Steven Pemberton, et al. XForms 1.0 (Third Edition). *W3C Recommendations*, 2007.

L.J.M. Geurts, L.G.L.T. Meertens, Steven Pemberton. ABC Programmer's Handbook. Bosko Books. 2005.

Han La Poutré

Career

1997 –	Group leader SEN4 – Multi-agent and Adaptive Computation
2001 – 2010	Full professor Eindhoven University of Technology
2010 –	Full professor Utrecht University

Research

Han La Poutré is leader of the group Multi-agent and Adaptive Computation. He is also full professor at Utrecht University. He was formerly affiliated with Princeton University, Utrecht University (KNAW Fellow), Eindhoven University (full professor), and Leiden University. Han La Poutré focuses on adaptive decision making in multi-actor and uncertain environments. This comprises computational intelligence techniques and decentralized paradigms, like multi-agent systems and non-cooperative (economic) games. His research interests include the design of adaptive agent strategies and simulation systems in strategic economic games (like negotiation, repeated auctions, or market based planning) and optimization problems. He develops generic and enriched models as well as adaptive solutions for target problems in key application areas like smart electricity networks, health care and transportation logistics, and electronic markets. Han addresses this via a combination of fundamental and applicable research.

Selected academic activities

2009	Member of program writing committee Smart Energy Systems program of NWO/STW/ICTRegie
2009 –	CWI representative for EIT ICT Labs
2008	Member senior program committee International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2008)
2008 –	Member Scientific Directorate of Schloss Dagstuhl – Leibniz Center for Informatics
2007 – 2008	Chairman IEEE Computational Finance and Economics Technical Committee (CFETC) of the Computational Intelligence Society (IEEE CIS)
2006 –	Member editorial board *ACM Transactions on Internet Technology* (ACM TOIT)
2005 –	Member editorial board *NETNOMICS: Economic Research and Electronic Networking*
2002 – 2006	Chair board BNVKI: Belgium/Netherlands Association for Artificial Intelligence

Selected publications

V. Robu, J.A. La Poutré. Designing bidding strategies in sequential auctions for risk averse agents. *Multiagent and Grid Systems 6*, 437–457, 2010.

T.B. Klos, D.J.A. Somefun, J.A. La Poutré. Automated interactive sales processes. *IEEE Intelligent Systems*, 2010.

I.B. Vermeulen, S.M. Bohte, S.G. Elkhuizen, J.S. Lameris, P.J.M. Bakker, J.A. La Poutré. Adaptive resource allocation for efficient patient scheduling. *Artificial Intelligence in Medicine 46*, 67–80, 2009.

A.K. Hutzschenreuter, P.A.N. Bosman, J.A. La Poutré. Evolutionary multiobjective optimization for dynamic hospital resource management. *Proceedings of Evolutionary Multi-Criterion Optimization 2009, Lecture Notes in Computer Science 5467*, 320–334, 2009.

P.A.N. Bosman, J.A. La Poutré. Learning and anticipation in online dynamic optimization with evolutionary algorithms: The stochastic case. *Proceedings of the Genetic and Evolutionary Computation Conference*, 1165–1172, 2007.

V. Robu, D.J.A. Somefun, J.A. La Poutré. Modeling complex multi-issue negotiations using utility graphs. *Proceedings of 4th International Conference on Autonomous Agents and Multiagent Systems 2005*, 280–287, 2005.

Jens Rademacher

Career

2006 – Scientific staff member MAC3 – Multiscale Modelling and Nonlinear Dynamics

Research

Work in the field of evolutionary differential equations, with focus on analysis of qualitative properties of solutions and coherent structures. Specifically nonlinear ordinary, partial and lattice differential equations with relation to application problems in ecology, biology and physics. Main results concern the rigorous treatment of spectral problems and bifurcations as well as methods in the applied literature and phenomena in pattern forming processes.

Selected academic activities

2011 Member organizing committee SIAM Conference on Applications of Dynamical Systems

2010 – 2011 Editor-in-chief *SIAM DSWeb Magazine*

Selected publications

J.D.M. Rademacher. Lyapunov-Schmidt reduction for unfolding heteroclinic networks of equilibria and periodic orbits with tangencies. *Journal of Differential Equations 249*, 305–348, 2010.

M. Herrmann, J.D.M. Rademacher. Heteroclinic travelling waves in convex FPU-type chains. *SIAM Journal on Mathematical Analysis 42*, 1483–1504, 2010.

M. Herrmann, J.D.M. Rademacher. Riemann solvers and undercompressive shocks of convex FPU chains. *Nonlinearity 23*, 277–304, 2010.

A.R. Champneys, V. Kirk, E. Knobloch, B. Oldeman, J.D.M. Rademacher. Unfolding a tangent equilibrium-to-periodic heteroclinic cycle. *SIAM Journal on Applied Dynamical Systems 8*, 1261–1304, 2009.

J.A. Sherratt, M. Smith, J.D.M. Rademacher. Locating the transition from periodic oscillations to spatiotemporal chaos in the wake of invasion. *Proceedings of the National Academy of Sciences of the United States of America 106*, 10890–10895, 2009.

Herman te Riele

Career

1970 – 1971	Project member RA – Rekenafdeling
1972 – 1975	Head CPP – Consultation and Project Programming Group
1973 – 1987	Deputy head NW – Numerieke Wiskunde
1984 – 1996	Group leader NW3 – Large-scale computing
1997 –	Scientific staff member PNA5 – Cryptology

Research

Herman te Riele is employed as CWI researcher since 1970. His specialities are numerical mathematics and computational number theory, including factorization of large numbers. He is known, a.o., for proving the correctness of the Riemann hypothesis for the first 1,5 billion non-trivial zeros of the Riemann zeta function (with Jan van de Lune and Dik Winter), for disproving the so-called Mertens conjecture (with Andrew Odlyzko), and for factoring large numbers of world record size (with many others). In 1987 he found a new upper bound for sign changes of the function pi(x) – Li(x).

Selected academic activities

2008	Co-organizer European Congress of Mathematics
2006 – 2011	Co-organizer Wintersymposium of KWG
2006	Co-organizer Matheon Workshop in honour of the 60th birthday of Richard Brent
2006 – 2009	Secretary ERCOM, European Research Centres on Mathematics
2005 – 2010	Member board of directors Mathematical Research Institute Onderzoekschool
2004 – 2010	Secretary Fifth European Congress of Mathematics, Amsterdam, July 14–18, 2008
2003 –	Archivist KWG
2003 – 2007	Secretary KWG

Selected publications

J. Korevaar, H.J.J. te Riele. Average prime-pair counting formula. *Mathematics of Computation 79,* 1209–1229, 2010.

T. Kleinjung, P.L. Montgomery, H.J.J. te Riele, A. Timofeev, et al. Factorization of a 768-bit RSA modulus. *Proceedings of Advances in Cryptology – CRYPTO 2010*, 333–350, 2010.

H.J.J. te Riele. Cryptografie en supercomputers. *De Rekenmeesters – een toekomstgericht beeld van 25 jaar grootschalig rekenen in Nederland*, 188–194, 2009.

T. Kotnik, H.J.J. te Riele. The Mertens conjecture revisited. *Proceedings of Algorithmic Number Theory Symposium 2006, Lecture Notes in Computer Science 4076*, 156–167, 2006.

M. García, J.M. Pedersen, H.J.J. te Riele. Amicable pairs : a survey. *High Primes and Misdemeanours: Lectures in Honour of the 60th Birthday of Hugh Cowie Williams*, 2004.

Jan Rutten

Career

1985 – 1996	Scientific staff member AP1 – Computational models
1997 – 2008	Group leader SEN3 – Foundations of Software Engineering
2008 –	Scientific staff member SEN3 – Foundations of Software Engineering
2009 –	Full professor Radboud University Nijmegen

Research

Jan Rutten is senior researcher at CWI and professor of theoretical computer science at the Radboud University Nijmegen. He was the founder of present day universal coalgebra, which is a general theory of the circular behaviour of automata, dynamical systems and infinite data structures. He was the (co)initiator of the workshop series Coalgebraic Methods in Computer Science (CMCS) and the Conference on Algebra and Coalgebra in Computer Science (CALCO). He is also a member of the Steering Committee of the conference on Foundations of Software Engineering (FSEN). His current research interests include coalgebraic foundations of computation as well as formal methods for software engineering, notably service-oriented and component-based programming.

Selected academic activities

2010 –	Member working group IFIP WG 1.3
2010 – 2011	Member program committee CMCS 2010 (co-chair), FOSSACS 2010, CONCUR 2010, AMAST 2010.
2009 –	Editor *Scientific Annals of Computer Science*
2009 – 2010	Member program committee CALCO 2009, HSCC 2009, ICALP 2009, FSEN 2009, GlobalComp 2009, FICS 2009.
2008 –	Member working group IFIP WG 2.2
2005 –	Editor *Logical Methods in Computer Science* (LMCS)
1995 –	Editor of series *Electronic Notes in Theoretical Computer Science*

Selected publications

C.A. Kupke, J.J.M.M. Rutten. Complete sets of cooperations. *Information and Computation 208*, 1398–1420, 2010.

F. Bonchi, A. Silva, M.M. Bonsangue, J.J.M.M. Rutten. Quantitative Kleene coalgebras. *Information and Computation*, 2010.

A. Silva, M.M. Bonsangue, J.J.M.M. Rutten. Non-deterministic Kleene coalgebras. *Logical Methods in Computer Science*, 2010.

H.H. Hansen, J.J.M.M. Rutten. Symbolic synthesis of Mealy machines from arithmetic bitstream functions. *Scientific Annals of Computer Science XX*, 97–130, 2010.

A. Silva, J.J.M.M. Rutten. A coinductive calculus of binary trees. *Information and Computation 208*, 578–593, 2010.

Guido Schäfer

Career

2005 – 2008	Head of the Independent Research Group Discrete Optimization – Matheon – Institute of Mathematics, TU Berlin
2009 – 2011	Scientific staff member/tenure track PNA1 – Algorithms, Combinatorics and Optimization
2010 –	Professor of Algorithmic Game Theory – Department of Econometrics and Operations Research, VU University Amsterdam

Research

Guido Schäfer's main research interests are algorithms and combinatorial optimization in general, and algorithmic game theory in particular. In his research, he attempts to unite ideas from operations research, optimization, algorithms, complexity and game theory with the goal to addresses real-world aspects that are of practical relevance (such as lack of coordination, data uncertainty, limited resources). Results of this research find their applications for instance in traffic, network routing and auctions.

Selected academic activities

2010	Lecturer Advanced Course on the Foundations of Computer Science (ADFOCS), MPI for Informatics
2010	Organizer Workshop on Advances in Algorithmic Game Theory
2009	Member program committee Fifth International Workshop on Internet and Network Economics (WINE)
2009 – 2011	Lecturer Academic Kolleg "Algorithmic Game Theory", German National Academic Foundation

Selected publications

L. Fleischer, J. Könemann, S. Leonardi, G. Schäfer. Strict cost sharing schemes for Steiner forest. *SIAM Journal on Computing 39*, 3616–3632, 2010.

F. Eisenbrand, F. Grandoni, T. Rothvoß, G. Schäfer. Connected facility location via random facility sampling and core detouring. *Journal of Computer and System Sciences 76*, 709–726, 2010.

B. de Keijzer, G. Schäfer, O. Telelis. On the inefficiency of equilibria in linear bottleneck congestion games. *Algorithmic Game Theory: Third International Symposium, Proceedings*, 2010.

V. Bonifaci, T. Harks, G. Schäfer. Stackelberg routing in arbitrary networks. *Mathematics of Operations Research 35*, 330–346, 2010.

A. Berger, V. Bonifaci, F. Grandoni, G. Schäfer. Budgeted matching and budgeted matroid intersection via the gasoline puzzle. *Mathematical Programming*, 2009.

Alexander Schoenhuth

Career

1999 – 2007	Scientific assistant, Center for Applied Computer Science, University Cologne
2007 – 2009	Postdoctoral scholar, School of Computing Science, Simon Fraser University, Canada
2009 – 2010	Postdoctoral scholar, Department of Mathematics, University of California
2010 – 2015	Scientific staff member/tenure track MAC4 – Life Sciences

Research

Alexander Schoenhuth's research is centered around biological sequence analysis as well as statistical learning and modeling. His particular theoretical expertise is on hidden Markov processes and related stochastic concepts, combined with an interest in algebraic statistics. In applications, his research interests comprise personalized medicine, in particular cancer biology as well as comparative and evolutionary (epi-)genomics. A special current focus of his are mathematical and computational approaches in high-throughput genomics, in particular as enabled by next-generation sequencing technology.

Selected awards and honors

2009	Postdoctoral Fellowship, Private Donation, David DesJardins, Google Inc.
2007	Postdoctoral Fellowship, Pacific Institute of the Mathematical Sciences

Recent publications

U. Faigle, A. Schoenhuth. Efficient tests for equivalence of hidden Markov processes and quantum random walks. *IEEE Transactions on Information Theory 57*, 1746–1753, 2011.

P. Dao, R. Colak, R. Salari, F. Moser, A. Schoenhuth, M. Ester. Inferring cancer subnetwork markers using density-constrained biclustering. *European Conference on Computational Biology Bioinformatics 26*, i625–i631, 2010.

A. Schoenhuth, R. Salari, S.C. Sahinalp. Pair HMM based gap statistics for re-evaluation of indels in alignments with affine gap penalties. *Workshop on Algorithms in Bioinformatics Lecture Notes in Computer Science 6293*, 350–361, 2010.

R. Colak, F. Moser, J. Shu, A. Schoenhuth, N. Chen, M. Ester. Module discovery by exhaustive search for densely connected, co-expressed regions in biomolecular networks. *PLoS One 5*, e13348, 2010.

Lex Schrijver

Career

1973 – 1979	Scientific staff member ZW – Zuivere wiskunde
1983 – 1989	Full professor University of Tilburg
1989 – 1996	Group leader BS1 – Combinatorial Optimization and Algorithmics
1990 –	Full professor University of Amsterdam
1997 – 1998	Scientific staff member PNA1 – Algorithms, Combinatorics and Optimization
1998 – 2005	Leader Scientific Cluster PNA – Probability, Networks and Algorithms
2005 –	CWI Fellow PNA1 – Algorithms, Combinatorics and Optimization

Research

Lex Schrijver does research in discrete mathematics, optimization, and algorithms, resulting in articles, books, and algorithms like for railway planning. His current focus is on applying methods from classical mathematics like algebra and geometry to more modern areas like combinatorics and optimization. Examples are applying representation theory to obtain sharper code bounds with semidefinite programming, and applying invariant theory to characterize the partition functions from statistical physics.

Selected awards and honors

2008	SIGMA Prize
2008	Franz Edelman Award
2006	John von Neumann Theory Prize (INFORMS)
2005	Spinoza Prijs

Selected academic activities

2010	Organizer Tagung Graphentheorie
2008 –	Member academy Academia Europaea
2006 –	Member academy Nordrhein-Westfälische Akademie der Wissenschaften
2006 –	Member academy Deutsche Akademie der Naturforscher Leopoldina
2006 – 2008	Chairman scientific committee 5th European Congress of Mathematicians
1995 –	Member academy Royal Netherlands Academy of Sciences
1993 –	Editor-in-chief *Combinatorica*
1993 –	Editor *Journal of Combinatorial Theory, Series B*
1988 –	Editor *Discrete Applied Mathematics*

Selected publications

M. Laurent, A. Schrijver. On Leonid Gurvits's proof for permanents. *American Mathematical Monthly 117*, 903–911, 2010.

L. Lovász, A. Schrijver. Dual graph homomorphism functions. *Journal of Combinatorial Theory – Series A 117*, 216–222, 2010.

D. Huisman, L.G. Kroon, E. Abbink, P.J. Fioole, M. Fischetti, G. Maróti, A. Schrijver, A.G. Steenbeek. The new Dutch timetable: The OR revolution. *Interfaces 39*, 6–17, 2009.

A. Schrijver. Tensor subalgebras and first fundamental theorems in invariant theory. *Journal of Algebra 319*, 1305–1319, 2008.

M.H. Freedman, L. Lovász, A. Schrijver. Reflection positivity, rank connectivity, and homomorphisms of graphs. *Journal of the American Mathematical Society 20*, 37–51, 2007.

Jan van Schuppen

Career

1978 – 1996	Researcher BS3 – System and Control Theory
1997 – 2001	Group leader PNA2 – Probability and Stochastic Networks
2002 – 2010	Scientific staff member MAC2 – Scientific Computing and Control Theory
2009 –	Full professor Delft University of Technology
2011 –	CWI Fellow MAC2 – Scientific Computing and Control Theory

Research

Control and system theory is my research area. The general focus is on fundamental problems of system theory, system identification, and control of distributed/decentralized dynamic systems. Particular research topics of the last years include: realization of rational systems, realization of hybrid systems, system identification of polynomial and rational systems; control of distributed/decentralized systems (linear systems, Gaussian systems, discrete-event systems), control of piecewise-affine hybrid systems. Applications in the following areas are active: systems biology, control of motorway networks, control of dike-levels.

Selected academic activities

2008 –	Coordinator Project Control for Coordination of Distributed Systems
2005	Member panel of experts INRIA Program on Biology and Medicine
2002 –	Co-editor Springer's Communication and Control Engineering Series
1994 –	Editor-in-chief *Mathematics of Control, Signals, and Systems*

Selected publications

M. Petreczky, J.H. van Schuppen. Realization theory for linear hybrid systems. *IEEE Transactions on Automatic Control 55*, 2282–2297, 2010.

R. Su, J.H. van Schuppen, J.E. Rooda. Efficient nonconflict check by using automaton abstractions. *Proceedings of European Control Conference*, 1997–2002, 2009.

J. Němcová, J.H. van Schuppen. Realization theory for rational systems: The existence of rational realizations. *SIAM Journal on Control and Optimization 48*, 2840–2856, 2009.

J. Komenda, J.H. van Schuppen. Control of discrete-event systems with modular or distributed structure. *Theoretical Computer Science 388*, 199–226, 2007.

H.M. Hardin, J.H. van Schuppen. Observers for linear positive systems. *Linear Algebra and its Applications 425*, 571–607, 2007.

L.C.G.J.M. Habets, P.J. Collins, J.H. van Schuppen. Reachability and control synthesis for piecewise-affine hybrid systems on simplices. *IEEE Transactions on Automatic Control 51*, 938–948, 2006.

P.R. de Waal, J.H. van Schuppen. A class of team problems with discrete action spaces: optimality conditions based on multimodularity. 2000.

A.A.F. Overkamp, J.H. van Schuppen. Maximal solutions in decentralized supervisory control. 2000.

Vladas Sidoravicius

Career

2007 –	Scientific staff member PNA2 – Probability and Stochastic Networks
2008 –	Full professor Leiden University

Research

I'm probabilist working mostly in the area of probability on discrete structures. My research interest focuses on models which have roots or are inspired by the problems in statistical physics: percolation, self-interacting processes, random walks in random environment, growth models. More specifically, my research concerns various aspects of random spatial processes, called percolative systems, in which macroscopic phenomena are naturally expressed in terms of paths of microscopic events that percolate through space (or space-time). Scaling concepts and renormalization methods play an important role in the analysis of such processes, in particular, in the understanding of the nature of phase transitions and critical behavior.

Topics that I study are:

- catalytic systems;
- scaling limits in percolation;
- random motion in a dynamically evolving random environment;
- self-interacting random walks and random polymers;
- rigorous renormalization in disordered systems;
- coarse geometry of large random systems.

Targeted applications are: spread of a disease, a rumor or a genetic type in an evolving multitype population, spread of a cultural change in a social network, and emerging structures in aggregation.

Selected academic activities

2010 – 2014	Chairman European Science Foundation Networking Program "Random Geometry and Large Interacting Systems in Statistical Physics"
2009 –	Senior fellow Random Spatial Structures (RSS) at EURANDOM

Recent publications

V. Beffara, V. Sidoravicius, M.E. Vares. Randomized polynuclear growth model with a columnar defect. *Probability Theory and Related Fields 147*, 565–581, 2010.

V. Sidoravicius, A.-S. Sznitman. Connectivity bounds for the vacant set of random interlacements. *Annales de l'Institut Henri Poincaré – Probability and Statistics = Probabilities and Statistics x*, X–X, 2010.

D.U. Marchetti, V. Sidoravicius, M.E. Vares. Oriented percolation in one-dimensional \beta/|x-y|2 random cluster model. *Journal of Statistical Physics 139*, 941–959, 2010.

R. Dickman, L. Rolla, V. Sidoravicius. Activated random walkers: facts, conjectures and challenges. *Journal of Statistical Physics 138*, 126–142, 2010.

M.R. Hilario, O. Luidor, C.M. Newman, L. Rolla, S. Sheffield, V. Sidoravicius. Fixation for distributed clustering processes. *Communications on Pure and Applied Mathematics 63*, 926–934, 2010.

Tijs van der Storm

Career

2003 – 2007	PhD student SEN1 – Software Analysis and Transformation
2007 – 2012	Scientific staff member/tenure track SEN1 – Software Analysis and Transformation

Research

The greatest challenge of software engineering is to keep software evolvable. Currently, software systems are growing larger and larger. The trend towards service oriented computing will require software engineering to scale up even more. Such software will consist of large numbers of highly heterogeneous, as well as distributed, parts, without centralized control. The key enabler for making large software easier to maintain, consists of higher levels of abstraction. Dedicated programming languages provide the best way to achieve such levels of abstraction. So called domain specific languages (DSLs) will thus play an important role in the future of software. My research focuses on technological means to construct, combine and maintain DSLs. Generic language technology (e.g., parsing, analyzing, transforming and presenting language artifacts) therefore is the primary component of my research. Additionally, these techniques are also valuable in extracting knowledge from existing systems in order to refactor, renovate, or migrate them to use higher levels of abstraction.

Selected academic activities

2011	Member of program committee Workshop on Intermediate Representations (WIR'11)
2010	Member of program committee 10th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'10)
2008	Member organizing committee ESUG 2008 International Smalltalk Conference
2008 –	Lecturer Master Programme Software Engineering, UvA
2008 – 2009	Member of program committee International Workshop on Language Descriptions, Tools and Applications (LDTA'09)

Selected publications

P. Klint, T. van der Storm, J.J. Vinju. EASY meta-programming with Rascal. *Proceedings of the Summer School on Generative and Transformational Techniques in Software Engineering 2009, Lecture Notes in Computer Science 6491*, 222–289, 2011.

J. van den Bos, T. van der Storm. Bringing domain-specific languages to digital forensics. *Proceedings of International Conference on Software Engineering 2011 (33)*, 2011.

P. Klint, T. van der Storm, J.J. Vinju. On the impact of DSL tools on the maintainability of language implementations. *Proceedings of Workshop on Language Descriptions, Tools and Applications 2010*, 2010.

P. Klint, T. van der Storm, J.J. Vinju. Rascal: A domain specific language for source code analysis and manipulation. *Proceedings of IEEE International Working Conference on Source Code Analysis and Manipulation 2009*, 2009.

Jan Verwer
(1946 – † 2011)

Career

1973 – 1977	PhD student NW – Numerieke Wiskunde
1978 – 1988	Scientific staff member NW – Numerieke Wiskunde
1989 – 2000	Group leader MAS1 – Dynamical Systems and Numerical Analysis
2000 – 2006	Leader Scientific Cluster MAS – Modelling, Analysis and Simulation
2000 – 2010	Full professor University of Amsterdam
2007 – 2011	CWI Fellow MAC1 – Dynamical Systems and Numerical Analysis

Research

Jan Verwer was a mathematician in the cluster Modelling, Analysis and Computing (MAC). Verwer did PhD research at CWI from 1973 to 1977. He successively served as project leader, theme leader and eventually cluster leader for MAS from 2000 to 2006. Under his leadership the cluster received the appraisal excellent from the research visitation committee in 2005. In 2007 he was named CWI Fellow for his excellent performance. Verwer was also Professor of Numerical Analysis at the Korteweg-de Vries Institute for Mathematics of the University of Amsterdam (UvA). Jan Verwer retired in January 2011, and passed away unexpectedly only five weeks later.

His main research activities were within numerical mathematics. His interests were in numerical algorithms for solving differential equations applied in, for instance, electro magnetism, fluid flows, diffusion processes and chemical reactions. As a researcher he wrote many scientific articles and he was editor of the professional journals *Transactions on Mathematical Software* and *Advances in Numerical Analysis*. At the national level he was active as chairman of the Dutch-Flemish working community Scientific Computing.

Verwer wrote two books in the field of numerical mathematics: Stability of Runge-Kutta methods for stiff nonlinear differential equations (1984), in cooperation with Kees Dekker (TUD), and Numerical Solution of Time Dependent Advection-Diffusion-Reaction Equations (2003), in cooperation with Willem Hundsdorfer (CWI).

Selected awards and honors

2011	Ridder in de Orde van de Nederlandse Leeuw
2007	CWI Fellow

Selected academic activities

2007 – 2010	Chairman WSC: Working Community Scientific Computing
2004 – 2009	General chair Bsik ICT project BRICKS

Recent publications

J.G. Verwer. Generalized collocation methods: solutions to nonlinear problems [book review of MR2355054]. *SIAM Review 52*, 216–217, 2010.

J.G. Verwer. Component splitting for semi-discrete Maxwell equations. *BIT: Numerical Mathematics*, 2010.

J.G. Verwer, M.A. Botchev. Unconditionally stable integration of Maxwell's equations. *Linear Algebra and its Applications 431*, 300–317, 2009.

J.G. Verwer. Runge–Kutta methods and viscous wave equations. *Numerische Mathematik 112*, 485–507, 2009.

M.A. Botchev, J.G. Verwer. Numerical integration of damped Maxwell equations. *SIAM Journal on Scientific Computing 31*, 1322–1346, 2009.

Jurgen Vinju

Career

2000 – 2005	PhD student SEN1 – Software Analysis and Transformation
2005 – 2010	Scientific staff member SEN1 – Software Analysis and Transformation
2011 –	Group leader SEN1 – Software Analysis and Transformation

Research

Jurgen Vinju is adjunct group leader of SEN1. His PhD thesis from 2005 was titled "Analysis and Transformation of Source Code by Parsing and Rewriting". The group studies software systems: their design, their construction and their inevitable evolution. We focus on complexity of understanding as the primary quality attribute of software systems. Software complexity is an important subject, which is not only due to the ubiquity of software systems and failing ICT projects in society: there is a general lack of deep understanding of what causes software systems to be complex and how complex systems can be made simpler. We study software analysis, software transformation and software generation techniques to try and improve this situation.

Selected awards and honors

2008	IBM "Bravo" Award

Selected academic activities

2010	Program Chair International Working Conference on Source Code Analysis and Manipulation
2010 –	Member steering committee SLE
2010 –	Member steering committee SCAM
2009	Program Chair Language Description Tools and Applications

Selected publications

P. Klint, T. van der Storm, J.J. Vinju. EASY meta-programming with Rascal. *Proceedings of the Summer School on Generative and Transformational Techniques in Software Engineering 2009, Lecture Notes in Computer Science 6491*, 222–289, 2011.

H.J.S. Basten, J.J. Vinju. Faster ambiguity detection by grammar filtering. *Proceedings of the Tenth Workshop on Language Descriptions, Tools and Applications*, 2010.

P. Klint, T. van der Storm, J.J. Vinju. Rascal: A domain specific language for source code analysis and manipulation. *Proceedings of IEEE International Working Conference on Source Code Analysis and Manipulation 2009*, 2009.

P. Charles, R.M. Fuhrer, S.M. Sutton, E. Duesterwald, J.J. Vinju. Accelerating the creation of customized, language-specific IDEs in Eclipse. *Proceedings of the 24th Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2009*, 191–206, 2009.

G.R. Economopoulos, P. Klint, J.J. Vinju. Faster scannerless GLR parsing. *Proceedings of the 18th International Conference on Compiler Construction: Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2009, Lecture Notes in Computational Science and Engineering 5501*, 126–141, 2009.

J.J. Vinju. Analysis and transformation of source code by parsing and rewriting. PhD thesis 2005.

Arjen P. de Vries

Career

1999 – 2003	Researcher INS1 – Database Architectures
2003 – 2010	Scientific staff member INS2 – Interactive Information Access
2008 –	Full professor (0.2 fte) at the Delft University of Technology
2011 –	Group leader INS2 – Interactive Information Access

Research

Arjen de Vries is a tenured researcher at CWI, where he leads the Interactive Information Access research group, and a full professor (0.2 fte) in the area of multimedia data management at the Technical University of Delft. De Vries is especially interested in the integration of (multimedia) information retrieval and database systems. He has worked on topics including (multimedia) information retrieval, database architecture, query processing, retrieval system evaluation, and ambient intelligence. He participated in EU project VITALAS leading the information retrieval work package and in Dutch national project MultimediaN as (assistant) project leader of the semantic access project. De Vries is a member of the EU PetaMedia Network of Excellence through his Delft affiliation, initiating the Data Collection integrated research project. He coordinates the Entity Ranking track at TREC.

Selected awards and honors

2007	Best student paper, ECIR 2007
2004	Best student paper, CIVR 2004

Selected academic activities

2009 –	Member steering committee Initiative for the Evaluation of XML Retrieval (INEX)
2009 –	Member of program committee TREC
2007	Co-organizer ACM SIGIR Conference on Research and Development in Information Retrieval SIGIR
2007 –	Member editorial board *Information Retrieval*

Selected publications

T. Tsikrika, C. Diou, Arjen P. de Vries, A. Delopoulos. Reliability and effectiveness of clickthrough data for automatic image annotation. *International Journal on Multimedia Tools and Applications*, 2010.

J. Wang, Arjen P. de Vries, M.J.T. Reinders. Unified relevance models for rating prediction in collaborative filtering. *ACM Transactions on Information Systems 26*, 1–42, 2008.

R. Cornacchia, S. Héman, M. Zukowski, Arjen P. de Vries, P.A. Boncz. Flexible and efficient IR using array databases. *VLDB Journal 17*, 151–168, 2008.

H.M. Blanken, Arjen P. de Vries, H.E. Blok, L. Feng (editors). Multimedia Retrieval (Data-Centric Systems and Applications). *Data-centric systems and applications,* Springer, 2007.

R. Cornacchia, Arjen P. de Vries. A parameterised search system. *Advances in Information Retrieval, 29th European Conference on IR Research, ECIR 2007*, 4–15, 2007.

J.A. List, V. Mihajlovic, G. Ramirez, Arjen P. de Vries, D. Hiemstra, H.E. Blok. TIJAH: embracing IR methods in XML databases. *Information Retrieval 8*, 547–570, 2005.

Ronald de Wolf

Career

1997 –	Scientific staff member PNA6 – Algorithms and Complexity
2001 – 2002	Postdoc at UC Berkeley
2011 –	Professor University of Amsterdam

Research

My main interests are quantum computing and complexity theory.

Selected awards and honors

2003	Cor Baayen Award, ERCIM

Selected academic activities

2010	Member program committee STACS 2011
2009	Member program committee ICALP 09
2009	Member program committee Complexity 2010
2008	Member steering committee QIP
2008	Member program committee Complexity 2008
2008 – 2011	Member editorial board *Theory of Computing*, an open access journal
2007	Member steering committee QIP

Selected publications

A. Drucker, R. de Wolf. Quantum proofs for classical theorems. *Theory of Computing*, 2010.

R. de Wolf. Error-correcting data structures. *Proceedings of Stacs 2009*, 313–324, 2009.

D. Gavinsky, J. Kempe, O. Regev, R. de Wolf. Bounded-error quantum state identification and exponential separations in communication complexity. *SIAM Journal on Computing 39*, 1–24, 2009.

D. Gavinsky, J. Kempe, I. Kerenidis, R. Raz, R. de Wolf. Exponential separation for one-way quantum communication complexity, with applications to cryptography. *SIAM Journal on Computing 38*, 1695–1708, 2008.

H. Klauck, R. Spalek, R. de Wolf. Quantum and classical strong direct product theorems and optimal time-space tradeoffs. *SIAM Journal on Computing 36*, 1472–1493, 2007.

Bert Zwart

Career

2002 – 2009	Scientific staff member PNA2 – Probability and Stochastic Networks
2006 – 2008	Associate professor Georgia Institute of Technology
2009 –	Full professor VU University Amsterdam
2010 –	Group leader PNA2 – Probability and Stochastic Networks

Research

The research of Bert Zwart is in applied probability and stochastic networks. Using probabilistic techniques such as laws of large numbers, central limit theorems, and large deviations, his research offers important qualitative insights and design rules for models that appear in call centers, computer-communications networks, and manufacturing systems. More recently, he also became involved in revenue management and dynamic pricing.

Selected awards and honors

2010	Best paper award
2008	Vidi Innovational Research Grant NWO
2008	Erlang Prize INFORMS
2005	Veni Innovational Research Grant NWO

Selected academic activities

2009 –	Editor-in-chief *Surveys in Operations Research and Management Science*
2009 –	Area editor *Operations Research*
2008 –	Senior fellow EURANDOM

Recent publications

Z. Palmowski, B. Zwart. On perturbed random walks. *Journal of Applied Probability 47*, 1203–1204, 2010.

J. Blanchet, B. Zwart. Asymptotic expansions of defective renewal equations with applications to perturbed risk models and processor sharing queues. *Mathematical Methods in Operations Research 72*, 311–326, 2010.

J. Dai, V. Gupta, M. Harchol Balter, B. Zwart. On the inapproximability of M/G/K: Why two moments of service distribution are not enough. *Queueing Systems 64*, 5–48, 2010.

J. Nair, A. Wierman, B. Zwart. Tail-robust scheduling using Limited Processor Sharing. *Performance Evaluation 67*, 978–995, 2010.

N. Litvak, W.R.W. Scheinhardt, Y. Volkovich, B. Zwart. Characterization of tail dependence for in-degree and PageRank. *Proceedings of WAW 2009*, 2009.

Centrum Wiskunde & Informatica (CWI) is the national research institute for mathematics and computer science in the Netherlands. The institute's strategy is to concentrate research on four broad, societally relevant themes: earth and life sciences, the data explosion, societal logistics and software as service.

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April 2011

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