

CURRICULUM VITAE



Docent, PhD. Napsu Marjo Sinikka Karmitsa

Department of Mathematics

University of Turku

FI-20014 Turku, Finland

Phone: +358 (0)40 085 9721

E-mail address: napsu@karmitsa.fi

Homepage: <http://napsu.karmitsa.fi/>

PERSONAL DATA

- Date and place of birth: June 4th, 1971, Liperi, Finland.
- Place of residence: Turku, Finland.
- Nationality: Finnish.
- Gender: Female.
- Marital status: Married (maiden name Haarala), no children.

EDUCATION

- Docent (adjunct professor) in Applied Mathematics, 2011. University of Turku, Finland.
- Doctor of Philosophy (Scientific Computing), 2004. Department of Mathematical Information Technology, University of Jyväskylä, Finland.
- Licentiate of Philosophy (Scientific Computing), 2003. Department of Mathematical Information Technology, University of Jyväskylä, Finland.
- Master of Science (Organic Chemistry), 1998 Department of Chemistry, University of Jyväskylä, Finland.
- Student Matriculation, 1991. Liperi's senior high school, Liperi, Finland.

DOCTORAL THESIS

- “*Large-Scale Nonsmooth Optimization: Variable Metric Bundle Method with Limited Memory*”, (monograph), Department of Mathematical Information Technology, University of Jyväskylä, Jyväskylä, 2004.
- Supervisors: Prof. Marko M. Mäkelä (University of Turku) and Prof. Kaisa Miettinen (University of Jyväskylä).
- Reviewers: Prof. Manlio Gaudioso (Università della Calabria, Italy) and Prof. Ladislav Lukšan (Academy of Sciences of the Czech Republic).
- Opponent: Prof. Per Olov Lindberg (Linköping University, Sweden).
- Grade: *Approved with honours* (this grade is granted to top 5–10 percent of theses.)

KNOWLEDGE OF LANGUAGES

- Finnish: native speaker.
- English: fluently.
- Swedish: satisfactorily.

WORK EXPERIENCE

- 1.8.2007 – 31.7.2012. Assistant, 7.9. – 21.10.2010, 15.8. – 19.8.2011 lecturer, Department of Mathematics, University of Turku, Finland. Research area: Large-scale nonsmooth optimization and molecular modeling.

- 1.1.2007 – 31.7.2007. Assistant Professor/Senior Researcher in SCOMA project, Department of Mathematical Information Technology, University of Jyväskylä, Finland. Research area: Large-scale nonsmooth optimization and MLPs.
- 4.11.2005 – 3.11.2006. Postdoctoral fellow (grant), School of Computational and Applied Mathematics, University of the Witwatersrand, Johannesburg, South Africa. Research area: Large-scale nonsmooth optimization with various constraints.
- 1.6.2001 – 31.10.2005. Researcher/Research trainee, Department of Mathematical Information Technology, University of Jyväskylä, Finland. Research area: Large-scale nonsmooth optimization.
- 5.7.1999 – 31.5.2001. Part-time programmer/Research assistant, Department of Mathematical Information Technology, University of Jyväskylä, Finland. Different projects.
- 1.9.1998 – 30.4.1999. Researcher/Substitute research assistant, Department of Chemistry, Laboratory of Organic Chemistry, University of Jyväskylä, Finland. Research area: Synthesis of resorcinarenes.
- 25. – 28.9.1992, 29. – 30.10.1992, and 23.11. – 4.12.1992. Substitute Senior teacher at Liperi's senior high school, Liperi, Finland.

SOFTWARE DEVELOPMENT

- LDGB — Limited memory Discrete Gradient Bundle method (2011): Fortran 95 package for unconstrained, possible nonconvex, moderate large nonsmooth (nondifferentiable) derivative free optimization. Also contains a new version of LMBM.
- *Solver-O-Matic* — online decision tree for choosing a nonsmooth optimization solver (2010).
- LMBM — Limited Memory Bundle Method (2004): FORTRAN77 package for general, possible nonconvex, large-scale nonsmooth optimization.
- LBB — L-BFGS Bundle method (2004): FORTRAN77 package for general, possible nonconvex, large-scale nonsmooth optimization.

All the softwares can be downloaded from the page <http://napsu.karmita.fi/>

RESEARCH GRANTS

- Turku University Foundation (2010): 1 200 € travel grant.
- Turku University Foundation (2010): 800 € travel grant.
- Turku University Foundation (2010): 1 000 € for inviting a visiting researcher.
- Magnus Ehrnrooth Foundation (2010): 4 000 € for the book project.
- Magnus Ehrnrooth Foundation (2008): 2 500 € travel grant.
- University of the Witwatersrand (2005): R101 000 for 12 month postdoctoral fellowship in the School of Computational and Applied Mathematics.
- Emil Aaltonen Foundation (2004): 7 000 € for finishing the Doctoral Thesis.

RESEARCH VISITS

- University of Ballarat, Centre for Informatics and Applied Optimization, School of Information Technology and Mathematical Sciences, with Prof. Adil Bagirov as a host. Ballarat, Australia, February 8 – 20, 2011.
- Federal University of Rio de Janeiro (UFRJ) in the Mechanical Engineering Program — COPPE with Prof. José Herskovits as a host. Rio de Janeiro, Brazil, June 1 – 18, 2008 and August 1 – 15, 2009.

- University of the Witwatersrand, School of Computational and Applied Mathematics with Prof. Montaz M. Ali as a host. Johannesburg, South Africa, November 4, 2005 – November 3, 2006.

INVITED LECTURES

- The 21st International Conference on Multiple Criteria Decision Making (MCDM), Jyväskylä, Finland, June 13 – 17, 2011. Presentation (in invited session organized by Prof. Marko Mäkelä): “Necessary and Sufficient Optimality Conditions for Generalized Convex Nonsmooth Multiobjective Optimization”.
- SIAM conference on optimization, Darmstadt, Germany, May 15 – 19, 2011. Presentation (in invited session organized by Prof. Antonio Frangioni): “Limited Memory Discrete Gradient Bundle Method for Derivative Free Nonsmooth Optimization”.
- Federal University of Rio de Janeiro (UFRJ), Brazil, August 7, 2009. Lecture: “Introduction to Nonsmooth Optimization”.
- University of Kuopio, Department of Physics, Finland, April 16, 2008. Lecture: “Suurten optimointitehtävien numeerinen ratkaiseminen ja epälineä optimointi” (Numerical methods for Large-Scale and Nonsmooth Optimization).
- The 22nd European Conference on Operational Research (EURO XXII), Prague, The Czech Republic, July 8 – 11, 2007. Presentation (in invited session organized by Prof. Claudia Sagastizábal): “Limited Memory Interior Point Bundle Method”.

PARTICIPATIONS TO INTERNATIONAL CONFERENCES AND WORKSHOPS

- The 21st International Conference on Multiple Criteria Decision Making (MCDM), Jyväskylä, Finland, June 13 – 17, 2011. Presentation (in invited session organized by Prof. Marko Mäkelä): “Necessary and Sufficient Optimality Conditions for Generalized Convex Nonsmooth Multiobjective Optimization”.
- SIAM conference on optimization, Darmstadt, Germany, May 15 – 19, 2011. Presentation (in invited session organized by Prof. Antonio Frangioni): “Limited Memory Discrete Gradient Bundle Method for Derivative Free Nonsmooth Optimization”.
- The 24th European Conference on Operational Research (EURO XXIV), Lisbon, Portugal, July 11 – 14, 2010. Presentation: “Comparing Nonsmooth Optimization Methods and Software”.
- The 8th EUROPT Workshop: Advances in Continuous Optimization, Aveiro, Portugal, July 8 – 9, 2010.
- The 24th IFIP TC 7 Conference on System Modelling and Optimization (IFIP 2009), Buenos Aires, Argentina, July 27 – 31, 2009. Presentation: “Comparing Nonsmooth Optimization Methods and Software”.
- International Conference on Engineering Optimization (EngOpt 2008), Rio de Janeiro, Brazil, June 1 – 5, 2008. Presentation: “Globally Convergent Limited Memory Bundle Method for Bound Constrained Large-Scale Nonsmooth Optimization”.
- The 22nd European Conference on Operational Research (EURO XXII), Prague, The Czech Republic, July 8 – 11, 2007. Presentation (in invited session organized by Prof. Claudia Sagastizábal): “Limited Memory Interior Point Bundle Method”.
- The 19th International Symposium on Mathematical Programming (ISMP 2006), UFRJ, Rio de Janeiro, Brazil, July 30 – August 4, 2006. Presentation: “Limited Memory Bundle Method for Bound Constrained Large-Scale Nonsmooth Optimization”.
- The third Mathematics in Industry Study Group in South Africa (MISGSA), the University of the Witwatersrand, Johannesburg, South Africa, January 23 – 27, 2006.

- The Eighth SIAM Conference on Optimization, Stockholm, Sweden, May 15 – 18, 2005.
- The 40th Workshop Large Scale Nonlinear Optimization, Erice, Sicily, Italy, June 22 – July 1, 2004. Presentation: “Large-Scale Nonsmooth Optimization: Limited Memory Bundle Method”.
- The 18th International Symposium on Mathematical Programming (ISMP 2003), Copenhagen, Denmark, August 18 – 22, 2003. Presentation: “Large-Scale Nonsmooth Optimization: New Limited Memory Bundle Method”.
- Finnish-Russian Doctoral Seminar on Multicriteria Decision Aid and Optimization, Helsinki, Finland, November 28 – 29, 2002. Presentation: “Bundle Methods for Large-Scale Optimization”.

PARTICIPATIONS TO OTHER WORKSHOPS

- Teaching Role Workshop, Centre for Learning, Teaching and Development (CLTD), University of the Witwatersrand, Johannesburg, South Africa, June 12 – 14, 2006.

TEACHING

- Intensive course: Large-Scale and SuperComputing, University of Turku, August 15 – 19, 2011.
- Lecture: Todennäköisyyslaskentaa sivuaineopiskelijoille (Probability Theory for Minor Students), University of Turku, in the fall 2010.
- My teaching demonstration for the position of an assistant professor in applied mathematics, University of Turku (April 14, 2008), was rated as *excellent*.

PHD AND MSc STUDENT SUPERVISORS

- Seppo Pulkkinen, PhD student, “*Derivative Free Model Based Global Optimization*”, estimated time of graduation 2013.
- Katariina Vaviolahti “*Molekyyliä mallinnukseen liittyvistä optimointitehtävistä ja niiden ratkaisemisesta*” (On Optimization Problems in Molecular Modeling), 2010.
- Lassi Hietarinta: “*Muurahaisyhdyskuntaoptimointi*”, (Ant Colony Optimization), MSc Thesis, University of Turku, 2009 (second supervisor).
- Jarmo Heinonen: “*Ensihoito: Ambulanssien kiinteiden sijoituspaikkojen optimointitehtävän mallinnus*”, (Optimizing Ambulance Station Locations), MSc Thesis, University of Turku, 2011 (second supervisor).

SCIENTIFIC TASKS AS AN EXPERT AND POSITIONS OF TRUST

- Outside Member of the Doctoral Committee of Mr Jeff Steward, a PhD student in Dept of Scientific Computing at Florida State University, Tallahassee, Florida 32306-4120.
- Member of the International Scientific Committee in 2nd and 3rd International Conference on Engineering Optimization (EngOpt 2010: Lisbon, Portugal, September 6 – 9, 2010; EngOpt 2012: Rio de Janeiro, Brazil, July 2 – 6, 2012).
- Member of the Finnish Graduate School in Computational Sciences (fics-2009) programme committee, 2009.
- Member of the board of the Finnish Society of Computational Sciences from April 16, 2008 to February 10, 2010.
- A founder member and a deputy member of the board of the Finnish Society of Computational Sciences from June 13, 2007 to April 16, 2008.

- Member of the Computer Science Joint Entrance Examination workgroup at the University of Jyväskylä in spring 2007.
- Referee for Mathematical Programming (Math. Prog.), SIAM Journal on Optimization (SIOPT), European Journal of Operational Research (EJOR), Journal of Optimization Theory and Applications (JOTA) and Journal of Computational and Applied Mathematics (COAP).

RESEARCH INTERESTS

- Nonsmooth (not necessarily differentiable), large-scale, nonconvex, and constrained optimization.
- Optimization problems in molecular modeling.
- Algorithm design.
- High performance computing.