Duy Nhat Phan

Postdoc Research Associate, University of Massachusetts Lowell
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RESEARCH INTERESTS

Convex optimization; nonconvex optimization; machine learning; stochastic learning; deep learning; reinforcement learning.

EDUCATION

PhD in Applied Mathematics, University of Lorraine, France 2013-2016

MS in Mathematics, University of Strasbourg, France 2009-2010

BS in Mathematics, HCMC University of Education, Vietnam 2004-2008

RESEARCH EXPERIENCE

Department of Mathematics and Statistics, University of Massachusetts Lowell, USA

Postdoctoral Researcher Sep. 2022 - Present

Dynamic Decision Making Lab, Carnegie Mellon University, USA

Postdoctoral Researcher Sep. 2021 - Aug. 2022

Visiting Scholar Mar. 2021 - Aug. 2021

Department of Computer Science and Applications, University of Lorraine, France

Postdoctoral Researcher Jan. 2017 - Oct. 2019

TEACHING EXPERIENCE

Instructor

Linear Algebra I, University of Massachusetts Lowell Fall 2022

Introduction to Machine Learning, Online Summer School Summer 2021

Linear Algebra, HCMC University of Education 2010-2013

Discrete Mathematics, HCMC University of Education 2010-2013

Linear Algebra and Analytic Geometry, HCMC University of Education 2010-2013

Lectures for gifted students in Mathematics, HCMC University of Education 2010-2013

TECHNICAL SKILLS

Programming languages: R, Matlab, Python, and C++

PUBLICATIONS

A. Journal Articles

[12] Le Thi Khanh Hien, **Duy Nhat Phan** and Nicolas Gillis: An Inertial Block Majorization Minimization Framework for Nonsmooth Nonconvex Optimization. *Journal of Machine Learning Research*, 2022 (Accepted).

[11] Le Thi Khanh Hien, **Duy Nhat Phan** and Nicolas Gillis: Inertial alternating direction method of multipliers for non-convex non-smooth optimization. *Computational Optimization and Applications* 83:247-285, 2022.

[10] Nguyen, Thuy Ngoc, **Duy Nhat Phan**, and Cleotilde Gonzalez: SpeedyIBL: A comprehensive, precise, and fast implementation of instance-based learning theory." *Behavior Research Methods*, 1-24, 2022.

[9] Le Thi Khanh Hien, **Duy Nhat Phan**, Nicolas Gillis, Masoud Ahookhosh and Panagiotis Patrinos: Block Bregman Majorization Minimization with Extrapolation. *SIAM Journal on Mathematics of Data Science* 4:1-25, 2022.

[8] Hoai An Le Thi, **Duy Nhat Phan** and Tao Pham Dinh: DCA based approaches for bi-level variable selection and application for estimate multiple sparse covariance matrices. *Neurocomputing* 466:162-177, 2021.

[7] **Duy Nhat Phan** and Thuy Ngoc Nguyen: An accelerated IRNN-Iteratively Reweighted Nuclear Norm algorithm for nonconvex nonsmooth low-rank minimization problems. *Journal of Computational and Applied Mathematics* 396, 2021.

[6] Hoai An Le Thi, Hoai Minh Le, **Duy Nhat Phan** and Bach Tran: Novel DCA based algorithms for a special class of nonconvex problems with application in machine learning. *Applied Mathematics and Computation* 409, 2021.

[5] Hoai An Le Thi, Hoai Minh Le, **Duy Nhat Phan** and Bach Tran: Stochastic DCA for minimizing a large sum of DC functions with application to multi-class logistic regression. *Neural Network* 132: 220-231, 2020.

[4] **Duy Nhat Phan** and Hoai An Le Thi: Group Variable Selection via $L_{p,0}$ regularization and Application to Optimal Scoring. *Neural Network* 118: 220-234, 2019.

[3] **Duy Nhat Phan**, Hoai An Le Thi and Tao Pham Dinh: Sparse Covariance Matrix Estimation by DCA based Algorithms. *Neural Computation* 29: 3040-3077, 2017.

[2] Hoai An Le Thi and **Duy Nhat Phan**: DC Programming and DCA for Sparse Fisher Linear Discriminant Analysis. *Neural Computing and Applications* 28:2809-2822, 2017.

[1] Hoai An Le Thi and **Duy Nhat Phan**: DC Programming and DCA for Sparse Optimal Scoring Problem. *Neurocomputing* 186:170-181, 2016.

B. Peer-reviewed Conference Articles

[9] Thuy Ngoc Nguyen, **Duy Nhat Phan** and Cleotilde Gonzalez: A Cognitive Hysteretic-IBL Model for Coordinated Multi-Agent Transportation Problems. *ACM Collective Intellegence*, 2021.

[8] **Duy Nhat Phan**, Hoai Le Minh and Hoai An Le Thi: Accelerated Difference of Convex functions Algorithm and Its Application to Sparse Binary Logistic Regression. *Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018)*, pp. 1369-1375.

[7] **Duy Nhat Phan** and Hoai An Le Thi: A Novel Approach for Estimating Multiple Sparse Precision Matrices using L_0,0 Regularization. *Proceedings of the 4th IEEE International Conference on Data Science and Advanced Analytics (DSAA 2017)*, Tokyo, pp. 726-733.

[6] Hoai An Le Thi, Hoai Minh Le, **Duy Nhat Phan** and Bach Tran: Stochastic DCA for the large-sum of non-convex functions problem and its application to group variables selection in classification. *Proceedings of the 34th International Conference on Machine Learning (ICML 2017)*, Vol. 70, pp. 3394-3403.

[5] **Duy Nhat Phan**, Hoai An Le Thi and Tao Pham Dinh: Efficient Bi-level Variable Selection and Application to Estimation of Multiple Covariance Matrices. *Proceedings of the 21st Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2017), Lecture Notes in Computer Science*, Vol. 10234, pp. 304-316, Springer 2017.

[4] Hoai An Le Thi, Hoai Minh Le, **Duy Nhat Phan** and Bach Tran: Stochastic DCA for Sparse Multiclass Logistic Regression. *Proceedings of the 5th International Conference on Computer Science, Applied Mathematics and Applications (ICCSAMA 2017), Advances in Intelligent Systems and Computing*, Volume 629, pp. 1-12, Springer 2017.

[3] Hoai An Le Thi and **Duy Nhat Phan**: A DC Programming Approach for Sparse Optimal Scoring. *Proceedings of the 19th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2015), Lecture Notes in Computer Science*, Volume 9078, pp. 435-446, Springer 2015.

[2] **Duy Nhat Phan**, Hoai An Le Thi and Tao Pham Dinh: A DC Programming Approach for Sparse Estimation of a Covariance Matrix. *Proceedings of the 3rd international conference on Modelling, Computation and Optimization in Information Systems and Management Sciences (MCO 2015), Advances in Intelligent Systems and Computing*, Volume 359, pp. 131-142, Springer 2015.

[1] **Duy Nhat Phan**, Manh Cuong Nguyen and Hoai An Le Thi: A DC Programming Approach for Sparse Linear Discriminant Analysis. *Proceedings of the 2nd International Conference on Computer Science, Applied Mathematics and Applications (ICCSAMA 2014), Advances in Intelligent Systems and Computing*, Volume 282, pp. 65-74, Springer 2014.

C. Preprints

[2] **Duy Nhat Phan** and Hoai An Le Thi: DCA based Algorithm with Extrapolation for Nonconvex Nonsmooth Optimization. *arXiv:2106.04743*.

[1] Hoai An Le Thi, **Duy Nhat Phan** and Tao Pham Dinh: Advanced Difference-of-Convex functions Algorithms.

PROFESSIONAL ACTIVITY

Journal article reviewer: Computers & Operations Research, Knowledge-Based Systems, Journal of Global Optimization, Applied Numerical Mathematics, Optimization and Engineering.

Conference paper reviewer: ACML 2016, 2017, 2018; MCO 2015; ICCSAMA 2015, 2017; ACIIDS 2016; LION 2017, ICCCI 2017, 2018; VCGO 2019, MCO 21, AAAI 22, NFFL 21, AISTATS 2022.

Organizing member of international conferences: ICCSAMA 2015, MCO 2015.

AWARDS

First Prize in Analysis and Second Prize in Algebra, Vietnam Mathematical Olympiad for University Students.

Third Prize of the National Mathematics Competition for High School Students.