

OLEKSANDR ROMANKO

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AREAS OF INTEREST

Optimization, operations research, data mining, mathematical modeling, optimization in finance, portfolio and risk management, algorithms, software development, high-performance computing

HIGHLIGHTS OF QUALIFICATIONS

- Wide expertise in optimization, operations research and data mining
- Advanced training in economics, optimization methods in finance, economics and risk management, financial modeling and portfolio management
- Proficiency in mathematical modeling, algorithms and software
- Extensive programming skills and experience in mathematical software development
- Knowledge of system architectures and operating systems, system administration experience
- Fluency in a number of languages including English and Russian, proficiency in technical writing
- Ability to meet deadlines, to work independently and in a team, good communication skills

EDUCATION

- Ph.D. in Computer Science** 2004 – 2010
Advanced Optimization Laboratory, Department of Computing and Software,
McMaster University, Hamilton, ON, Canada
Ph.D. Project: *Multiobjective and Parametric Optimization with Applications in Finance*
Supervisors: *Tamás Terlaky* (Lehigh University) and *Antoine Deza* (McMaster University)
- Master of Science in Computer Science** 2002 – 2004
Advanced Optimization Laboratory, Department of Computing and Software,
McMaster University, Hamilton, ON, Canada
M.Sc. Thesis: *Quadratic and Parametric Quadratic Optimization*
Supervisor: *Tamás Terlaky*, Canada Research Chair in Optimization
- Master of Arts in Economics** 2000 – 2002
Center for Economic Research and Graduate Education (CERGE) / University of
the State of New York graduate program, Charles University, Prague, Czech Republic
- Bachelor of Science in Systems Engineering, with distinction** 1993 – 1998
Sumy State University, Sumy, Ukraine
B.Sc. Thesis: *Microprocessor Control System of the Electronic Microscope PEM-125K*

WORK EXPERIENCE

- MITACS Industrial Postdoctoral Research Fellow** 2010 – present
McMaster University, Hamilton, ON, Canada
Algorithmics Inc., an IBM Company, Toronto, ON, Canada
- Conduct research on risk management and financial optimization
 - Develop and implement risk management, portfolio optimization and portfolio replication models
 - Lecturer for the course *Continuous Optimization Algorithms* at McMaster University
- Intern, Quantitative Research Group** 2008 – 2009
Algorithmics Inc., Toronto, ON, Canada
- Conducted research on credit risk optimization and portfolio replication
 - Developed, implemented and tested risk management and portfolio optimization models
- CTO, Project Manager** (part-time) 2005 – present
Creatif Solutions, Hamilton, ON, Canada
- Manage and participate in scientific software development projects
 - Provide IT-consulting services for local businesses
 - Lead and manage IT-support projects
- Senior Computer Systems Analyst** (part-time) 2004 – 2010
Tetraplex Limited, Hamilton, ON, Canada
- Administered mail/web/backup/hosting/collaboration servers for a number of industrial clients
 - Managed and supported application development projects
 - Provided network design and deployment services
- Research Assistant** 2003 – 2008
Advanced Optimization Laboratory, McMaster University, Hamilton, ON, Canada
- Designed, developed and tested optimization software packages (SeDuMi and McIPM)
 - Managed hardware and software infrastructure for solving optimization problems remotely via Internet (CaNEOS Server for Optimization)
 - Administered and maintained high-performance computational servers, workstations, PCs and all other equipment at the Advanced Optimization Laboratory
- Teaching Assistant** 2002 – 2009
Department of Computing and Software, McMaster University, Hamilton, ON, Canada
- *Design and Implementation of C Programs* course for 2nd year computer science students (160 students class)
 - *Continuous Optimization Algorithms* course for 4th year computer science, software engineering and management students (delivered five times, 90 students per class)
- Research Assistant** 2001 – 2002
Center for Economic Research and Graduate Education, Prague, Czech Republic
- Designed and developed computer-based experimental economics projects with subjects interacting with each other in real time using a network of PCs
 - Conducted research in e-commerce
- System Administrator, Programmer** 1998 – 2000
Industrial Company “Kvalitet”, Sumy, Ukraine
- Managed computer equipment and administered a local area network
 - Installed and maintained office hardware/software
 - Performed various programming and technical tasks

AWARDS AND HONOURS

- **MITACS Industrial Postdoctoral Fellowship**, McMaster University, Hamilton, ON 2010
- **Second Place at MITACS Poster Competition**, Fredericton, NB 2009
- **MITACS ACCELERATE Internship at Algorithmics Inc.**, Toronto, ON 2009
- **First place at International Forum of Young Researchers**, St. Petersburg, Russia 2009
- **MITACS ACCELERATE Internship at Algorithmics Inc.**, Toronto, ON 2008
- **First Place at MITACS Poster Competition**, Montreal, QC 2008
- **Second prize at SIMUL8 Simulation Competition**, Quebec, QC 2008
- **First place at International Forum of Young Researchers**, St. Petersburg, Russia 2008
- **Diploma in Operational Research**, Canadian Operational Research Society 2007
- **Nortel OGSST Graduate Scholarship**, McMaster University, Hamilton, ON 2007
- **First Place at MITACS Poster Competition**, Winnipeg, MB 2007
- **VISUAL8 Modelling Competition Winning Team Member**, London, ON 2007
- **International Operations Research Case Competition Winning Team Leader**,
Simon Fraser University, Vancouver, BC 2007
- **RIM Ontario Graduate Scholarship**, McMaster University, Hamilton, ON 2006
- **Ontario Graduate Scholarship**, McMaster University, Hamilton, ON 2005
- **Sherman Graduate Scholarship**, McMaster University, Hamilton, ON 2004
- **Best Student Paper Prize**, Canadian Operational Research Society 2004
- **Ashbaugh Graduate Scholarship**, McMaster University, Hamilton, ON 2003
- **Citigroup Foundation Scholarship**, CERGE, Prague, Czech Republic 2002
- **CERGE Performance Scholarship**, CERGE, Prague, Czech Republic 2001
- **Ukrainian Contest in Programming**, Second Prize, Ukraine 1993

PUBLICATIONS

1. Mausser, H., and **Romanko, O.** (2011) Bias, Exploitation and Proxies in Scenario-Based Risk Minimization. Submitted to *Optimization* (special issue on Optimizing Risk Management).
2. **Romanko, O.**, Ghaffari-Hadigheh, A., and Terlaky, T. (2011) Multiobjective Optimization via Parametric Optimization: Models, Algorithms and Applications. To appear in *Springer Proceedings in Mathematics*.
3. Iscoe, I., Kreinin, A., Mausser, H., and **Romanko, O.** (2011) Portfolio Credit Risk Optimization. Report ARPS 09-01, Algorithmics Inc., Toronto, submitted to *Journal of Banking and Finance*.
4. Burmeister, C., Mausser, H., and **Romanko, O.** (2010) Using Trading Costs to Construct Better Replicating Portfolios, Enterprise Risk Management Symposium Monograph, Society of Actuaries, Schaumburg, IL, April 2010.
5. **Romanko, O.** (2010) Multiobjective and Parametric Optimization with Applications in Finance, Ph.D. Thesis, defended on March 26, 2010.
6. Ghaffari-Hadigheh, A., **Romanko, O.**, and Terlaky, T. (2010) Bi-Parametric Convex Quadratic Optimization. *Optimization Methods and Software*, Volume 25, Issue 2 (2010), pp. 229-245.
7. Ghaffari-Hadigheh, A., **Romanko, O.**, and Terlaky, T. (2008) On Bi-Parametric Programming in Quadratic Optimization. Proceedings of the "Continuous Optimization and Knowledge-Based Technologies" Conference, Neringa, Lithuania, May 20-23, 2008.
8. Bose, C., **Romanko, O.** and Gong J. (2007) Optimization of Multi-Drug Composition for the Most Efficacious Action. Proceedings of 11th PIMS Industrial Problem Solving Workshop (IPSW), Edmonton, AB, June 11-15, 2007.
9. Ghaffari-Hadigheh, A., **Romanko, O.**, and Terlaky, T. (2007) Sensitivity Analysis in Convex Quadratic Optimization: Simultaneous Perturbation of the Objective and Right-Hand-Side Vectors. *Algorithmic Operations Research*, Volume 2, Number 2 (2007), pp. 94-111.
10. Grodzevich, O., **Romanko, O.** (2006) Discussions on Normalization and Other Topics in Multi-Objective Optimization. Proceedings of Fields-MITACS Industrial Problem-Solving Workshop (FMIPW), August 14-18, 2006, pp. 89-102.

11. **Romanko, O.** (2004) An Interior Point Approach to Quadratic and Parametric Quadratic Optimization, M.Sc. Thesis, defended on August 19, 2004.
12. Ghaffari-Hadigheh, A., **Romanko, O.**, and Terlaky, T. (2003) Simultaneous Perturbation Parametric Analysis in Convex Quadratic Optimization. Technical Report #2003/6, Advanced Optimization Laboratory, McMaster University, Hamilton.

SOFTWARE

- Copyright (2004-2008) on SeDuMi open source software package for solving optimization problems over symmetric cones (with T. Terlaky, I. Pólik and Y. Zinchenko), <http://sedumi.mcmaster.ca>
- Development of McIPM software package for solving linear and quadratic optimization problems (joint with L. Zhu)
- Development of CaNEOS Server for Optimization – Internet-based client-server optimization engine

COMPUTER SKILLS

<i>System Administration:</i>	MS Windows, Unix/Linux, Mac OS
<i>Programming Languages:</i>	C/C++, Pascal, Fortran, HTML, XML, JavaScript, Perl, PHP, SQL, FoxPro/dBASE
<i>Mathematical and Statistical Software:</i>	Matlab, Maple, Mathematica, Mathcad, Cplex, Mosek, Ipopt, Minos, AMPL, AIMMS, Simul8, R, Stata, E-views, TSP

LEADERSHIP AND ACTIVITIES

- Organizer and Practice Chair of CORS/MOPGP International Joint Conference 2012, Niagara Falls, ON, Canada, June 11-13, 2012.
- Organizer of Industrial Academic Workshop on Optimization in Finance and Risk Management, Fields Institute, Toronto, ON, Canada, October 3-4, 2011
- Graduate Student Representative at the Department of Computing and Software, McMaster University, Hamilton, ON, Canada (2005-2008)
- Technical support and conference management software development for MOPTA and ICCOPT conferences, McMaster University, Hamilton, ON, Canada (2003-2007)
- Served as the Vice-President of Youth Environmental NGO “Eco”, Sumy, Ukraine (1998-2000)
- Organizing Committee Chair of the International Student Conference “Economics for Ecology”, Sumy, Ukraine (1999, 2000)

MEMBERSHIP

- Canadian Operational Research Society (CORS)
- Institute for Operations Research and the Management Sciences (INFORMS)
- Mathematical Optimization Society (MOS)
- Society for Industrial and Applied Mathematics (SIAM)
- Professional Risk Managers' International Association (PRMIA)

LANGUAGE SKILLS

- English (fluent), Ukrainian, Russian (both native), Czech (intermediate)

INTERESTS

- *Sports:* mountain hiking, canoeing, cross-country and downhill skiing, tennis, swimming
- *Traveling:* traveled to the majority of European countries, summer work in the UK and Russia
- *Graphic arts:* computer graphics and art, web-design

REFERENCES

Available upon request