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Raport,

In cadrul proiectului "Learning to optimize: from mathematical foundations to applications in modelling and control" (Invatand sa optimizam: de la fundamente matematice la aplicatii in modelare si control), Acronym: L2O-MOC, PN-III-P4-PCE-2021-0720, 01.07.2022 – 31.12.2024, finantat de UEFISCDI (https://sites.google.com/view/l2o-moc/home), Romania, echipa a fost formata din:

Ion Necoara, Gabriela Marinoschi, Lucian Toma, Tudor Ionescu, Daniela Lupu, Nitesh Kumar Singh

In cadrul proiectului au fost publicate 16 articole in reviste ISI de top si 14 articole in conferinte internationale.

De asemenea, doua teze de doctorat au fost finalizate in perioada de derulare a proiectului de catre doi membri: Daniela Lupu, Nitesh Kumar Singh.

Articolele publicate in reviste ISI sunt:

[J1]. I. Necoara, N.K. Singh, Stochastic subgradient projection methods for composite optimization with functional constraints, *Journal of Machine Learning Research* (Q1), 23(265), 1-35, 2022 (https://www.jmlr.org/papers/volume23/21-1062/21-1062.pdf).

[J2]. L. El Bourkhissi, I. Necoara, Complexity of linearized quadratic penalty for optimization with nonlinear equality constraints, *Journal of Global Optimization (Q2), doi: 10.1007/s10898-024-01456-3, 2024.*

[J3]. I. Necoara, D. Lupu, General higher-order majorization-minimization algorithms for (non)convex optimization, provisionally accepted in *Siam Journal on Optimization (Q1)*, 2022.

[J4] D. Lupu, I. Necoara, Convergence analysis of stochastic higher-order majorization-minimization algorithms, *Optimization Methods and Software (Q2),* doi: 10.1080/10556788.2023.2256447, 2023.

[J5] F. Chorobura, I. Necoara, Random coordinate descent methods for nonseparable composite optimization, *Siam Journal on Optimization (Q1),* 33(3), doi: 10.1137/22M148700X, 2023.

[J6] N.K. Singh, I. Necoara, V. Kungurtsev, Mini-batch stochastic subgradient for functional constrained optimization, *Optimization (Q2),* doi: 10.1080/02331934.2023.2189015, 2023.

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[J7] Y. Nabou, I. Necoara, Efficiency of higher-order algorithms for minimizing general composite optimization, *Computational Optimization and Applications (Q1),* doi: 10.1007/s10589-023-00533-9, 2023.

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[J9] I. Necoara, F. Chorobura, Efficiency of stochastic coordinate proximal gradient methods on nonseparable composite optimization, *Mathematics of Operations Research (Q1)*, doi: 10.1287/moor.2023.0044, 2024.

[J10] N.K. Singh, I. Necoara, A stochastic moving ball approximations method for smooth convex constrained minimization, *Computational Optimization and Applications (Q1)*, 89, 659--689, doi: 10.1007/s10589-024-00612-5, 2024.

[J11] L. Tondji, I. Necoara, D.A. Lorenz, Acceleration and restart for the randomized Bregman-Kaczmarz method, *Linear Algebra and Its Applications (Q2)*, 699, 508--538, doi: 10.1016/j.laa.2024.07.009, 2024.

[J12] N.K. Singh, I. Necoara, Stochastic halfspace approximation method for convex optimization with nonsmooth functional constraints, *IEEE Transactions on Automatic Control (Q1)*, 70(1), doi: 10.1109/TAC.2024.3426888, 2025.

[J13] D. Lupu, I. Necoara, Exact representation and efficient approximations of linear model predictive control laws via HardTanh type deep neural networks, *Systems and Control Letters (Q1),* 186, doi: 10.1016/j.sysconle.2024.105742, 2024.

[J14] L. El Bourkhissi, I. Necoara, Convergence rates for an inexact linearized ADMM for nonsmooth optimization with nonlinear equality constraints, provisionally accepted in *Computational Optimization and Applications (Q1)*, 2024.

[J15] T.C. Ionescu, O.V. Iftime, R. Stefan, "Loewner matrices-based data-driven loopshaping design with closed-loop pole placement", submitted to *IEEE Transactions on Automatic Control (Q1),* 2024.

[J16] D. Lupu, J. Garrett, T.A. Johansen, M. Orlandic, I. Necoara, Quick unsupervised hyperspectral dimensionality reduction for earth observation: a comparison, submitted to *IEEE Transactions on Computational Imaging (Q2)*, 20 June 2024.

Va multumesc,

Ion Necoara 20.11.2025