Curriculum Vitae

Napsu Karmitsa, PhD., Adjunct Professor 09.11.2020

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: Kangasala, Finland.
- Nationality: Finnish.
- Gender: Female.
- Marital status: Married (maiden name Haarala).

Education

- 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. My PhD Thesis "*Large-Scale Nonsmooth Optimization: Variable Metric Bundle Method with Limited Memory*" was *Approved with honours* (this grade is granted to top 5–10 percent of theses).
- Master of Science (Organic Chemistry), 1998 Department of Chemistry, University of Jyväskylä, Finland.

Work Experience

- 01.09.2015 – 14.12.2020, Academy Research Fellow; Department of Mathematics and Statistics, University of Turku, Finland (01.09.2019 – 14.12.2020, part time: 20% on unpaid parental leave). Visiting researcher at Federation University Australia, Australia, 2016. Research project: Complex nonsmooth optimization and machine learning.
- 01.08.2007 – 31.08.2015, Postdoctoral researcher / University teacher / Assistant (01.08.2014 – 31.08.2015, part time: 20% on unpaid maternity leave, 23.11.2012 – 31.07.2014, part time: 40% on unpaid maternity leave); 14.1. – 22.11.2012, Maternity leave; 01.09. – 18.10.2013, 15.08. – 19.08.2011, 07.09. – 21.10.2010, Lecturer; Department of Mathematics and Statistics, University of Turku, Finland. Research area: Large-scale nonsmooth optimization and molecular modeling.
- 01.01.2007 – 31.07.2007, Assistant Professor / Senior Researcher in SCOMA project; Department of Mathematical Information Technology, University of Jyväskylä, Finland. Research area: Large-scale nonsmooth optimization and MLPs.
- 04.11.2005 – 03.11.2006, 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.
- 01.06.2001 – 31.10.2005, Researcher / Research trainee; Department of Mathematical Information Technology, University of Jyväskylä, Finland. Research area: Large-scale nonsmooth optimization.
- 05.07.1999 – 31.05.2001, Part-time programmer / Research assistant; Department of Mathematical Information Technology, University of Jyväskylä, Finland. Different projects.
- 01.09.1998 – 30.04.1999, Researcher / Substitute research assistant; Department of Chemistry, Laboratory of Organic Chemistry, University of Jyväskylä, Finland. Research area: Synthesis of resorcinarenes.

Research Grants

- Academy of Finland (2018): 139 947 euro as continuation funding (last two years) for Academy Research Fellows' research costs. Decision No. 319274, 01.09.2018 – 30.11.2020.
- Academy of Finland (2017), ICT 2023: computation, machine learning and artificial intelligence: 79 527 euro for the Consortium-project Tensor Learning for Biomedicine (TensorBioMed). Decision No. 313269, 01.01.2018 – 31.12.2019.
- Academy of Finland (2015): 434 485 euro for five years research post as Academy Research Fellow. Decision No. 289500, 01.09.2015 – 14.12.2020.
- Academy of Finland (2015): 209 574 euro as initial funding (first three years) for Academy Research Fellows' research costs. Decision No. 294002, 01.09.2015 – 31.08.2018.
- University of the Witwatersrand (2005): R101 000 for 12 month postdoctoral fellowship in the School of Computational and Applied Mathematics.
- Small grants (less than 7 000 euro/grant) for traveling, inviting visiting researchers, book project and finishing doctoral thesis from Magnus Ehrnrooth Foundation (2014, 2010, 2008), Turku University Foundation (2015, 2010 x 3) and Emil Aaltonen Foundation (2004).

Research Visits

- Federation University Australia (former University of Ballarat), Faculty of Science and Technology with Prof. A. Bagirov as a host. Ballarat, Australia, 01. – 18.12.2019, 15.03. – 01.04.2019, 10. – 24.02.2018, 02.01. – 22.12.2016, 13. – 27.02.2015, and 08. – 20.02.2011.
- Universitá della Calabria, Dipartimento di Ingegneria Informatica, Modellistica, Elettronica e Sistemistica with Prof. M. Gaudioso as a host. Rende, Italy, 15.09. – 21.09.2018 and 01. – 07.11.2015.
- Federal University of Rio de Janeiro (UFRJ) in the Mechanical Engineering Program — COPPE with Prof. J. Herskovits as a host. Rio de Janeiro, Brazil, 01. –15.08.2009 and 01. – 18.06.2008.
- University of the Witwatersrand, School of Computational and Applied Mathematics with Prof. M.M. Ali as a host. Johannesburg, South Africa, 04.11.2005 – 03.11.2006.

PhD Student Supervisors

- Seppo Pulkkinen: "*Efficient Optimization Algorithms for Nonlinear Data Analysis*", in 2014. The other supervisor was Prof. M.M. Mäkelä (University of Turku, Finland).
- Kaisa Joki: "*Bundle Methods in Nonsmooth DC Optimization*", in 2018. The other supervisors were Prof. M.M. Mäkelä and Prof. A. Bagirov (Federation University Australia).
- Outi Montonen: "*Multiobjective Nonsmooth Optimization*", in 2020. The other supervisors are Prof. M.M. Mäkelä and Doc. Y. Nikulin (University of Turku, Finland).
- Ville-Pekka Eronen: "*Nonsmooth mixed interger progamming*", estimated time of graduation 2021. The other supervisors are Prof. M.M. Mäkelä and Prof. T. Westerlund (Abo Academi Univesity, Finland).
- Debangana Baruah: "*Generalized Orlicz spaces and partial differential equations applied in image restoration*" estimated time of graduation 2021. The other supervisors are Prof. P. Hästö (University of Turku, Finland), PhD. P. Harjulehto (University of Turku, Finland), and Prof. M.M. Mäkelä.

Scientific Tasks as an Expert and Positions of Trust

- Guest editor for Special Issue "*Nonsmooth Optimization in Honor of the 60th Birthday of Adil M. Bagirov*" in Algorithms, 2020.
- Outside Member of the Doctoral Committee of Jeffrey L. Steward, Dept. of Scientific Computing at Florida State University, 2011.
- Member of the International Scientific Committee in 2nd and 3rd International Conference on Engineering Optimization (EngOpt 2010: Lisbon, Portugal, 06. – 09.09.2010; EngOpt 2012: Rio de Janeiro, Brazil, 02. – 06.07.2012).
- Member of the Finnish Graduate School in Computational Sciences (fics-2009) programme committee, 2009.
- A founder member and a deputy member of the board of the Finnish Society of Computational Sciences 13.06.2007 – 16.04.2008, and a member of the board 16.04.2008 –10.2.2010.
- Referee for Math. Reviews, Math. Prog., SIOPT, Pattern Recognit., EJOR, JOTA, COAP, OMS, JAMC, JIMO, JMAA, NUMA, COAM, EJCO, CAM, MPC, AMC, etc.

Publications and Software Development

- I have published three books: "*Introduction to Nonsmooth Optimization: Theory, Practice and Software*" (Springer, 2014) co-authored with A. Bagirov and M.M. Mäkelä, "*Numerical Nonsmooth Optimization: State-of-the-Art Algorithms*" (Springer, 2020) co-edited with A. Bagirov, M. Gaudioso, M.M. Mäkelä and S. Taheri, and "*Partitional Clustering via Nonsmooth Optimization: Cluster Analysis via Optimization*" (Springer, 2020) co-authored with A. Bagirov and S. Taheri.
- I have published 37 papers in referred professional journals and proceedings. Four of my papers have been published in JUFO level 3 journals (the top level in Finnish system). I have also written several research reports.
- Citation statistics: number of citations = 1004, h-index = 15, i10-index = 24 (Google Scholar, 09.11.2020).
- In addition to these conventional forms of publications, I have shared my work on my webpage `http://napsu.karmitsa.fi/`. There you can find, for instance, a short introduction to nonsmooth optimization, source codes for nonsmooth optimization solvers `LMBM`, `LBB`, `LDGB`, `D-Bundle`, and `DDG-Bundle` that I have developed, two nonsmooth clustering algorithms `LMBM-Clust` and `DCD-Bundle`, imputation method `IviaCLR` for preprocessing incomplete data, neural networks `LMBNNR` for large-scale regression, and *Solver-o-matic* — an online decision tree for choosing a nonsmooth optimization solver.