

Computational Intelligence Research – Intelligent Algorithms for Scheduling Problems

Publications

- J. Kyngäs, K. Nurmi, N. Kyngäs, G. Lilley and T. Salter, "Scheduling the Australian Football League", in Proc. of the 10th Conference on the Practice and Theory of Automated Timetabling (PATAT), York, UK, 2014. (accepted)
- K. Nurmi, D. Goossens and J. Kyngäs, "Scheduling a Triple Round Robin Tournament with Minitournaments for the Finnish National Youth Ice Hockey League", Journal of the Operational Research Society, Vol.?(?), 2014. (accepted)
- N. Kyngäs, K. Nurmi and J. Kyngäs, "Scheduling the Highly Constrained Finnish Major Ice Hockey League", Lecture Notes in Engineering and Computer Science: Proceedings of The International MultiConference of Engineers and Computer Scientists, Hong Kong, 2014.
- N. Kyngäs, K. Nurmi and J. Kyngäs, "Workforce Scheduling Using the PEAST algorithm", in Ao, Sio-long (ed.): IAENG Transactions on Engineering Technologies Volume ?, Springer, USA, 2014.
- K. Nurmi, J. Kyngäs, Zheng-Yun Zhuang and N. Kyngäs, "Optimized Workforce Scheduling in Bus Transit Companies", in Proc of the 4th Global Congress on Intelligent Systems, Hong Kong, 2013.
- K. Nurmi, J. Kyngäs and N. Kyngäs, "Computational Intelligence – the Key to Optimizing Workforce Management and Professional Sports League Schedules", in Proc. of the FORS40 Workshop, Lappeenranta, Finland, 2013.
- N. Kyngäs, K. Nurmi and J. Kyngäs, "Crucial Components of the PEAST Algorithm in Solving Real-World Scheduling Problems", Journal of Lecture Notes on Software Engineering, Vol.1(3), 2013.
- N. Kyngäs, D. Goossens, K. Nurmi and J. Kyngäs, "The PEAST Algorithm in Sports Scheduling" in Proc of the 4th International Conference on the Mathematics in Sport, Leuven, Belgium, 2013.
- K. Nurmi, J. Kyngäs and N. Kyngäs, "Solving real-world workforce scheduling problems", in Proc. of the 3rd World Conference On Innovation And Computer Sciences (INSODE), Antalya, Turkey, 2013.
- N. Kyngäs, K. Nurmi and J. Kyngäs: "Solving the person-based multitask shift generation problem with breaks", in Proc. of the 5th International Conference On Modeling, Simulation And Applied Optimization (ICMSAO), Hammamet, Tunis, 2013.
- N. Kyngäs, K. Nurmi and J. Kyngäs, "Workforce Scheduling and Optimization", in Proc of the 20th Automation Conference, Helsinki, Finland, 2013.
- N. Kyngäs, K. Nurmi and J. Kyngäs, "The Workforce Optimization Process Using the PEAST algorithm", Lecture Notes in Engineering and Computer Science: Proceedings of The International MultiConference of Engineers and Computer Scientists, Hong Kong, 2013.
- N. Kyngäs, D. Goossens, K. Nurmi and J. Kyngäs, "Optimizing the Unlimited Shift Generation Problem", Applications of Evolutionary Computation, Lecture Notes in Computer Science Volume 7248, Springer, USA 2012.

N. Kyngäs, K. Nurmi, E.I. Ásgeirsson and J. Kyngäs, "Using the PEAST Algorithm to Roster Nurses in an Intensive-Care Unit in a Finnish Hospital", in Proc. of the 9th Conference on the Practice and Theory of Automated Timetabling (PATAT), Son, Norway, 2012.

K. Nurmi, N. Kyngäs and J. Salli, "A workload prediction, staffing and shift generation method for contact centers", in Proc. of the 4th EURO Working Group on Stochastic Modeling, Paris, France, 2012.

N. Kyngäs, D. Goossens, K. Nurmi and J. Kyngäs, "Optimizing the Unlimited Shift Generation Problem", in Proc. of the International Conference on the Applications of Evolutionary Computation, Malaga, Spain, 2012.

N. Kyngäs, K. Nurmi and J. Kyngäs, "Optimizing Large-Scale Staff Rostering Instances", Lecture Notes in Engineering and Computer Science: Proceedings of The International MultiConference of Engineers and Computer Scientists, Hong Kong, 2012.

G. Post, J.H. Kingston, S. Ahmadi, S. Daskalaki, C. Gogos, J. Kyngas, K. Nurmi, N. Musliu, N. Pillay, H. Santos and A. Schaerf, "XHSTT: an XML archive for high school timetabling problems in different countries", Annals of Operations Research, Springer, USA, 2012.

G. Post, S. Ahmadi, S. Daskalaki, J. H. Kingston, J. Kyngäs, K. Nurmi, D. Ranson and H. Ruizenaar, "An XML Format for Benchmarks in High School Timetabling", Annals of Operations Research 194, Springer, USA, 2012.

J. Kyngäs, "Solving Challenging Real-World Scheduling Problems", Ph.D. dissertation, Dept. of Information Technology, University of Turku, Finland, 2011.

K. Nurmi, J. Kyngäs and G.Post, "Driver Rostering for Bus Transit Companies", Engineering Letters, Volume 19(2), pp. 125-132, IAENG, Hong Kong, 2011.

H. Ketamo, K. Nurmi and K. Kallama, "User Generated AI in Sports Education", in Proc. of the 5th European Conference on Games Based Learning, Athens, Greece, 2011.

K. Nurmi and J. Kyngäs, "Solving Scheduling Problems for Business Use using Computational Intelligence", in Proc of the 4th International Workshop on Advanced Computational Intelligence (IWACI), Wuhan, China, 2011.

E.I. Ásgeirsson, J. Kyngäs, K. Nurmi and M. Stølevik, "A Framework for Implementation-Oriented Staff Scheduling", in Proc of the 5th Multidisciplinary Int. Scheduling Conf.: Theory and Applications (MISTA), Phoenix, USA, 2011.

J. Kyngäs and K. Nurmi, "Shift Scheduling for a Large Haulage Company", in Proc of the 2011 International Conference on Network and Computational Intelligence (ICNCI), Zhengzhou, China, 2011.

K. Nurmi, D. Goossens and J. Kyngäs, "Scheduling a triple round robin tournament for the Finnish national ice hockey league for players under 20", in Proc of the IEEE Symposium on Computational Intelligence in Scheduling, Paris, France, 2011.

K. Nurmi, J. Kyngäs and G.Post, "Staff Scheduling for Bus Transit Companies", Lecture Notes in Engineering and Computer Science: Proceedings of The International MultiConference of Engineers and Computer Scientists, Hong Kong, 2011.

K. Nurmi and J. Kyngäs, "Days-off Scheduling for a Bus Transportation Staff", International Journal of Innovative Computing and Applications Volume 3 (1), Inderscience, UK, 2011.

K. Nurmi, J. Kyngäs, M. Leinonen and N. Kyngäs, "Automated Staff Scheduling using Computational Intelligence", in Proc of the 19th Automation Conference, Helsinki, Finland, 2011.

K. Nurmi, D. Goossens, T. Bartsch, F. Bonomo, D. Briskorn, G. Duran, J. Kyngäs, J. Marengo, C.C. Ribeiro, F. Spieksma, S. Urrutia and R. Wolf-Yadlin, "A Framework for Scheduling Professional Sports Leagues", in Ao, Sio-long (ed.): IAENG Transactions on Engineering Technologies Volume 5, Springer, USA, 2010.

K. Nurmi, J. Kyngäs and M. Leinonen, "The Quality of Major Sports League Schedules in Finland", invited presentation in Annual Meeting of Institute for Operations Research and Management Sciences (INFORMS), Austin, USA, 2010.

G. Post, J. H. Kingston, S. Ahmadi, S. Daskalaki, C. Gogos, J. Kyngäs, K. Nurmi, H. Santos, B. Rorije, A. Schaerf: "An improved XML format and benchmark problems for High School Timetabling", in Proc of the 8th Conference on the Practice and Theory of Automated Timetabling (PATAT), Belfast, Ireland, 2010.

K. Nurmi and J. Kyngäs, "Understanding an Operations Research Customer – or Not", invited presentation in 24th European Conference on Operational Research (EURO), Lisbon, Portugal, 2010.

K. Nurmi and J. Kyngäs, "Days-off Scheduling for a Bus Transportation Staff", in Proc of the 4th International Conference on Bioinspired Optimization Methods and their Applications, Ljubljana, Slovenia, 2010.

K. Nurmi, D. Goossens, T. Bartsch, F. Bonomo, D. Briskorn, G. Durán, J. Kyngäs, J. Marengo, C.C. Ribeiro, F. Spieksma, S. Urrutia and R. Wolf, "A Framework for a Highly Constrained Sports Scheduling Problem", Lecture Notes in Engineering and Computer Science: Proceedings of The International MultiConference of Engineers and Computer Scientists, Hong Kong, 2010.

K. Nurmi and J. Kyngäs, "Improving the Schedule of the Finnish Major Ice Hockey League" in Proc of the 2nd International Conference on the Mathematics in Sport, Groningen, Netherlands, 2009.

J. Kyngäs and K. Nurmi, "Scheduling the Finnish 1st Division Ice Hockey League", in Proc of the 22nd Florida Artificial Intelligence Research Society Conference, Florida, USA, 2009.

J. Kyngäs and K. Nurmi, "Scheduling the Finnish Major Ice Hockey League", in Proc of the IEEE Symposium on Computational Intelligence in Scheduling, Nashville, USA, 2009.

K. Nurmi and J. Kyngäs, "Solving Extremely Difficult Scheduling Problems Using Innovative Computational Methods", in Proc of the 18th Automation Conference, Helsinki, Finland, 2009.

K. Nurmi and J. Kyngäs, "A Conversion Scheme for Turning a Curriculum-based Timetabling Problem into a School Timetabling Problem" in Proc of the 7th Conference on the Practice and Theory of Automated Timetabling (PATAT), Montreal, Canada, 2008.

G. Post, S. Ahmadi, S. Daskalaki, J. H. Kingston, J. Kyngäs, K. Nurmi, D. Ranson and H. Ruizenaar, "An XML format for Benchmarks in High School Timetabling" in Proc of the 7th

Conference on the Practice and Theory of Automated Timetabling (PATAT), Montreal, Canada, 2008.

K. Nurmi and J. Kyngäs, "A Framework for School Timetabling Problem" in Proc of the 3rd Multidisciplinary Int. Scheduling Conf.: Theory and Applications (MISTA), Paris, France, 2007, pp. 386-393.

K. Nurmi, "Genetic Algorithms for Timetabling and Traveling Salesman Problems", Ph.D. dissertation, Dept. Applied Math., University of Turku, Finland, 1998.

Presentations

N. Kyngäs and K. Nurmi, "An algorithm for solving real-world routing and scheduling problems", presentation in Computational Management Science 2014 Conference, (CMS), Lisbon, Portugal, 2014.

K. Nurmi, "Using the PEAST algorithm to solve all the phases of the workforce scheduling process", presentation in 26th European Conference on Operational Research (EURO), Rome, Italy, 2013.

N. Kyngäs, K. Nurmi and J. Kyngäs: "The workforce scheduling process using PEAST", presentation in 3rd Student Conference on Operational Research (SCOR), Nottingham, UK, 2012.

D. Goossens, K. Nurmi and J. Kyngäs, "Scheduling the Finnish national ice hockey league for players under 20", presentation in 26th Annual Conference of the Belgian Operations Research Society, Bruxelles, Belgium, 2012.

K. Nurmi, "Staff Scheduling Optimization", presentation in Finnish Operations Research Society (IFORS) Seminar, Helsinki, Finland, 2011.

K. Nurmi, J. Kyngäs and M. Leinonen, "The Quality of Major Sports League Schedules in Finland", invited presentation in Annual Meeting of Institute for Operations Research and Management Sciences (INFORMS), Austin, USA, 2010.

K. Nurmi and J. Kyngäs, "Understanding an Operations Research Customer – or Not", invited presentation in 24th European Conference on Operational Research (EURO), Lisbon, Portugal, 2010.

K. Nurmi and J. Kyngäs, "Laskennallisen älykkyyden tutkimus", presentation in Ammattikorkeakoulutuksen ja ammatillisen koulutuksen tutkimuspäivät, Helsinki, Finland, 2010.

K. Nurmi and J. Kyngäs, "Jääkiekon SM-liigan ja Mestiksen sarjaohjelmien laatiminen innovatiivisilla ja älykkäillä algoritmeilla", presentation in Lahti Science Day, Lahti University Consortium, Lahti, Finland, 2009.