Menkes van den Briel

Contact

Name	Menkes van den Briel
Company	National ICT Australia
Position	Researcher
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Summary

Menkes van den Briel is an operations research scientist with a consistent track record in developing practical solutions for complex real-world problems. His work is impactful both academically and in practice.

His research on airplane boarding was implemented system-wide by US Airways from 2003 to 2009, and won the first prize in the Operations Research in Practice poster session at the INFORMS annual meeting in 2003. In relation to this work, Menkes has been cited on the front page of **The Wall Street Journal** and in numerous other media including **The New York Times**, **Wired** magazine, and **National Public Radio**.

Menkes PhD thesis on automated planning was distinguished with an **honorable mention** at the International Conference on Automated Planning and Scheduling Best Dissertation Award in 2009. He has been a regular member of the program committee for AAAI, IJCAI, and ICAPS since 2008.

Throughout his postdoc at the University of Colorado Boulder, Menkes taught supply chain management in the business school. During this time, he helped a travel company save over $100,000 by scheduling flights for their polar bear viewing tours and started looking into the problem of open pit mine production scheduling.

Overall, Menkes is a generous collaborator and excellent communicator. He has great linear and mixed integer programming skills, and experience in different optimization solvers and modeling languages including CPLEX, Gurobi, and AMPL.

Education

August 2008 **PhD in Industrial Engineering**, *Arizona State University*, Tempe, AZ, USA.
Thesis title: Integer Programming Approaches for Automated Planning.

May 2000 **MS in Econometrics**, *Universiteit Maastricht*, Maastricht, Netherlands.
Thesis title: Algorithms for CDM on Slot Allocation: Slot Swapping and Slot Shifting.

Employment

2011–present **Research Staff Member**, *NICTA*, Sydney, Australia.
Research staff member in the Intelligent Fleet Logistics group.
- Managed the data collection, helped with the optimization process and provided further analysis and interpretation of the data for a large consulting project.

2011–2011 **Senior Consultant**, *Kyos Energy Consulting*, Haarlem, Netherlands.
Consultant in the gas and power market.
- Developed a prototype model for gas portfolio optimization.

2008–2010 **Associate Researcher**, *Leeds School of Business, University of Colorado*, Boulder, CO, USA.
Associate researcher in the Operations and Information Management group.
- Created the 2009 season schedule for polar bear viewing tours that saved a travel company over $100,000 compared to their existing schedule.

2003–2008 **Associate Researcher**, *Arizona State University*, Tempe, AZ, USA.
PhD student under AAAI fellow Subbarao Kambhampati in the Department of Computer Science and Engineering.
- Revived the use of integer programming approaches in automated planning.
- Distinguished with an **honorable mention** at the International Conference on Automated Planning and Scheduling Best Dissertation Award 2009.

Summer 2007 **Summer Intern**, *Palo Alto Research Center*, Palo Alto, CA, USA.
Summer intern working with Haitham Hindi in the Embedded Reasoning Area group.
- Developed a unified framework, based on network flow models, for solving generic job shop scheduling problems.

2002–2003 **Assistant Researcher**, *Arizona State University*, Tempe, AZ, USA.
Working with Rene Villalobos in the Department of Industrial Engineering.
- Developed efficient group boarding strategies for US Airways (previously America West Airlines). Results were implemented system-wide by the airline from 2003 to 2009.
- "This is a great illustration of how science helped improve both efficiency and customer service," says Mr. Mulé, Senior Vice President for Customer Services. **The Wall Street Journal**.

2000–2001 **Junior Consultant**, *ORTEC*, Gouda, Netherlands.
Junior consultant in the ORTEC Systems group.
- Worked on SprintManager and ORTEC Shortrec, commercial software for optimizing transportation and distribution planning.

1999–2000 **Assistant Researcher**, *Dutch National Aerospace Laboratory*, Amsterdam, Netherlands.
MS student under Marjan van den Akker and Peter de Waal at the Dutch National Aerospace Laboratory.
- Developed algorithms for slot swapping and slot shifting, two applications for collaborative decision making in air traffic flow management.
- Results were presented at the FAA/EUROCONTROL Technical Meeting Interchange.

Awards

Winner of the A. Richard Newton Excellence in Wealth Creation at the NICTA impact awards 2011 (team prize).

Honorable mention at the International Conference on Automated Planning and Scheduling Best Dissertation Award in 2009

First prize in the Operations Research in Practice poster session at the INFORMS annual meeting in 2003.

Research interests

- Operations research
- Automated planning
- Artificial intelligence
- Mine scheduling

Research

Journal Articles

M.H.L. van den Briel, T. Vossen, and S. Kambhampati. (2008), **Loosely Coupled Formulations for Automated Planning: An Integer Programming Perspective**. *Journal of Artificial Intelligence Research*, vol. 31, p. 217-257.

M.H.L. van den Briel, and S. Kambhampati. (2005), **Optiplan: A Planner Based on Integer Programming (Engineering Note)**. *Journal of Artificial Intelligence Research*, vol. 24, p. 919-931.

M.H.L. van den Briel, J.R. Villalobos, G.L. Hogg, T. Lindemann, and A. Mulé (2005), **America West Airlines Develops Efficient Boarding Strategies**. *Interfaces*, vol. 35, nr. 3, p. 191-201.

P.R. de Waal, **M.H.L. van den Briel**, and J.M. van den Akker (2002), **Slot Swapping Applications for Collaborative Decision Making**. *Air Traffic Control Quarterly*, vol 11, nr 1, p. 65-84.

Conference Proceedings

E. Capelo, J.L. de Castro Silva, **M.H.L. van den Briel**, and J.R. Villalobos (2008), **Aircraft Boarding Fine-Tuning**. In *Proceedings of the 14th International Conference on Industrial Engineering and Operations Management* (ICIEOM).

M.H.L. van den Briel, J. Benton, S. Kambhampati, and T. Vossen (2007), **LP-Based Heuristic for Optimal Planning**. In *Proceedings of the 13th International Conference on Principles and Practice of Constraint Programming* (CP), p. 651-665.

J. Benton, **M.H.L. van den Briel**, and S. Kambhampati (2007), **A Hybrid Linear Programming and Relaxed Plan Heuristic for Partial Satisfaction Planning Problems**. In *Proceedings of the 17th International Conference on Automated Planning and Scheduling* (ICAPS), p. 34-41.

M.B. Do, J. Benton, **M.H.L. van den Briel**, and S. Kambhampati (2007), **Planning with Goal Utility Dependencies**. In *Proceedings of the 20th International Joint Conference on Artificial Intelligence* (IJCAI), p. 1872-1878.

M.H.L. van den Briel, T. Vossen, and S. Kambhampati (2005), **Reviving Integer Programming Approaches for AI Planning: A Branch-and-Cut Framework**. In *Proceedings of the 15th International International Conference on Automated Planning and Scheduling* (ICAPS), p. 310-319.

M.H.L. van den Briel, R. Sanchez, M.B. Do, and S. Kambhampati (2004), **Effective Approaches for Partial Satisfaction (Over-Subscription) Planning**. In *Proceedings of the 24th National Conference on Artificial Intelligence* (AAAI), p. 562-569.

M.H.L. van den Briel, J.R. Villalobos, and G.L. Hogg (2003), **The Aircraft Boarding Problem**. In *Proceedings of the 12th Industrial Engineering Research Conference* (IERC).

Other

M.H.L. van den Briel (2008), Integer programming Approaches for Automated Planning (PhD thesis).

M.H.L. van den Briel, and S. Kambhampati (2007), **Fluent Merging: A general technique to Improve Reachability Heuristics and Factored Planning**. In *Proceedings of the ICAPS Workshop on Heuristics for Domain-Independent Planning: Progress, ideas, Limitations, Challenges*.

J. Benton, **M.H.L. van den Briel**, and S. Kambhampati (2007), **Finding Admissible Bounds for Over-Subscription Planning Problems** In *Proceedings of the ICAPS Workshop on Heuristics for Domain-Independent Planning: Progress, ideas, Limitations, Challenges*.

M.H.L. van den Briel, S. Kambhampati, and T. Vossen (2006), Planning with Preferences and Trajectory Constraints by Integer Programming. In *Proceedings of the ICAPS Workshop on Preferences and Soft Constraints in Planning*.

M.H.L. van den Briel, R. Sanchez, and S. Kambhampati (2004), **Over-Subscription Planning: A Partial Satisfaction Problem**. In *Proceedings of the ICAPS Workshop on integrating Planning into Scheduling*.

M.H.L. van den Briel (2000), Algorithms for CDM on Slot Allocation: Slot Swapping and Slot Shifting (MS thesis).

Conference Presentations

M.H.L. van den Briel, T. Vossen, A. Newman, and K. Wood (2010), A Nested Benders Decomposition Approach to Open Pit Mine Production Scheduling. *INFORMS Annual Meeting*, Austin, TX, USA.

M.H.L. van den Briel, and T. Vossen (2009), Optimal Automated Planning. *INFORMS Annual Meeting*, San Diego, California, USA.

M.H.L. van den Briel, T. Vossen, S. Kambhampati, and J.W. Fowler (2008), Artificial Intelligence Planning and Operations Research (invited contribution). *INFORMS Annual Meeting*, Washington, DC, USA.

M.H.L. van den Briel, and J.R. Villalobos (2006), How to Board a 150 Seat Airplane in Less Than 15 Minutes? (invited contribution). *21st European Conference on Operational Research*, Reykjavik, Iceland.

T. Vossen, **M.H.L. van den Briel**, and S. Kambhampati (2005), A Branch-and-Cut Framework for Artificial Intelligence Planning. *9th INFORMS Computing Society Conference*, Annapolis, MD, USA.

M.H.L. van den Briel, J.R. Villalobos, and A. Keha (2004), Improved Group Configurations for Zone/Group Boarding. *INFORMS Annual Meeting*, Denver, CO, USA.

M.H.L. van den Briel, J.R. Villalobos, and G.L. Hogg (2003), Efficient Airplane Boarding Strategies. *INFORMS Annual Meeting*, Atlanta, GA, USA.

P.R. de Waal, **M.H.L. van den Briel**, and J.M van den Akker (2001), Slot Swapping Applications for CDM (invited contribution). *FAA/EUROCONTROL Technical Interchange Meeting on CDM in Air Traffic Flow Management*, Reston, VA, USA.

Teaching

2008–2010 **OPIM4050 Supply Chain Management**, *Leeds School of Business, University of Colorado Boulder*, Instructor.
40+ students

Fall 2009 **OPIM4900 Independent Study**, *Leeds School of Business, University of Colorado Boulder*, Instructor.
1 student

Spring 2002 **IEE574 Deterministic Operations Research Models**, *Department of Industrial Engineering, Arizona State University*, Teaching Assistant/Grader.
50+ students

Fall 2001 **IEE376 Operations Research Techniques**, *Department of Industrial Engineering, Arizona State University*, Teaching Assistant/Grader.
30+ students

Service

Professional
Program committee member:
- AAAI, 2008, 2010
- ECAI, 2010
- ICAPS, 2009, 2011, 2012
- IJCAI, 2009, 2011

External reviewer:
- AAAI, 2006
- ICAPS, 2007, 2008

Academic
Student representative of the INFORMS Chapters/Fora Committee, 2004–2008.
Vice President, INFORMS Student Chapter at Arizona State University, 2002.

Public
Treasurer, Phoenix Chapter of the National Space Society, 2005–2008.
Treasurer, Mars Society Phoenix Chapter, 2005–2008.
Treasurer, MSAV UROS, the student association for track and field at Universiteit Maastricht, 1998–1999.
Coeditor, PerVectum, the magazine for econometricians at Universiteit Maastricht, 1996–1999.
Coach, AV Kimbria, Maastricht, Netherlands, 1996–1999.

Technical skills

Programming: C++, Matlab, Perl, Python
Optimization software: CPLEX, Gurobi, AMPL
Operating systems: Windows, Linux

Media Coverage

Newspapers

H. Klimpe, October 1, 2010. **Schneller ins Flugzeug**. *Financial Times Deutschland*, p. 28.

P. Finney. November 14, 2006. **Loading an airliner is rocket science**. The New York Times, p. C1.

D. Price. August 26, 2006. **Airlines trying to speed up boarding**. The News and Observer, p. B1

P. Bernau. July 10, 2006. **Auf die Plätze, Passagiere! Financial Times Deutschland**, p. 30

G. Stoller. June 27, 2006. **Getting fliers on jets faster**. USA TODAY, p. B5.

H. Stil. June 23, 2006. Instappen in vliegtuigen kan sneller. Het Parool, p. 22-23

B. Bigelow. June 21, 2006. **No 'cattle car'? Southwest plans S.D. boarding tests**. The San Diego Union-Tribune, p. A1 (front page).

D. Bear and A. Sostek. June 18, 2006. **There's more than one way to fill a plane**. Pittsburgh Post-Gazette, p. A1 (front page).

T. Ramstack. April 23, 2006. Manned mission to "Mars". The Washington Times, p. A1 (front page).

R. Yu. January 10. 2006. **Airlines change how they herd us aboard**. USA TODAY, p. B1.

N. Zamiska. November 2, 2005. **Plane Geometry: Scientists Help Speed Boarding of Aircraft**. The Wall Street Journal, p. A1 (front page).

H. Mattern. May 1, 2003. AmWest hopes new boarding procedure will save time for all involved. The Arizona Republic, p. B1.

Magazines

T. Hayden. January, 2008. **10 Ways to Fix Air Travel. Popular Mechanics**. p. 85.

A. Turkenburg. January, 2007. De Instapprof. Elsevier Thema. p. 15.

T. Hayden. June, 2006. **Now Boarding, Fast**. Wired. p. 32.

Radio

Day to day. June 21, 2006. **Plane Truth: Seating Passengers Is a Pain**. National Public Radio.

Internet

L. Grossman. September 19, 2011 **Test shows most efficient way to board a plane**. New Scientist.

D. Nelson. September 21, 2009. **The Fastest Man Alive?** Quotronics Limited.

D. Reed and R. Yu. June 20, 2006. **Northwest tries first-in-line boarding**. USA TODAY.

D. Demerjian. May 9, 2006. **Airlines Try Smarter Boarding**. Wired News.

Referees

Feel free to contact any of my referees.

Contact information has been removed for this online version