

Peter van Beek

Curriculum Vitae

School of Computer Science
University of Waterloo
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Education

- 1990 **PhD**, *University of Waterloo.*
- 1986 **MMath**, *University of Waterloo.*
- 1984 **BSc (Honours)**, *University of British Columbia.*

Research Interests

Artificial Intelligence: constraint programming, scheduling, sequencing, planning, applied machine learning

Honours and Awards

- 2022–present **AAIA Fellow**, *Asia-Pacific Artificial Intelligence Association.*
- 2019–present **CAIAC Fellow**, *Canadian Artificial Intelligence Association.*
- 2008–present **AAAI Fellow**, *Association for the Advancement of Artificial Intelligence.*
 - 2017 **Best Paper Award**, *Canadian Conference on Artificial Intelligence.*
 - 2011 **Best Paper Award**, *Canadian Conference on Artificial Intelligence.*
- 2003–2008 **IBM Canada CAS Fellow**, *IBM Canada.*
 - 2008 **Best Paper Award**, *Canadian Conference on Artificial Intelligence.*
- 2004–2007 **Mathematics Faculty Research Fellow**, *University of Waterloo.*
 - 2007 **Outstanding Performance Award**, *University of Waterloo.*
- 2002 **Sir Alan Newell Visiting Fellowship**, *Griffith University, Australia.*
- 2001 **Best Paper Award (Innovative Applications Track)**, *International Conference on Principles and Practice of Constraint Programming.*
- 2001 **Best Paper Award**, *Canadian Conference on Artificial Intelligence.*
- 1995 **Outstanding Paper Award**, *International Joint Conference on Artificial Intelligence.*
- 1992 **Honorable Mention Award for Best Written Paper**, *AAAI Conference on Artificial Intelligence.*

Employment

- 2023–current **Adjunct Professor & Professor Emeritus**, *University of Waterloo*.
- 2000–2023 **Professor**, *University of Waterloo*.
- 2018–2021 **Founding Co-Director**, *Waterloo Artificial Intelligence Institute, University of Waterloo*.
- 2018–2020 **Associate Director**, *Computer Science, University of Waterloo*.
- 2012–2014 **Chair**, *Academic Freedom and Tenure Committee, Faculty Association of the University of Waterloo*.
- 2007–2009 **Director of Infrastructure**, *Computer Science, University of Waterloo*.
- 2002–2004 **Director of Graduate Studies**, *Computer Science, University of Waterloo*.
- 1999–2000 **Associate Chair (Undergraduate)**, *Computing Science, University of Alberta*.
- 1999–2000 **Professor**, *University of Alberta*.
- 1995–1999 **Associate Professor**, *University of Alberta*.
- 1996 **Visiting Professor**, *EPFL, Switzerland*.
- 1990–1995 **Assistant Professor**, *University of Alberta*.
- 1986 **Instructor**, *Redeemer College, Ontario*.

Professional Experience

Journal Activities

- 2015–2022 **Associate Editor**, *Computational Intelligence*, Wiley.
- 2009–2016 **Associate Editor**, *Artificial Intelligence*, Elsevier.
- 2010–2016 **Associate Editor**, *Transactions on Intelligent Systems and Technology*, ACM.
- 2010–2015 **Advisory Board Member**, *Constraints*, Springer.
- 2005–2009 **Editor-in-Chief**, *Constraints*, Springer.
- 2005 **Guest Editor (with Fahiem Bacchus)**, *Annals of Mathematics and Artificial Intelligence*, Special issue 44(4), Springer.
- 1995–2004 **Editorial Board Member**, *Constraints*, Springer.
- 2002–2004 **Advisory Board Member**, *J. of AI Research*, AI Access Foundation.
- 1999–2001 **Associate Editor**, *J. of AI Research*, AI Access Foundation.
- 1996–1999 **Editorial Board Member**, *User Modeling and User-Adapted Interaction*, Springer.
- 1996–1998 **Editorial Board Member**, *J. of AI Research*, AI Access Foundation.
- Reviewer:** *Constraints*, *AIJ*, *ACM TIST*, *COIN*, *JAIR*, *JACM*, *ACM CACM*, *IEEE TKDE*, *Annals of Mathematics and AI*, *Discrete Optimization*, *Theoretical Computer Science*, *Journal of Automated Reasoning*, *Annals of OR*, *European Journal of OR*, *Journal of Heuristics*, *Journal of Scheduling*, *Computer Journal*

Conference Activities

AAAI — Conference of the Association for Artificial Intelligence

AI+Math — International Symposium on Artificial Intelligence and Mathematics

CAI — Canadian Conference on Artificial Intelligence

CP — International Conf. on Principles and Practice of Constraint Programming

ECAI — European Conference on Artificial Intelligence

IJCAI — International Joint Conference on Artificial Intelligence

KR — Int'l Conf. on Principles of Knowledge Representation and Reasoning

PACLING — Conference of the Pacific Assoc. for Comput. Linguistics

TIME — International Symposium on Temporal Representation and Reasoning

UAI — Conference on Uncertainty in Artificial Intelligence

UM — International Conference on User Modeling

- 2022 **Program Committee Member**, *28th CP*.
- 2021 **Program Committee member**, *UAI*.
Area Chair, *30th IJCAI*.
Program Committee Member, *36th AAAI*.
- 2020 **Program Committee member**, *UAI*.
Senior Program Committee member, *29th IJCAI*.
Program Committee Member, *26th CP*.
- 2019 **Senior Program Committee member**, *28th IJCAI*.
Program Committee Member, *34th AAAI*.
Program Committee Member, *25th CP*.
- 2018 **Senior Program Committee member**, *27th IJCAI*.
Program Committee Member, *33rd AAAI*.
Program Committee Member, *24th CP*.
- 2017 **Program Committee Member**, *30th CAI*.
Program Committee Member, *26th IJCAI*.
Program Committee Member, *23rd CP*.
- 2016 **Program Committee Member**, *29th CAI*.
- 2015 **Senior Program Committee Member**, *29th AAAI*.
Program Committee Member, *28th CAI*.
Program Committee Member, *21st CP*.
Area chair, *24th IJCAI*.
- 2014 **Program Co-Chair**, *27th CAI*.
- 2013 **Senior Program Committee Member**, *27th AAAI*.
Senior program Committee Member, *23rd IJCAI*.

- Program Committee Member, 26th CAI.**
Program Committee Member, 19th CP.
- 2012 **Senior Program Committee Member, 26th AAAI.**
Program Committee Member, 25th CAI.
Program Committee Member, 20th ECAI.
- 2011 **Senior program Committee Member, 22nd IJCAI.**
Program Committee Member, 24nd CAI.
Program Committee Member, 17th CP.
- 2010 **Senior Program Committee Member, 24th AAAI.**
Program Committee Member, Eleventh AI+Math.
Program Committee Member, 23nd CAI.
Program Committee Member, 19th ECAI.
Program Committee Member, 16th CP.
- 2009 **Program Committee Member, Sixteenth TIME.**
Program Committee Member, 22nd CAI.
Program Committee Member, 21st IJCAI.
Program Committee Member, 15th CP.
- 2008 **Senior Program Committee Member, 23nd AAAI.**
Program Committee Member, Tenth AI+Math.
Program Committee Member, 21st CAI.
Program Committee Member, 18th ECAI.
Program Committee Member, 14th CP.
- 2007 **Senior Program Committee Member, 22nd AAAI.**
Reviewer, 20th IJCAI.
Program Committee Member, Twentieth CAI.
Program Committee Member, 13th CP.
- 2006 **Senior Program Committee Member, 21st AAAI.**
Program Committee Member, Twelfth CP.
Program Committee Member, Ninth AI+Math.
Program Committee Member, Nineteenth CAI.
Program Committee Member, 17th ECAI.
- 2005 **Program Committee Member, Twentieth AAAI.**
Program Committee Member, Eighteenth CAI.
Program Chair, Eleventh CP.
- 2004 **Program Committee Member, Seventeenth CAI.**
Program Committee Member, Nineteenth AAAI.

- Program Committee Member, *Eleventh TIME.***
Program Co-Chair, *Eighth AI+Math.*
- 2004 **Conference Co-Chair, *Tenth CP.***
- 2003 **Reviewer, *Eighteenth IJCAI.***
Program Committee Member, *Tenth TIME.*
Program Committee Member, *Sixteenth CAI.*
Program Committee Member, *Ninth CP.*
- 2002 **Workshop Chair, *Eighth CP.***
Senior Program Committee Member, *Eighteenth AAAI.*
Reviewer, *Fifteenth ECAI.*
Program Committee Member, *Seventh AI+Math.*
Program Committee Member, *Ninth TIME.*
Program Committee Member, *Fifteenth CAI.*
- 2001 **Workshop Chair, *Seventeenth IJCAI.***
Reviewer, *Seventeenth IJCAI.*
Program Committee Member, *PACLING-2001 CP.*
Program Committee Member, *Fourteenth CAI.*
Program Committee Member, *Eighth TIME.*
- 2000 **Senior Program Committee Member, *Seventeenth AAAI.***
Program Committee Member, *Thirteenth CAI.*
Program Committee Member, *Sixth CP.*
Program Committee Member, *Sixth AI+Math.*
- 1999 **Program Committee Member, *Sixteenth AAAI.***
Program Committee Member, *PACLING-1999 CP.*
Program Committee Member, *Fifth CP.*
- 1998 **Program Committee Member, *Twelfth CAI.***
Program Committee Member, *Thirteenth ECAI.*
Program Committee Member, *KR-1998.*
Program Committee Member, *Fourth CP.*
Program Committee Member, *Fifth TIME.*
Program Committee Member, *Fifth AI+Math.*
Program Committee Member, *Fifteenth AAAI.*
- 1997 **Reviewer, *Fifteenth IJCAI.***
Program Committee Member, *Third CP.*
Program Committee Member, *Fourteenth AAAI.*
- 1996 **Reviewer, *Eleventh CAI.***

- Publicity Chair**, *Second CP*.
- Program Committee Member**, *Thirteenth AAAI*.
- Program Committee Member**, *Third TIME*.
- Program Committee Member**, *Fifth UM*.
- Co-Chair, Doctoral Consortium**, *Fifth UM*.
- 1995 **Reviewer**, *Fourteenth IJCAI*.
- Program Committee Member**, *Second TIME*.
- Program Committee Member**, *First CP*.
- 1994 **Reviewer**, *Tenth CAI*.
- Program Committee Member**, *Twelfth AAAI*.
- Program Committee Member**, *KR-1994*.
- 1993 **Program Committee Member**, *PACLING-1993 CP*.
- Program Committee Member**, *Eleventh AAAI*.
- 1992 **Reviewer**, *Ninth CAI*.
- Program Committee Member**, *Third UM*.
- 1991 **Reviewer**, *Twelfth IJCAI*.
- 1990 **Reviewer**, *Eighth CAI*.
- 1989 **Reviewer**, *Eleventh IJCAI*.
- 1988 **Reviewer**, *Seventh CAI*.

Other Professional Activities

- 2020 **External Evaluator**, *Computer Science*, University of British Columbia.
- 2017 **Chair**, *Computing Science Graduate Program Review*, University of Alberta.
- 2017 **External Evaluator**, *Computer Science*, University of Regina.
- 2017–2021 **Member**, *University Appointments Review Committee*, University of Waterloo.
- 2015–2017 **Chair**, *School Advisory Committee on Appointments*, School of Computer Science.
- 2016 **Member**, *Dissertation Award Committee*, Canadian AI Association.
- 2015 **Member**, *Doctoral Research Award Committee*, Association for CP.
- 2012–2014 **Chair**, *Academic Freedom and Tenure Committee*, University of Waterloo.
- 2013 **Member**, *Dissertation Award Committee*, Canadian AI Association.
- 2013 **Member**, *Awards Committee*, *Artificial Intelligence*.
- 2012 **Member**, *Dissertation Award Committee*, Canadian AI Association.
- 2012 **Member**, *Awards Committee*, *Artificial Intelligence Journal*.
- 2010–2018 **Member**, *Academic Freedom and Tenure Committee*, University of Waterloo.
- 2008–2011 **Member**, *Senate*, University of Waterloo.
- 2011 **Member**, *Doctoral Research Award Committee*, Association for CP.
- 2007–2010 **Member**, *Senate*, Redeemer University College.

- 2010 **Member**, *Dissertation Award Committee*, Canadian AI Association.
- 2006–2007 **Vice-President**, *Executive Committee of Association for CP*.
- 2004–2005 **Member**, *Executive Committee of Association for CP*.
- 2002 **External Evaluator**, *Computer Science*, Redeemer University College.
- 2000 **External Evaluator**, *Computing Science*, Augustana University College.
- 1994–1996 **Treasurer**, *Canadian Artificial Intelligence Association*.

Grant Proposal Reviewer: Natural Sciences and Engineering Research Council of Canada, Canadian Foundation for Innovation, MITACS Canada, National Science Foundation of USA, Israel Science Foundation, Engineering and Physical Sciences Research Council of UK, Science Foundation Ireland, Dutch National Science Foundation, Research Grants Council of Hong Kong

Research Funding

- 2017–2021 **NSERC Discovery Grant**, *Combinatorial Optimization in Machine Learning using Constraint Programming*, \$23,000/year.
- 2017–2018 **NSERC CRD Grant (with AMD)**, *Accelerating Multi-Objective Combinatorial Optimization via GPUs for Cyber-Physical Systems Design*, Krzysztof Czarnecki, principal investigator; 3 co-investigators, \$75,825/year.
- 2012–2016 **NSERC Discovery Grant**, *Constraint Programming for Probabilistic Reasoning and Compiler Optimization*, \$28,000/year.
- 2007–2008 **TD-UW Computation Finance Research Partnership Program**, *Computing Optimal Trade Execution Strategies*, Peter Forsyth and Yuying Li co-investigators, \$25,000.
- 2007–2011 **NSERC Discovery Grant**, *Constraint Programming: Models and Algorithms*, \$36,000/year.
- 2002–2006 **NSERC Discovery Grant**, *Constraint Programming: Reformulations and Methodologies*, \$38,000/year.
- 2004–2005 **NSERC CRD Grant (with IBM Canada)**, *Optimal Instruction Scheduling using Constraint Programming*, \$37,000/year.
- 2003–2005 **IBM Canada CAS Fellowship**, *IBM Canada*, \$28,000/year.
- 2002 **Sir Alan Newell Visiting Fellowship**, *Griffith University, Australia*, A\$6,000.
- 1998–2001 **NSERC Discovery Grant**, *Formulating and Solving Constraint Satisfaction Problems*, \$30,030/year.
- 2001 **HP/Intel Itanium-Based System Grants Program**, *Optimal Instruction Scheduling for the Itanium Processor*, \$26,792.
- 1999–2000 **NSERC CRD Grant (with ShivaSoft Inc.)**, *Constraint-based Assembly Line Sequencing and Scheduling*, \$69,800.
- 2000 **Startup Grant**, *University of Waterloo*, \$30,000.

- 1999 **NSERC Infrastructure Grant**, *Experiments with Constraints and Learning*, Randy Goebel, principal investigator; 2 co-investigators, \$29,467.
- 1997–1998 **ShivaSoft Research Fellowship**, *ShivaSoft Inc.*, \$57,500.
- 1994–1997 **IRIS II Research Grant**, *Institute for Robotics and Intelligent Systems*, Speech and Signal Understanding, Renato De Mori, project leader; plus 7 principal investigators; Project total over 4 years: \$649,312; U. of Alberta node total (P. van Beek): \$57,236.
- 1994–1997 **NSERC Discovery Grant**, *Applications of Constraint Networks to Temporal Reasoning*, \$22,000/year.
- 1994–1996 **IRIS II Research Grant**, *Institute for Robotics and Intelligent Systems*, Intelligent Scheduling, Randy Goebel and Bill Havens, project co-leaders, plus 6 principal investigators; Project total over 3 years: \$557,086; U. of Alberta node total (R. Goebel, P. van Beek): \$216,910.
- 1994–1996 **NSERC Infrastructure Grant**, *Artificial Intelligence Group*, Randy Goebel, principal investigator; 9 co-investigators, \$33,250/year.
- 1994 **Central Research Fund Operating Grant**, *University of Alberta*, Visit of Researcher Amnon Meisels, \$2,000.
- 1994 **NSERC Conference Grant**, \$3,505.
- 1991–1993 **NSERC Discovery Grant**, *Applications of Constraint Networks to Temporal Reasoning*, \$20,000/year.
- 1991–1993 **NSERC Infrastructure Grant**, *Artificial Intelligence / Database Systems Groups*, Randy Goebel, principal investigator; 10 co-investigators, \$45,000/year.
- 1990 **Central Research Fund Operating Grant**, *Exact and Approximate Reasoning about Qualitative Temporal Relations*, University of Alberta, \$5,000.
- 1990 **Travel Grant**, *University of Alberta, Faculty of Science*, \$405.

Undergraduate Student Supervision

- 2022 **Guanzhao Wang**, *Bayesian network structure learning*.
- 2021 **Albert Ding**, *Bayesian network structure learning*.
- 2020 **David Duan**, *NSERC USRA*, Bayesian network structure learning.
- 2020 **Dongshu Luo**, *Bayesian network structure learning*.
- 2020 **Umar Ahmed**, *Bayesian network structure learning*.
- 2019 **Yinan Zhang**, *HDR image selection*.
- 2018 **Junheng Wang**, *HDR image selection*.
- 2018 **Tobi Adewoye**, *HDR image selection*.
- 2018 **Andrew Chong Li**, *NSERC USRA*, Bayesian network structure learning.
- 2017 **Xi Zhu**, *White balancing in computational photography*.
- 2017 **Wojtek Swiderski**, *White balancing in computational photography*.

- 2017 **Kelvin Wong**, *White balancing in computational photography*.
- 2017 **Yihan Zhou**, *White balancing in computational photography*.
- 2017 **Gurpreet Gill**, *White balancing in computational photography*.
- 2017 **Eric Bai**, *White balancing in computational photography*.
- 2016 **Weijie Wang**, *White balancing in computational photography*.
- 2016 **Tengyu Cai**, *White balancing in computational photography*.
- 2016 **Michelle Pokrass**, *Rating images using machine learning*.
- 2016 **Felix Chen**, *White balancing in computational photography*.
- 2016 **Colin Lee**, *NSERC USRA*, Bayesian network structure learning.
- 2016 **Akshaya Senthil**, *White balancing in computational photography*.
- 2015 **Wuhan Zhou**, *Focus stacking in computational photography*.
- 2014 **Rudi Chen**, *NSERC USRA*, Machine learning in computational photography.
- 2014 **Khalil Choudhry**, *Focus stacking in computational photography*.
- 2014 **David Choi**, *Focus stacking in computational photography*.
- 2014 **Aliya Pazyzbekova**, *Water data analytics and focus stacking*.
- 2013 **Peter Xu**, *Focus measures and algorithms in computational photography*.
- 2013 **Max Li**, *Algorithms in computational photography*.
- 2013 **Hashim Mir**, *Focus measures and algorithms in computational photography*.
- 2002 **Thomas Lai**, *Planning using constraint programming*.
- 2002 **Chun-Fung Yuen**, *Constraint programming*.
- 1998 **Jonathan Sillito**, *Comparison of CSP models on temporal reasoning*.
- 1997 **Jyotirmoy Paul**, *Interface and scheduling algorithms for high school timetabling*.
- 1996 **Ka Yan Irene Shum**, *Relational consistency algorithms for CSPs*.
- 1994 **Shane Ruman**, *Natural language interface for course-advising system*.
- 1993 **Dennis W. Manchak**, *Backtracking algorithms for CSPs and temporal reasoning*.

Graduate Student Supervision

- current **Charupriya Sharma, PhD**, *Improved Scalability and Accuracy of Bayesian Network Structure Learning in the Score-and-Search Paradigm*.
- 2022 **Alister Liao, PhD**, *Improved Bayesian Network Structure Learning in the Model Averaging Paradigm*.
- 2020 **Daniel Tamming, MMath**, *Data Augmentation for Text Classification Tasks*.
- 2019 **Jonathan Perrie, MMath**, *Modelling Chart Trajectories using Song Features*, Co-supervised with D. Brown.
- 2018 **Steven Wang, MMath**, *Improved Artificial Neural Network Models for Predicting Hourly Water Consumption*.

- 2018 **Irish Medina, MMath**, *Predicting Short-Term Water Consumption for Multi-Family Residences.*
- 2018 **Valerie Platsko, MMath**, *Smart-Meter Enabled Estimation and Prediction of Outdoor Residential Water Consumption.*
- 2014 **David Dufour, MMath**, *Finding Cost-Efficient Decision Trees.*
- 2013 **Ray Ruvinskiy, MMath**, *Using Decision Tree Voting to Select a Polyhedral Model Loop Transformation.*
- 2013 **Mirza Omer Beg, PhD**, *Combinatorial Problems in Compiler Optimization.*
- 2012 **Vladimir Pisanov, MMath**, *Novel Value Ordering Heuristics Using Non-Linear Optimization in Boolean Satisfiability.*
- 2010 **Tyrel Russell, PhD**, *A Computational Study of Problems in Sports.*
- 2010 **Wei Li, PhD**, *Exploiting Structure in Backtracking Algorithms for Propositional and Probabilistic Reasoning.*
- 2009 **Zijie Li, MMath**, *Backdoors in Satisfiability Problems.*
- 2008 **Abid Malik, PhD**, *Constraint Programming Techniques for Optimal Instruction Scheduling.*
- 2006 **Michael Chase, MMath**, *On the Near-Optimality of List Scheduling Heuristics for Local and Global Instruction Scheduling.*
- 2006 **Tyrel Russell, MMath**, *Learning Instruction Scheduling Heuristics from Optimal Data.*
- 2006 **Huayue Wu, MMath**, *Randomization and Restart Strategies.*
- 2004 **Lars Hellsten, MMath**, *Consistency Propagation for Stretch Constraints.*
- 2004 **Vincent Park, MMath**, *An Empirical Study of Different Branching Strategies for CSPs.*
- 2000 **Xinguang Chen, PhD**, *A Theoretical Comparison of Selected CSP Solving and Modeling Techniques.*
- 2000 **Michael Bergen, MSc**, *Constraint-Based Assembly Line Sequencing.*
- 2000 **Jonathan Sillito, MSc**, *Improvements to and Estimating the Cost of Backtracking Algorithms for CSPs.*
- 1996 **Donald Banks, MSc**, *A Constraint Satisfaction Approach To Timetabling*, Co-supervised with A. Meisels.
- 1994 **Kenneth J. Schmidt, MSc**, *Clarification Dialogues for Plan Recognition in Advice-Giving Systems.*
- 1994 **Grzegorz Kondrak, MSc**, *A Theoretical Evaluation of Selected Backtracking Algorithms.*
- 1993 **Alan D. Sharpe, MSc**, *An Adaptive Approach for Acquiring Missing Knowledge*, Co-supervised with R. Goebel.

Postdoctoral Fellow Supervision

- 2011–2012 **Matthew Kitching, PhD (University of Toronto).**
- 2011 **Tyrel Russell, PhD (University of Waterloo).**
- 1995–1996 **Casey Abram, PhD (University of Durham).**

Supervisory and Examining Committee Memberships

Internal Committees

- 2023 **Mohammad Zarei, PhD thesis examiner.**
- 2022 **Zaid Hassan Chaudhry, Master's reader.**
- 2022 **Elliot Nelson, Master's reader.**
- 2021 **Haonan Duan, Master's reader.**
- 2021 **Chunxiao Li, PhD candidacy.**
- 2021 **Pascale Walters, Master's reader.**
- 2020 **David Choi, Master's reader.**
- 2020 **Mohammad Zarei, PhD candidacy.**
- 2020 **Pavel Valov, PhD thesis examiner.**
- 2020 **Gaurav Gupta, Master's reader.**
- 2020 **Alexandre Parmentier, Master's reader.**
- 2020 **Joshua Jung, PhD candidacy.**
- 2019 **Priyank Jaini, PhD thesis examiner.**
- 2019 **Aman Juhnjhnwala, Master's reader.**
- 2019 **Tim Tse, Master's reader.**
- 2019 **Wenfu Wang, PhD thesis examiner.**
- 2019 **Brandon Alcox, Master's reader.**
- 2018 **Ben Armstrong, Master's reader.**
- 2018 **Atrisha Sarkar, PhD candidacy.**
- 2018 **Ricardo Salmon, PhD thesis examiner.**
- 2018 **Pavel Valov, PhD candidacy.**
- 2018 **Ed Zulkoski, PhD thesis examiner.**
- 2018 **Lisa Elkin, Master's reader.**
- 2018 **Marta Kryven, PhD thesis examiner.**
- 2017 **Areej Alhothali, PhD thesis examiner.**
- 2017 **Alan Tsang, PhD thesis examiner.**
- 2016 **Mazen Melibari, PhD thesis examiner.**
- 2016 **Joshua Jung, Master's reader.**
- 2016 **Jordan Ross, Master's reader.**

2016 **Hadi Hosseini**, *PhD thesis examiner*.
2016 **Amirhossein Vakili**, *PhD thesis examiner*.
2016 **Ed Zulkoski**, *PhD candidacy*.
2016 **Adrian Waddell**, *PhD thesis examiner*.
2015 **Wenfu Wang**, *PhD candidacy*.
2015 **Samaneh Hosseini Semnani**, *PhD thesis examiner*.
2015 **Chengbo Li**, *Master's reader*.
2015 **Alan Tsang**, *PhD candidacy*.
2014 **Taras Kinath**, *Master's reader*.
2014 **Luyuan Lin**, *Master's reader*.
2014 **Fathiyeh Faghieh**, *PhD candidacy*.
2014 **Dean Shaft**, *Master's reader*.
2014 **Areej Alhothali**, *PhD candidacy*.
2013 **Ricardo Salmon**, *PhD candidacy*.
2013 **Rafael Olaechea**, *Master's reader*.
2013 **Lachlan Dufton**, *PhD thesis examiner*.
2013 **Jiewen Wu**, *PhD thesis examiner*.
2012 **Samaneh Hosseini Semnani**, *PhD candidacy*.
2012 **John Finnson**, *Master's reader*.
2012 **John Doucette**, *Master's reader*.
2012 **John Champaign**, *PhD thesis examiner*.
2012 **Jiewen Wu**, *PhD candidacy*.
2012 **Amirhossein Vakili**, *PhD candidacy*.
2011 **Joshua Gorner**, *Master's reader*.
2011 **Areej Alhothali**, *Master's reader*.
2010 **Lachlan Dufton**, *PhD candidacy*.
2010 **John Champaign**, *PhD candidacy*.
2010 **Georgia Kastidou**, *PhD thesis examiner*.
2010 **Daniel Rasmussen**, *Master's reader*.
2009 **Marcilio Mendonca**, *PhD thesis examiner*.
2009 **Jie Zhang**, *PhD thesis examiner*.
2008 **Selvaprabu Nadarajah**, *Master's reader*.
2008 **Milen Pavolv**, *Master's reader*.
2007 **Marcilio Mendonca**, *PhD candidacy*.
2007 **Jie Zhang**, *PhD candidacy*.
2006 **Claude-Guy Quimper**, *PhD thesis examiner*.

2005 **Xiangdong An**, *PhD thesis examiner*.
2005 **Michael Cheng**, *Master's reader*.
2005 **Marcia Wang**, *PhD thesis examiner*.
2005 **Jiongiong Chen**, *PhD thesis examiner*.
2005 **Jane Zhang**, *Master's reader*.
2005 **Claude-Guy Quimper**, *PhD candidacy*.
2004 **Paul Nijjar**, *Master's reader*.
2004 **Finnegan Southey**, *PhD thesis examiner*.
2004 **Chris Micacchi**, *Master's reader*.
2003 **Thomas Tran**, *PhD thesis examiner*.
2003 **Mike Poznanski**, *Master's reader*.
2003 **Jennifer Campbell**, *Master's reader*.
2003 **Fletcher Lu**, *PhD thesis examiner*.
2003 **Alan Angold**, *Master's reader*.
2002 **Blake Grant**, *Master's reader*.
2001 **Thomas Tran**, *PhD candidacy*.
2001 **Fletcher Lu**, *PhD candidacy*.
2000 **Tom Harke**, *Master's essay reader*.
2000 **Bruce Fraser**, *Master's reader*.
1999 **Srinivas Padmanabhuni**, *PhD thesis examiner*.
1999 **Candy Pang**, *Master's thesis examiner*.
1999 **Andreas Junghanns**, *PhD thesis examiner*.
1998 **Pawel Jachowicz**, *Master's thesis examiner*.
1998 **Jonathan Baldwin**, *PhD candidacy*.
1998 **Iqbal Goralwalla**, *PhD thesis examiner*.
1998 **David Medler**, *PhD thesis examiner*.
1998 **David McCaughan**, *PhD candidacy*.
1996 **Iqbal Goralwalla**, *PhD candidacy*.
1996 **Chenghui Wang**, *PhD thesis examiner*.
1996 **Chee H. Wong**, *Master's thesis examiner*.
1995 **Stefan Kremer**, *PhD thesis examiner*.
1994 **Yunqi Sun**, *PhD thesis examiner*.
1994 **Suryanil Ghosh**, *PhD thesis examiner*.
1994 **Narendra Ravi**, *PhD candidacy*.
1994 **Michael Boshra**, *PhD candidacy*.
1994 **C. Ronald Kube**, *PhD candidacy*.

1993 **Yong Hu**, *PhD thesis examiner*.
1993 **Stefan Kremer**, *PhD candidacy*.
1993 **Stanley K. Melax**, *Master's thesis examiner*.
1993 **Lin Shen**, *Master's thesis examiner*.
1993 **Kevin Shamanski**, *Master's thesis examiner*.
1993 **Gregory L. Lobe**, *Master's thesis examiner*.
1992 **Zhong Li**, *Master's thesis examiner*.
1992 **Yunqi Sun**, *PhD candidacy*.
1992 **Francis Lau**, *PhD thesis examiner*.
1992 **Francis Lau**, *PhD candidacy*.
1992 **Chung Hee Hwang**, *PhD thesis examiner*.
1991 **Xiaobu Yuan**, *PhD thesis examiner*.
1991 **Chenghui Wang**, *PhD candidacy*.
1991 **C. Ronald Kube**, *Master's thesis examiner*.
1991 **Andrew E. Walenstein**, *Master's thesis examiner*.
1991 **Abul K. Salek**, *Master's thesis examiner*.
1990 **Xiaobu Yuan**, *PhD candidacy*.
1990 **Suryanil Ghosh**, *PhD candidacy*.
1990 **Sam Farrage**, *Master's thesis examiner*.
1990 **Clayton D. Stafford**, *Master's thesis examiner*.

External Committees

2022 **Fulya Trösser**, **Université de Toulouse**, *PhD thesis rapporteur*.
2022 **Yasha Robert Pushak**, **UBC**, *PhD thesis examiner*.
2021 **Kari Rantanen**, **University of Helsinki**, *PhD thesis opponent*.
2021 **Md Solimul Chowdhury**, **U. of Alberta**, *PhD thesis examiner*.
2021 **Kyle E. C. Booth**, **U. of Toronto**, *PhD thesis examiner*.
2018 **Gabriel Hjort Blindell**, **KTH, Sweden**, *PhD thesis examiner*.
2017 **Christopher Srinivas**, **U. of Toronto**, *PhD thesis examiner*.
2016 **Ozan Erdem**, **U. of Toronto**, *PhD thesis examiner*.
2015 **Mohamed Ibrahim**, **Ecole Poly. de Montreal**, *PhD thesis examiner*.
2014 **Roberto Castañeda Lozano**, **KTH, Sweden**, *Ph. Lic. opponent*.
2013 **Maher Al Hossaini**, **U. of Toronto**, *PhD thesis examiner*.
2011 **Nina Naroditskaya**, **UNSW, Australia**, *PhD thesis examiner*.
2011 **Geoffrey G. Chu**, **U. of Melbourne, Australia**, *PhD thesis examiner*.
2010 **Andrei Missine**, **SFU**, *PhD thesis examiner*.
2010 **Alessandro Zanarini**, **Ecole Poly. de Montreal**, *PhD thesis examiner*.

- 2008 **George Katsirelos, U. of Toronto, PhD thesis examiner.**
- 2006 **Emmanuel Hebrard, Sydney, Australia, PhD thesis examiner.**
- 2006 **Duc Nghia Pham, Griffith U., Australia, PhD thesis examiner.**
- 2004 **Zeynep Kiziltan, Uppsala University, Sweden, PhD thesis examiner.**
- 2003 **Yuanlin Zhang, National U of Singapore, PhD thesis examiner.**
- 2003 **Diana Cukierman, SFU, PhD thesis examiner.**
- 2002 **Vladimir Ryabov, U. of Jyvaskyla, Finland, PhD thesis examiner.**
- 2001 **Vladimir Ryabov, U. of Jyvaskyla, Finland, Ph. Lic. examiner.**
- 1998 **Rattana Wetprasit, Griffith U., Australia, PhD thesis examiner.**
- 1996 **Michael Dent, U. Western Ontario, PhD thesis examiner.**
- 1995 **Jamila Sam, EPFL, Switzerland, PhD thesis examiner.**
- 1994 **Gina Koehn, U. Sask, Master's thesis examiner.**
- 1994 **Daya Gaur, SFU, Master's thesis examiner.**

Teaching Experience

- Introductory programming
- Introductory data structures
- Logic and computation
- Scientific computing
- Non-procedural programming languages
- Introductory artificial intelligence
- Graduate course in artificial intelligence
- Graduate seminar course in constraint programming

Publications

Edited Books

- B1 Peter van Beek (ed.), *Proceedings of the 11th International Conference on Principles and Practice of Constraint Programming*, Sitges, Spain, 2005. Appears as: Lecture Notes in Computer Science 3709, Springer.
- B2 Francesca Rossi, Peter van Beek, and Toby Walsh (eds.), *Handbook of Constraint Programming*, Elsevier, 2006.
- B3 Marina Sokolova and Peter van Beek (eds.), *Proceedings of the 27th Canadian Conference on Artificial Intelligence*, Montréal, 2014. Appears as: Lecture Notes in Artificial Intelligence 8436, Springer.

Refereed Journal Papers

- J1 Peter van Beek and Robin Cohen. Exact and Approximate Reasoning about Temporal Relations. *Computational Intelligence*, 6:132-144, 1990.

- J2 Robin Cohen, Fei Song, Bruce Spencer, and Peter van Beek. Exploiting Temporal and Novel Information from the User in Plan Recognition. *User Modeling and User-Adapted Interaction*, 1:125-148, 1991.
- J3 Peter van Beek. Temporal Query Processing With Indefinite Information. *Artificial Intelligence in Medicine*, 3:325-339, 1991.
- J4 Peter van Beek. Reasoning about Qualitative Temporal Information. *Artificial Intelligence*, 58:297-326, 1992.
- J5 Peter van Beek, Robin Cohen, and Ken Schmidt. From Plan Critiquing to Clarification Dialogue for Cooperative Response Generation. *Computational Intelligence*, 9:132-154, 1993.
- J6 Peter van Beek and Rina Dechter. On the Minimality and Global Consistency of Row-Convex Constraint Networks. *Journal of the ACM*, 42:543-561, 1995.
- J7 Peter van Beek and Dennis W. Manchak. The Design and Experimental Analysis of Algorithms for Temporal Reasoning. *Journal of Artificial Intelligence Research*, 4:1-18, 1996.
- J8 Grzegorz Kondrak and Peter van Beek. A Theoretical Evaluation of Selected Backtracking Algorithms. *Artificial Intelligence*, 89:365-387, 1997.
- J9 Rina Dechter and Peter van Beek. Local and Global Relational Consistency. *Theoretical Computer Science*, 173:283-308, 1997.
- J10 Peter van Beek and Rina Dechter. Constraint Tightness and Looseness versus Local and Global Consistency. *Journal of the ACM*, 44:549-566, 1997.
- J11 Xinguang Chen and Peter van Beek. Conflict-Directed Backjumping Revisited. *Journal of Artificial Intelligence Research*, 14:53-81, 2001.
- J12 Fahiem Bacchus, Xinguang Chen, Peter van Beek, and Toby Walsh. Binary vs. non-binary constraints. *Artificial Intelligence*, 140:1-37, 2002.
- J13 Claude-Guy Quimper, Alexander Golynski, Alejandro Lopez-Ortiz, and Peter van Beek. An Efficient Bounds Consistency Algorithm for the Global Cardinality Constraint. *Constraints*, 10:115-135, 2005.
- J14 Abid M. Malik, Tyrel Russell, Michael Chase, and Peter van Beek. Learning Heuristics for Basic Block Instruction Scheduling. *J. of Heuristics*, 14(6):549-569, 2008.
- J15 Abid M. Malik, Jim McInnes, and Peter van Beek. Optimal Basic Block Instruction Scheduling for Multiple-Issue Processors using Constraint Programming. *International J. on AI Tools*, 17(1):37-54, 2008.
- J16 Huayue Wu and Peter van Beek. Portfolios with Deadlines for Backtracking Search. *International J. on AI Tools*, 17(5):835-856, 2008.
- J17 Tyrel Russell, Abid M. Malik, Michael Chase, and Peter van Beek. Learning Heuristics for the Superblock Instruction Scheduling Problem. *IEEE Transactions on Knowledge and Data Engineering*, 21(10):1489-1502, 2009.

- J18 Wei Li, Pascal Poupart, and Peter van Beek. Exploiting Structure in Weighted Model Counting Approaches to Probabilistic Inference. *Journal of Artificial Intelligence Research*, 40:729-765, 2011.
- J19 Tyrel Russell and Peter van Beek. A Hybrid Constraint Programming and Enumeration Approach for Solving NHL Playoff Qualification and Elimination Problems. *European Journal of Operational Research*, 218(3):819-828, 2011.
- J20 Michael Chase, Abid M. Malik, Tyrel Russell, R. Wayne Oldford, and Peter van Beek. A Computational Study of Heuristic and Exact Techniques for Superblock Instruction Scheduling. *Journal of Scheduling*, 15(6):743-756, 2012.
- J21 Mirza Beg and Peter van Beek. A Constraint Programming Approach for Integrated Spatial and Temporal Scheduling for Clustered Architectures. *ACM Transactions on Embedded Computing Systems*, 13(1):14:1-14:23, 2013.
- J22 Rudi Chen and Peter van Beek. Improving the Accuracy and Low-light Performance of Contrast-based Autofocus using Supervised Machine Learning. *Pattern Recognition Letters*, 56:30-37, 2015.
- J23 Hashim Mir, Peter Xu, Rudi Chen, and Peter van Beek. An Autofocus Heuristic for Digital Cameras Based on Supervised Machine Learning. *J. of Heuristics*, 21(5):599-616, 2015.
- J24 Samaneh Hosseini Semnani, Otman A. Basir, and Peter van Beek. Constrained Clustering for Flocking-based Tracking in Maneuvering Target Environment. *Robotics and Autonomous Systems*. 83:243-250, 2016.

Refereed Conference Papers

- C1 Peter van Beek and Robin Cohen. Towards User-Specific Explanations from Expert Systems. *Proceedings of the Sixth Canadian Conference on Artificial Intelligence*, Montreal, Quebec, 194-198, May, 1986.
- C2 Peter van Beek. A Model For Generating Better Explanations. *Proceedings of the 25th Conference of the Association for Computational Linguistics*, Stanford, California, 215-220, July, 1987.
- C3 Peter van Beek. Approximation Algorithms for Temporal Reasoning. *Proceedings of the Eleventh International Joint Conference on Artificial Intelligence*, Detroit, Michigan, 1291-1296, August, 1989.
- C4 Peter van Beek. Reasoning about Qualitative Temporal Information. *Proceedings of the Eighth National Conference on Artificial Intelligence*, Boston, Massachusetts, 728-734, July, 1990. Also appears in: *Advance papers of the Fourth International Workshop on Qualitative Physics*, Lugano, Switzerland, July, 1990 and in *Recent Advances in Qualitative Physics*, Boi Faltings and Peter Struss (eds.), The MIT Press, 211-227, 1992.

- C5 Peter van Beek and Robin Cohen. Resolving Plan Ambiguity for Cooperative Response Generation. *Proceedings of the Twelfth International Joint Conference on Artificial Intelligence*, Sydney, Australia, 938-944, August, 1991. Also appears in: *Advance papers of the Fifth International Workshop on Natural Language Generation*, Pittsburgh, Pennsylvania, 144-149, July, 1990.
- C6 Peter van Beek. On the Minimality and Decomposability of Constraint Networks. *Proceedings of the Tenth National Conference on Artificial Intelligence*, San Jose, California, 447-452, July, 1992. Received Honorable Mention Award for Best Written Paper.
- C7 Peter van Beek and Rina Dechter. Constraint Tightness versus Global Consistency. *Proceedings of the Fourth International Conference on Principles of Knowledge Representation and Reasoning*, Bonn, Germany, 572-582, May, 1994.
- C8 Peter van Beek. On the Inherent Level of Local Consistency in Constraint Networks. *Proceedings of the Twelfth National Conference on Artificial Intelligence*, Seattle, Washington, 368-373, July, 1994.
- C9 Robin Cohen, Ken Schmidt, and Peter van Beek. A Framework for Soliciting Clarification from Users During Plan Recognition. *Proceedings of the Fourth International Conference on User Modeling*, Hyannis, Massachusetts, 11-17, August, 1994.
- C10 Grzegorz Kondrak and Peter van Beek. A Theoretical Evaluation of Selected Backtracking Algorithms. *Proceedings of the Fourteenth International Joint Conference on Artificial Intelligence*, Montreal, Quebec, 541-547, August, 1995. Received Outstanding Paper Award.
- C11 Rina Dechter and Peter van Beek. Local and Global Relational Consistency. *Proceedings of the First International Conference on Principles and Practices of Constraint Programming*, Cassis, France, 240-257, September, 1995.
- C12 Peter van Beek. An Investigation of Probabilistic Interpretations of Heuristics in Plan Recognition. *Proceedings of the Fifth International Conference on User Modeling*, Kailua-Kona, Hawaii, 113-120, January, 1996.
- C13 Don Banks, Peter van Beek, and Amnon Meisels. A Heuristic Incremental Modeling Approach to Course Timetabling. *Proceedings of the Twelfth Canadian Conference on Artificial Intelligence*, Vancouver, British Columbia, 16-29, June, 1998.
- C14 Fahiem Bacchus and Peter van Beek. On the Conversion Between Non-Binary and Binary Constraint Satisfaction Problems. *Proceedings of the Fifteenth National Conference on Artificial Intelligence*, Madison, Wisconsin, 311-318, July, 1998.
- C15 Peter van Beek and Xinguang Chen. CPlan: A Constraint Programming Approach to Planning. *Proceedings of the Sixteenth National Conference on Artificial Intelligence*, Orlando, Florida, 585-590, July, 1999.

- C16 Fulu Li, Ioanis Nikolaidis, and Peter van Beek. On the Design of Efficient Video-on-Demand Broadcast Schedules. *Proceedings of the Seventh International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems*, College Park, Maryland, 262-269, October, 1999.
- C17 Adam Beacham, Xinguang Chen, Jonathan Sillito, and Peter van Beek. Constraint Programming Lessons Learned from Crossword Puzzles. *Proceedings of the Fourteenth Canadian Conference on Artificial Intelligence*, Ottawa, Ontario, 78-87, June, 2001. Received Best Paper Award.
- C18 Michael E. Bergen, Peter van Beek, and Tom Carchrae. Constraint-based Vehicle Assembly Line Sequencing. *Proceedings of the Fourteenth Canadian Conference on Artificial Intelligence*, Ottawa, Ontario, 88-99, June, 2001.
- C19 Peter van Beek and Kent Wilken. Fast Optimal Instruction Scheduling for Single-Issue Processors with Arbitrary Latencies. *Proceedings of the Seventh Conference on Principles and Practice of Constraint Programming*, Paphos, Cyprus, 625-639, November, 2001. Received Best Paper Award (Innovative Applications Track).
- C20 Alejandro Lopez-Ortiz, Claude-Guy Quimper, John Tromp, and Peter van Beek. A Fast and Simple Algorithm for Bounds Consistency of the Alldifferent Constraint. *Proceedings of the 18th International Joint Conference on Artificial Intelligence*, Acapulco, Mexico, 245-250, August, 2003.
- C21 Claude-Guy Quimper, Peter van Beek, Alejandro Lopez-Ortiz, Alexander Golynski, and Sayyed Bashir Sadjad. An Efficient Bounds Consistency Algorithm for the Global Cardinality Constraint. *Proceedings of the 9th International Conference on Principles and Practice of Constraint Programming*, Kinsale, Ireland, 600-614, September, 2003.
- C22 Lars Hellsten, Gilles Pesant, and Peter van Beek. A Domain Consistency Algorithm for the Stretch Constraint. *Proceedings of the 10th International Conference on Principles and Practice of Constraint Programming*, Toronto, Ontario, 290-304, September, 2004.
- C23 Claude-Guy Quimper, Alejandro Lopez-Ortiz, Peter van Beek, and Alexander Golynski. Improved Algorithms for the Global Cardinality Constraint. *Proceedings of the 10th International Conference on Principles and Practice of Constraint Programming*, Toronto, Ontario, 542-556, September, 2004.
- C24 Wei Li and Peter van Beek. Guiding Real-world SAT Solving with Dynamic Hypergraph Separator Decomposition. *Proceedings of the Sixteenth IEEE International Conference on Tools with Artificial Intelligence*, Boca Raton, Florida, 542-548, November, 2004.
- C25 Tyrel Russell, Abid M. Malik, Michael Chase, and Peter van Beek. Learning basic block scheduling heuristics from optimal data. *Proceedings of the 15th CASCON*, Toronto, Ontario, October, 2005.

- C26 Wei Li, Peter van Beek, and Pascal Poupart. Performing incremental Bayesian inference by dynamic model counting. *Proceedings of the 21st National Conference on Artificial Intelligence*, Boston, Mass., July, 2006.
- C27 Abid M. Malik, Jim McInnes, and Peter van Beek. Optimal Basic Block Instruction Scheduling for Multiple-Issue Processors using Constraint Programming. *Proceedings of the 18th IEEE International Conference on Tools with Artificial Intelligence*, Washington, DC, 279-287, November, 2006.
- C28 Huayue Wu and Peter van Beek. On Universal Restart Strategies for Backtracking Search. *Proceedings of the 13th International Conference on Principles and Practice of Constraint Programming*, Providence, RI, 681-695, September, 2007.
- C29 Huayue Wu and Peter van Beek. On Portfolios for Backtracking Search in the Presence of Deadlines. *Proceedings of the 19th IEEE International Conference on Tools with Artificial Intelligence*, Patras, Greece, 231-238, October, 2007.
- C30 Tyrel Russell and Peter van Beek. Mathematically Clinching a Playoff Spot in the NHL and the Effect of Scoring Systems. *Proceedings of the 21st Canadian Conference on Artificial Intelligence*, Windsor, Ontario, 234-245, May, 2008. Received Best Paper Award.
- C31 Wei Li, Pascal Poupart, and Peter van Beek. Exploiting Causal Independence Using Weighted Model Counting. *Proceedings of the 23rd AAAI Conference on Artificial Intelligence*, Chicago, Ill., 337-343, July, 2008.
- C32 Abid M. Malik, Michael Chase, Tyrel Russell, and Peter van Beek. An Application of Constraint Programming to Superblock Instruction Scheduling. *Proceedings of the 14th International Conference on Principles and Practice of Constraint Programming*, Sydney, Australia, 97-111, September, 2008.
- C33 Tyrel Russell and Peter van Beek. Determining the Number of Games Needed to Guarantee an NHL Playoff Spot. *Proceedings of the Sixth International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CPAIOR 2009)*, Pittsburgh, 233-247, May, 2009.
- C34 Omer Beg and Peter van Beek. A Graph Theoretic Approach to Cache-Conscious Placement of Data for Direct Mapped Caches. *Proceedings of the ACM SIGPLAN International Symposium on Memory Management (ISMM 2010)*, Toronto, 113-120, June, 2010.
- C35 Zijie Li and Peter van Beek. Finding Small Backdoors in SAT Instances. *Proceedings of the 24th Canadian Conference on Artificial Intelligence*, St. John's, Newfoundland and Labrador, 269-280, May, 2011. Received Best Paper Award.
- C36 Tyrel Russell and Peter van Beek. An Empirical Study of Seeding Manipulations and Their Prevention. *Proceedings of the 22nd International Joint Conference on Artificial Intelligence*, Barcelona, 350-356, July, 2011.

- C37 Tyrel Russell and Peter van Beek. Detecting Manipulation in Cup and Round Robin Sports Competitions. *Proceedings of the 24th IEEE International Conference on Tools with Artificial Intelligence*, Athens, Greece, 285-290, November, 2012.
- C38 Hashim Mir, Peter Xu, and Peter van Beek. An Extensive Empirical Evaluation of Focus Measures for Digital Photography. *Proceedings of IS&T/SPIE International Symposium on Electronic Imaging: Digital Photography X (Vol. 9023)*, San Francisco, February, 2014.
- C39 Ray Ruvinskiy and Peter van Beek. An Improved Machine Learning Approach for Selecting a Polyhedral Model Transformation. *Proceedings of the 28th Canadian Conference on Artificial Intelligence*, Halifax, Nova Scotia, 100-113, June, 2015.
- C40 Peter van Beek and Hella-Franziska Hoffmann. Machine Learning of Bayesian Networks Using Constraint Programming. *Proceedings of the 21st International Conference on Principles and Practice of Constraint Programming*, Cork, Ireland, 428-444, September, 2015.
- C41 Colin Lee and Peter van Beek. Metaheuristics for Score-and-Search Bayesian Network Structure Learning. *Proceedings of the 30th Canadian Conference on Artificial Intelligence*, Edmonton, Alberta, May, 2017.
- C42 Jianmei Guo, Eric Blais, Krzysztof Czarnecki, and Peter van Beek. A Worst-Case Analysis of Constraint-Based Algorithms for Exact Multi-Objective Combinatorial Optimization. *Proceedings of the 30th Canadian Conference on Artificial Intelligence*, Edmonton, Alberta, May, 2017. Received Best Paper Award.
- C43 David Choi, Aliya Pazyzbekova, Wuhan Zhou, and Peter van Beek. Improved Image Selection for Focus Stacking in Digital Photography. *Proceedings of IEEE International Conference on Image Processing (ICIP-2017)*, Beijing, China, September, 2017.
- C44 Colin Lee and Peter van Beek. An Experimental Analysis of Anytime Algorithms for Bayesian Network Structure Learning. *Proceedings of Machine Learning Research, Volume 73: Advanced Methodologies for Bayesian Networks (AMBN-2017)*, Kyoto, Japan, September, 2017.
- C45 Peter van Beek and R. Wayne Oldford. Illuminant Estimation using Ensembles of Multivariate Regression Trees. *Proceedings of IS&T International Symposium on Electronic Imaging: Computational Imaging XVI*, Burlingame, California, February, 2018.
- C46 Valerie Platsko and Peter van Beek. Identification, Prediction, and Explanation of Outdoor Residential Water Consumption Using Smart Meter Data. *Proceedings of the 1st International Water Distribution Systems Analysis / Computing and Control for the Water Industry (WDSA/CCWI) Joint Conference*, Kingston, Ontario, July, 2018.
- C47 Andrew C. Li and Peter van Beek. Bayesian Network Structure Learning with Side Constraints. *Proceedings of the 9th International Conference on Probabilistic Graphical Models*, Prague, September, 2018.

- C48 Peter van Beek. Improved Image Selection for Stack-Based HDR Imaging. *Proceedings of IS&T International Symposium on Electronic Imaging: Photography, Mobile, and Immersive Imaging*, Burlingame, California, January, 2019.
- C49 Zhenyu A. Liao, Charupriya Sharma, James Cussens, and Peter van Beek. Finding All Bayesian Network Structures within a Factor of Optimal. *Proceedings of the 33rd AAAI Conference on Artificial Intelligence*, Honolulu, Hawaii, January, 2019.
- C50 Charupriya Sharma, Zhenyu A. Liao, James Cussens, and Peter van Beek. A Score-and-Search Approach to Learning Bayesian Networks with Noisy-OR Relations. *Proceedings of the 10th International Conference on Probabilistic Graphical Models*, Aalborg, Denmark, September, 2020.
- C51 Zhenyu A. Liao, Charupriya Sharma, Dongshu Luo, and Peter van Beek. An Empirical Study of Scoring Functions for Learning Bayesian Networks in Model Averaging. *Proceedings of the 35th Canadian Conference on Artificial Intelligence*, Toronto, Ontario, May, 2022.
- C52 Zhenyu A. Liao, Junyao Duan, and Peter van Beek. On Identifying Significant Edges for Structure Learning in Bayesian Networks. *Proceedings of the 35th Canadian Conference on Artificial Intelligence*, Toronto, Ontario, May, 2022.
- C53 Charupriya Sharma and Peter van Beek. Scalable Bayesian Network Structure Learning with Splines. *Proceedings of the 11th International Conference on Probabilistic Graphical Models*, Almería, Spain, October, 2022.

Note: The results reported in some of the entries above also appear in revised form in refereed journal articles.

[Papers in Edited Collections](#)

- E1 Marc Vilain, Henry Kautz, and Peter van Beek. Constraint Propagation Algorithms for Temporal Reasoning: A Revised Report. In *Readings in Qualitative Reasoning about Physical Systems*, Daniel S. Weld and Johan de Kleer (eds.), Morgan-Kaufman, 373-381, 1989.
- E2 Francesca Rossi, Peter van Beek, and Toby Walsh. Constraint Programming. Chapter 4 in the *Handbook of Knowledge Representation*, B. Porter, V. Lifschitz, F. van Harmelen (eds.), Elsevier, 2007.
- E3 Peter van Beek. Backtracking Search Algorithms. Chapter 4 in the *Handbook of Constraint Programming*, F. Rossi, P. van Beek, T. Walsh (eds.), Elsevier, 2006.

[Workshop Papers and Posters \(Lightly Refereed\)](#)

- W1 Bruce Spencer and Peter van Beek. Applying Truth Maintenance to a Network of Constraints. Collection of papers from the IJCAI-89 Workshop on Constraint Processing, Detroit, Michigan, 182-186, August, 1989.
- W2 Robin Cohen, Fei Song, Bruce Spencer, and Peter van Beek. Plan Recognition Beyond Fixed Plan Libraries. *Advance papers of the Second International Workshop on User Modeling*, Honolulu, Hawaii, 10 pages, March, 1990.

- W3 Robin Cohen, Bruce Spencer, and Peter van Beek. In Search of Practical Specifications—Allowing the User a More Active Role. Working Notes of the AAAI Spring Symposium on Implemented Knowledge Representation and Reasoning Systems, Stanford, California, 313-316, March, 1991.
- W4 Peter van Beek, Robin Cohen, and Ken Schmidt. Towards Building a Cooperative Advice-Giving System. Working Notes of the AAAI Spring Symposium on Producing Cooperative Explanations, Stanford, California, 110-116, March, 1992.
- W5 Peter van Beek. Query Processing with Disjunctive Qualitative Temporal Information. Working Notes of the AAAI-1992 Workshop on Implementing Temporal Reasoning, San Jose, California, 4 pages, July, 1992.
- W6 Tyrel Russell and Peter van Beek. Lessons Learned from Modelling the NHL Playoff Qualification Problem. Collection of papers from the Eighth International Workshop on Constraint Modelling and Reformulation. Lisbon, Portugal, September, 2009.
- W7 Omer Beg and Peter van Beek. A Constraint Programming Approach for Instruction Assignment. Fifteenth Workshop on Interaction between Compilers and Computer Architectures. San Antonio, Texas, February, 2011.
- W8 Valerie Platsko and Peter van Beek. Forecasting Outdoor Residential Water Consumption using Ensembles of Regression Trees. Poster at the 51st Canadian Meteorological and Oceanographic Society Congress, Toronto, June, 2017.

Note: The results reported in some of the entries above also appear in revised form in refereed journal articles.

Research Reports

- R1 Peter van Beek. A Model for User-Specific Explanations from Expert Systems. M. Math thesis, University of Waterloo. Available as: Department of Computer Science Research Report CS-86-42, University of Waterloo, 1986.
- R2 Peter van Beek and Robin Cohen. Approximation Algorithms for Temporal Reasoning. Department of Computer Science Research Report CS-89-12, University of Waterloo, 1989.
- R3 Peter van Beek. Exact and Approximate Reasoning about Qualitative Temporal Relations. PhD thesis, University of Waterloo. Available as: Department of Computing Science Technical Report TR-90-29, University of Alberta, 1990.
- R4 Peter van Beek and Dennis W. Manchak. The Design and an Experimental Analysis of Algorithms for Temporal Reasoning. Department of Computing Science Technical Report TR-93-16, University of Alberta, 1993.
- R5 Alejandro Lopez-Ortiz, Claude-Guy Quimper, John Tromp, and Peter van Beek. An Fast and Simple Algorithm for Bounds Consistency of the AllDifferent Constraint. School of Computer Science Technical Report CS-2003-5, University of Waterloo, 2003.

- R6 Claude-Guy Quimper, Peter van Beek, Alejandro Lopez-Ortiz, Alexander Golynski, and Sayyed Bashir Sadjad. An Efficient Bounds Consistency Algorithm for the Global Cardinality Constraint. School of Computer Science Technical Report CS-2003-10, University of Waterloo, 2003.
- R7 Abid M. Malik, Jim McInnes, and Peter van Beek. Optimal Basic Block Instruction Scheduling for Multiple-Issue Processors using Constraint Programming. School of Computer Science Technical Report CS-2005-19, University of Waterloo, 2005.
- R8 Abid M. Malik, Tyrel Russell, Michael Chase, and Peter van Beek. Optimal Superblock Instruction Scheduling for Multiple-Issue Processors using Constraint Programming. School of Computer Science Technical Report CS-2006-37, University of Waterloo, 2006.

Note: The results reported in some of the entries above also appear in revised form in refereed journal articles.

Other Publications

- R9 Peter van Beek and Toby Walsh. A review of the books, “Principles of Constraint Programming, by Krzysztof R. Apt” and “Constraint Processing, by Rina Dechter.” *AI Magazine*, 25:105-106, Winter 2005.
- R10 Peter van Beek. A review of the book, “Artificial Intelligence: Foundations of Computational Agents, by David L. Poole and Alan K. Mackworth.” *Artificial Intelligence*, 175(5-6):932-934, 2011.

Presentations

Tutorials

- U1 An Introduction to Expert and Knowledge-Based Systems. An invited half-day tutorial presented at the Information Technology Conference, CIPS Edmonton 1994, October, 1994.
- U2 An Introduction to Constraint Programming. An invited half-day tutorial/Master class presented at the CPAIOR Conference, Pittsburgh, May, 2009.

Panels

- L1 Applications of Constraint Networks to Temporal Reasoning. Invited panel presentation, AAAI Workshop on Constraint Directed Reasoning, Boston, Mass., July, 1990.
- L2 Invited participant and chair of panel on “Data Management and Modeling,” Workshop on Implementing Temporal Reasoning, San Jose, California, July, 1992.
- L3 Invited participant of panel on “The Future of Constraint Programming,” Second International Conference on Principles and Practice of Constraint Programming (CP96), Cambridge, Mass., August, 1996.

Invited Talks

- T1 University of Calgary, March 1990

- T2 University of Alberta, March 1990
- T3 University of Toronto, March 1990
- T4 York University, March 1990
- T5 University of Saskatchewan, March 1992
- T6 University of Waterloo, October 1992
- T7 University of Calgary, November 1992
- T8 Xerox PARC, Palo Alto, California, March 1993
- T9 University of Saskatchewan, July 1994
- T10 Information Systems Audit and Control Association, Edmonton, February 1995
- T11 Information Technology Conference, CIPS Edmonton 1995, October 1995
- T12 Int'l Workshop on Constraint-Based Reasoning, Key West, Florida, May 1996
- T13 EPFL, Lausanne, Switzerland, November 1996
- T14 DFKI, Saarbrücken, Germany, February 1997
- T15 Albert-Ludwigs-Universität, Freiburg, Germany, February 1997
- T16 Tel Aviv University, Israel, March 1997
- T17 Ben-Gurion University of the Negev, Israel, March 1997
- T18 Bar-Ilan University, Israel, March 1997
- T19 Bar-Ilan University, Israel, March 1997
- T20 University of Manchester Institute of Science and Technology, UK, April 1997
- T21 Practical Applications of Constraint Technology Conf., London, UK, April 1997
- T22 Department of Computer Science 30th Anniversary, Royal Holloway College, University of London, May 1998
- T23 University of Waterloo, October 1999
- T24 Seventh Conference on Principles and Practice of Constraint Programming, Paphos, Cyprus, November, 2001
- T25 Waterloo Mathematics Contest Seminar, University of Waterloo, June, 2002
- T26 Fifteenth Australian Joint Conference on Artificial Intelligence, Canberra, Australia, December, 2002
- T27 Griffith University, December, 2002
- T28 AI Problem Solving Seminar, Barcelona, Spain, May 2003
- T29 School of Computer Science 2003 Invitational Lecture Series, University of Waterloo, September 2003
- T30 École Polytechnique de Montréal, February 2004
- T31 Ninth Knowledge Representation and Reasoning Distinguished Lecturer, University of York, March 2004
- T32 Ninth Knowledge Representation and Reasoning Distinguished Lecturer, University of Leeds, March 2004

- T33 Redeemer University College, March 2004
- T34 Simon Fraser University, March 2006
- T35 Grand Valley Mathematics Association, October, 2007
- T36 University of Athens, Greece, November 2007
- T37 FreuderfestCP2011: A Celebration of Gene Freuder’s Retirement, Perugia, Italy, September 2011
- T38 Tenth International Conference on Integration of Artificial Intelligence (AI) and Operations Research (OR) techniques in Constraint Programming, IBM T. J. Watson Research Center, Yorktown Heights, NY, USA, May, 2013
- T39 Special Track on SAT and CSP Technologies, 25th International Conference on Tools with Artificial Intelligence, Washington, DC, USA, November, 2013
- T40 Uppsala University, Sweden, November 2014
- T41 KTH Royal Institute of Technology, Sweden, November 2014
- T42 31st Canadian Conference on Artificial Intelligence, Toronto, May 2018
- T43 Toronto CDO Executive Summit, Toronto, December 2018.
- T44 MCAC Conference on Innovation, Toronto, April 2019.
- T45 Calvin University, Waterloo (remote), February 2021.
- T46 IEEE 12th Annual Information Technology, Electronics and Mobile Communications Conference (remote), October 2021.

Conference and Workshop Presentations

- P1 Towards User-Specific Explanations from Expert Systems. Sixth Canadian Conference on Artificial Intelligence, Montreal, Quebec, May, 1986.
- P2 A Model For Generating Better Explanations. Twenty-fifth Conference of the Association for Computational Linguistics, Stanford, California, July, 1987.
- P3 Approximation Algorithms for Temporal Reasoning. Eleventh International Joint Conference on Artificial Intelligence, Detroit, Michigan, August, 1989.
- P4 Plan Recognition Beyond Fixed Plan Libraries. Second International Workshop on User Modeling, Honolulu, Hawaii, March, 1990.
- P5 Reasoning about Qualitative Temporal Information. Fourth International Workshop on Qualitative Physics, Lugano, Switzerland, July, 1990.
- P6 Reasoning about Qualitative Temporal Information. Eighth National Conference on Artificial Intelligence, Boston, Mass., July, 1990.
- P7 Resolving Plan Ambiguity for Cooperative Response Generation. Twelfth International Joint Conference on Artificial Intelligence, Sydney, Australia, August, 1991.
- P8 Towards Building a Cooperative Advice-Giving System. AAAI Spring Symposium on Producing Cooperative Explanations, Stanford University, March, 1992.

- P9 On the Minimality and Decomposability of Constraint Networks. Tenth National Conference on Artificial Intelligence, San Jose, California, July, 1992.
- P10 Constraint Tightness versus Global Consistency. Fourth International Conference on Principles of Knowledge Representation and Reasoning, Bonn, Germany, May, 1994.
- P11 On the Inherent Level of Local Consistency in Constraint Networks. Twelfth National Conference on Artificial Intelligence, Seattle, Washington, July, 1994.
- P12 A Theoretical Evaluation of Selected Backtracking Algorithms. International Workshop on Constraint-Based Reasoning (Constraint-1995), Melbourne Beach, Florida, April, 1995.
- P13 An Investigation of Probabilistic Interpretations of Heuristics in Plan Recognition. Fifth International Conference on User Modeling, Kailua-Kona, Hawaii, January, 1996.
- P14 A Heuristic Incremental Modeling Approach to Course Timetabling. Twelfth Canadian Conference on Artificial Intelligence, Vancouver, British Columbia, June, 1998.
- P15 On the Conversion between Binary and Non-Binary Constraint Satisfaction Problems. Fifth International Symposium on AI and Mathematics, Fort Lauderdale, Florida, January, 1998.
- P16 CPlan: A Constraint Programming Approach to Planning. Sixteenth National Conference on Artificial Intelligence, Orlando, Florida, July, 1999.
- P17 Constraint Programming Lessons Learned from Crossword Puzzles. Fourteenth Canadian Conference on Artificial Intelligence, Ottawa, Ontario, June, 2001.
- P18 Fast Optimal Instruction Scheduling for Single-Issue Processors with Arbitrary Latencies. Seventh Conference on Principles and Practice of Constraint Programming, Paphos, Cyprus, November, 2001.
- P19 Constraint Programming for Compiler Optimizations. Second CASCON Workshop on Compiler-Driven Performance, Toronto, Ontario, October, 2003.
- P20 On Universal Restart Strategies for Backtracking Search. 13th Conference on Principles and Practice of Constraint Programming, Providence, RI, September, 2007.
- P21 On Portfolios for Backtracking Search in the Presence of Deadlines. 19th IEEE International Conference on Tools with Artificial Intelligence, Patras, Greece, October, 2007.
- P22 A Constraint Programming Approach for Instruction Assignment. 15th Workshop on Interaction between Compilers and Computer Architectures (INTERACT-15), San Antonio, Texas, USA, February, 2011.
- P23 Detecting Manipulation in Cup and Round Robin Sports Competitions. 24th IEEE International Conference on Tools with Artificial Intelligence (ICTAI-2012), Athens, Greece, November, 2012.

- P24 An Extensive Empirical Evaluation of Focus Measures for Digital Photography. IS&T/SPIE International Symposium on Electronic Imaging: Digital Photography X, San Francisco, February, 2014.
- P25 Machine Learning of Bayesian Networks Using Constraint Programming. 21st International Conference on Principles and Practice of Constraint Programming, Cork, Ireland, September, 2015.
- P26 A Worst-Case Analysis of Constraint-Based Algorithms for Exact Multi-Objective Combinatorial Optimization. 30th Canadian Conference on Artificial Intelligence, Edmonton, Alberta, May, 2017.
- P27 An Experimental Analysis of Anytime Algorithms for Bayesian Network Structure Learning. Advanced Methodologies for Bayesian Networks, Kyoto, Japan, September, 2017.
- P28 Illuminant Estimation using Ensembles of Multivariate Regression Trees. IS&T International Symposium on Electronic Imaging: Computational Imaging XVI, Burlingame, California, February, 2018.
- P29 Improved Image Selection for Stack-Based HDR Imaging. IS&T International Symposium on Electronic Imaging: Photography, Mobile, and Immersive Imaging, Burlingame, California, January, 2019.