Mikhail Batsyn

Senior research fellow: NRU HSE in Nizhny Novgorod / Laboratory of Algorithms and Technologies for Networks Analysis

Associate professor: NRU HSE in Nizhny Novgorod / Faculty of Informatics, Mathematics, and Computer Science / Department of Applied Mathematics and Informatics

Academic supervisor of master program: Data Mining

Academic work experience: 7 years.

Education

2009   Candidate of physical-mathematical sciences. Dissertation: Optimization problems in insurance models with discontinuous probability distribution of payments. Speciality: 05.13.18 Mathematical modeling, numerical methods and software systems. Date of defence: 23.12.2009.

2006   Master degree with distinction: Nizhny Novgorod State Technical University, Faculty IRIT, Speciality «Applied mathematics and informatics»

2004   Bachelor degree with distinction: Nizhny Novgorod State Technical University, Faculty FIST, Speciality «Applied mathematics and informatics»

Awards

Bonus for academic work (2011-2012, 2010-2011)

Bonus for a paper in a leading journal (2015-2017)

Group of high professional potential (NRU HSE Academic Professionals)
Category of "New lecturers" (2009-2011)

Work Experience

Mar 2013 – Present

Senior research fellow in LATNA laboratory, NRU Higher School of Economics

Managing a team of 4 researchers. State-of-art problems in optimization.

Nov 2011 – Feb 2013

Research fellow in LATNA laboratory, NRU Higher School of Economics

Managing a team of 4 researchers. State-of-art problems in optimization.

Nov 2009 – Nov 2010

Junior research fellow in TAPRADESS laboratory, NRU Higher School of Economics

Research in actuarial mathematics, collective choice theory, collective action theory, operations research.

Sep 2013 – Present

Associate professor of Applied Mathematics and Informatics department, NRU Higher School of Economics

Giving lectures on courses of: Algorithms of Operations Research, State-of-art Problems of Operations Research, Discrete Optimization.

Sep 2009 – Sep 2013

Assistant professor of Applied Mathematics and Informatics department, NRU Higher School of Economics

Giving lectures on courses of: Operations Research, Discrete Mathematics, PC Architecture, Actuarial Mathematics, Introduction to the speciality of applied mathematics and informatics.

Feb 2010 – Nov 2011

Leading software developer, StreamScape, LLC

Development of distributed service-oriented software system. HTTP-client development. Services development.

Mar 2009 – Feb 2010

System software developer, Auriga, Inc

Development of LinuxWorks (hard real time operating system): TCP/IP stack, standard utilities and libraries, drivers, kernel.

Oct 2008 – Mar 2009

Team leader, Auriga, Inc

Project plan management. Development in C/C++ of TCP-servers working via its own secure protocol. Working with TCP: TCP window, TCP tuning, Nagel algorithm, Eifel algorithm. Development in Perl of an application for automated testing.

Feb 2007 – Oct 2008

Team leader, Mera

Project plan management. Development in C/C++ of multi-threaded simulators for different devices in GSM networks. ASN.1 and XDR data processing. Development of GUI in Java.

Nov 2003 – Feb 2007

Software developer, Mera

Development in C/C++ of multi-threaded simulators for different devices in GSM networks. ASN.1 and XDR data processing. Development of GUI in Java.

Jul 2006 – Aug 2007

Intern, IntelStudio 2006 project

Operating systems and hardware. Development of threads library in Linux. Development of a small shell for Linux. Modification of Linux kernel. Improvement of a file system on Linux. Implementation of virtual memory mechanism for a simple processor simulator. Smashing the stack of a web-server.

Grants

2015-2017, RHSF 15-32-01052 «The application of robust procedures to the analysis of the structural characteristics of stock markets», participant

2014-2016, RFBR grant 14-01-00807 «Theoretical basis of the network analysis of stock markets», participant

2014-2015, RSF grant 14-41-00039 «Clustering and search techniques in large scale networks», participant

2014-2015, RF government grant 11.G34.31.0057 «Information and communication technologies and computational algorithms for analysis of complex networks», participant

2011-2013, RF government grant 11.G34.31.0057 «Information and communication technologies and computational algorithms for analysis of complex networks», participant

2011-2012, HSE science fund grant 11-04-0008 «Calculus of tolerances in combinatorial optimization problems: theory and algorithms», participant

2010-2011, TAPRADESS laboratory project, HSE: Automated system for building of LEGMACH factory production schedule, participant

2010-2010, CFI project 61.1 «Development of methods and means of situational modeling», participant

2008-2009, RHSF grant 08-02-00231a «Comparative analysis of behavioral preconditions in collective action theory », participant

2007-2008, HSE Science Foundation grant 06-06-0002 «Development of power indices taking into account agent's preferences for coalition formation», participant

Conferences

2016   Mikhail Batsyn. Tutorial: Optimization problems in the transportation logistics. Discrete Optimization and Operations Research, DOOR-2016. 19-23 September 2016. Vladivostok, Russky Island. Russia.

Irina Utkina, Mikhail Batsyn, Ekaterina Batsyna. A branch and bound algorithm for a fractional 0-1 programming problem. Discrete Optimization and Operations Research, DOOR-2016. 19-23 September 2016. Vladivostok, Russky Island. Russia.

Mikhail Batsyn. A branch and bound algorithm for a fractional 0-1 programming problem. Workshop on Critical and collective effects in graphs and networks. 25-29 April 2016. MIPT, Moscow.

2015   Mikhail Batsyn, Alexander Ponomarenko. Heuristic for Site-Dependent Truck and Trailer Routing Problem with Soft and Hard Time Windows and Split Deliveries. International Workshop on Machine learning, Optimization and big Data - MOD-2015. 21-23 July 2015. Taormina - Sicily. Italy.

Mikhail Batsyn, Alexey Nikolaev, Pablo San Segundo. An efficient approach to the protein structure alignment problem. World Congress on Global Optimization WCGO 2015. 22-25 February 2015. University of Florida. Gainesville. Florida. USA.

2014   Mikhail Batsyn, Ilya Bychkov, Panos M. Pardalos, Pavel Sukhov. Multi-start local search heuristic for the cell formation problem. The 20th Conference of the International Federation of Operational Research Societies IFORS-2014. 13-18 July 2014. Barcelona. Spain.

Mikhail Batsyn, Alexey Nikolaev, Panos M. Pardalos, Pablo San Segundo. A simple approach for essential improvement of the state-of-art exact algorithms for the maximum clique problem. Conference on Optimization Control and Applications in the Information Age. 15-20 June 2014. Chalkidiki. Greece.

2013   Mikhail Batsyn, Valery Kalyagin. A general axiomatics for power indicies without anonymity axiom. 26th European Conference on Operational Research. 1-4 July 2013. Sapienza University of Rome. Rome. Italy.

Mikhail Batsyn, Boris Goldengorin, Panos M. Pardalos, Pavel Sukhov. Lower and upper bounds for the preemptive single machine scheduling problem with equal processing times. The 3rd International Conference on Network Analysis. 7-9 May 2013. Higher School of Economics. Nizhny Novgorod. Russia.

Mikhail Batsyn, Evgeny Maslov, Panos M. Pardalos. An Efficient Branch and Bound Algorithm for Protein Matching Problem. 2nd International Conference on Computational Biomedicine. 24-26 Jan 2013. University of Florida. Gainesville. USA.

2012   Mikhail Batsyn, Ilya Bychkov, Boris Goldengorin, Panos M. Pardalos. Tolerance-based Algorithm for the Assignment Problem. Constructive Nonsmooth Analysis and Related Topics. 18-23 June 2012. Euler International Mathematical Institute. Saint-Petersburg. Russia.

Mikhail Batsyn, Boris Goldengorin, Evgeny Maslov, Panos M. Pardalos. Tolerance Based Algorithms for the Asymmetric Capacitated VRP. 3rd Conference on Optimization Methods and Software. 13-17 May 2012. Chania. Crete. Greece.

Mikhail Batsyn, Boris Goldengorin, Panos M. Pardalos. Applying Tolerances to the Asymmetric Capacitated Vehicle Routing Problem. The 2nd International Conference on Network Analysis. 7-9 May 2012. Higher School of Economics. Nizhny Novgorod. Russia.

2011   Mikhail Batsyn, Valery Kalyagin. On the distribution of the sum of random variables with a mixed-uniform density and mass function. The 1st International Conference on Network Analysis. 14-16 Dec 2011. University of Florida. Gainesville. Florida. USA.

Main Publications

Article Larisa Komosko, Mikhail Batsyn, Pablo San Segundo, Pardalos P. M. A fast greedy sequential heuristic for the vertex colouring problem based on bitwise operations // Journal of Combinatorial Optimization. 2016. No. 4. P. 1665-1677.

Article Mikhail Batsyn, Ponomarenko A. Heuristic for Site-Dependent Truck and Trailer Routing Problem with Soft and Hard Time Windows and Split Deliveries // Lecture Notes in Computer Science. 2016. Vol. 9432. P. 65-79.

Article San Segundo P., Nikolaev A., Batsyn M., Pardalos P.M. Improved Infra-Chromatic Bound for Exact Maximum Clique Search // Informatica. 2016. Vol. 27. No. 2. P. 463-487.

Article San Segundo P., Lopez A., Batsyn M. V., Nikolaev A. I., Pardalos P. M. Improved initial vertex ordering for exact maximum clique search // Applied Intelligence. 2016. Vol. 45. No. 3. P. 868-880.

Article San Segundo P., Nikolaev A., Batsyn M. Infra-chromatic bound for exact maximum clique search // Computers & Operations Research. 2015. Vol. 64. P. 293-303.

Article Anton Kocheturov, Mikhail Batsyn, Panos M. Pardalos. Dynamics of cluster structures in a financial market network // Physica A: Statistical Mechanics and its Applications. 2014. Vol. 413. P. 523-533.

Article Ilya Bychkov, Mikhail Batsyn, Panos M. Pardalos. Exact Model for the Cell Formation Problem // Optimization Letters. 2014. Vol. 8. No. 8. P. 2203-2210.

Article Mikhail Batsyn, Boris Goldengorin, Evgeny Maslov, Panos M. Pardalos. Improvements to MCS algorithm for the maximum clique problem // Journal of Combinatorial Optimization. 2014. Vol. 27. No. 2. P. 397-416.

Book Models, Algorithms and Technologies for Network Analysis / Eds. Mikhail V. Batsyn, Valery A. Kalyagin , Panos M. Pardalos. Vol. 104, NY, Dordrecht, Heidelberg. Springer, 2014.

Article Mikhail Batsyn, Boris Goldengorin, Panos M. Pardalos, Pavel Sukhov. Online heuristic for the preemptive single machine scheduling problem of minimizing the total weighted completion time // Optimization Methods and Software. 2014. Vol. 29. No. 5. P. 955-963.

Article Evgeny Maslov, Mikhail Batsyn, Panos M. Pardalos. Speeding up branch and bound algorithms for solving the maximum clique problem // Journal of Global Optimization. 2014. Vol. 59. No. 1. P. 1-21.

Book chapter Mikhail Batsyn, Valery Kalyagin. An Analytical Expression for the Distribution of the Sum of Random Variables with Mixed Uniform Density and Mass Function, in: Models, Algorithms, and Technologies for Network Analysis / Ed. by B. I. Goldengorin, V. A. Kalyagin, P. M. Pardalos. Issue 32. NY : Springer, 2013. Ch. 3. P. 51-63.

Book chapter Mikhail Batsyn, Boris Goldengorin, Pavel Sukhov, Panos M. Pardalos. Lower and Upper Bounds for the Preemptive Single Machine Scheduling Problem with Equal Processing Times, in: Models, Algorithms, and Technologies for Network Analysis / Ed. by Boris I. Goldengorin, Valery A. Kalyagin, Panos M. Pardalos. Vol. 59. NY : Springer, 2013. Ch. 2. P. 11-27.

Article Batsyn M. V., Batsyna E. K. On applying approximations to find optimal excess of loss reinsurance // Business Informatics. 2012. Vol. 4. No. 22. P. 69-75.

Article Batsyn M. V., Kalyagin V. A. Power Index Axiomatics in the Problem of Voting with Quota / Пер. с рус. // Automation and Remote Control. 2011. Vol. 72. No. 3. P. 600-614.

Book chapter Batsyn M. V., Kalyagin V. A. Default risk estimation in reinsurance contracts on the base of simulation model, in: History of accounting, buisness administration doctrines and development of new methods of management in Italy and Russia, 2010 / Ed. by S. Terzani, O. Kozyrev. Milan : Rirea, 2010. P. 8-20.