

Lam M. Nguyen

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EDUCATION

- 2014 – 2018 **Ph.D.**, Department of Industrial and Systems Engineering, *Lehigh University*, Bethlehem, PA
Thesis advisors: *Katya Scheinberg*, *Martin Takac*, and *Alexander L. Stolyar*
Thesis title: A Service System with On-Demand Agents, Stochastic Gradient Algorithms and the SARAH Algorithm
Elizabeth V. Stout Dissertation Award
Research areas: Optimization for Large Scale Problems, Machine Learning, Deep Learning, Stochastic Models, Optimal Control
- 2011 – 2013 **M.B.A.**, College of Business, *McNeese State University*, Lake Charles, LA
Beta Gamma Sigma (Academic Honor)
- 2004 – 2008 **B.S.**, Applied Mathematics and Computer Science, Faculty of Computational Mathematics and Cybernetics, *Lomonosov Moscow State University*, Moscow, Russia
Thesis advisor: *Vladimir I. Dmitriev*
Thesis title: Methods for Detecting Hidden Period in Some Economics Processes

RESEARCH EXPERIENCE

- 06/2022 – Present **Staff Research Scientist**, *IBM Research, Thomas J. Watson Research Center*, Yorktown Heights, NY
Research areas: Optimization, Machine Learning, Reinforcement Learning, Time Series
- 04/2021 – 06/2022 **Research Staff Member**, *IBM Research, Thomas J. Watson Research Center*, Yorktown Heights, NY
Research areas: Optimization, Machine Learning, Reinforcement Learning
- 09/2020 – Present **Principal Investigator**, *MIT-IBM Watson AI Lab*, Cambridge, MA
Research areas: Dynamical Systems, Time Series, Reinforcement Learning, Adversarial Robustness
- 10/2018 – 03/2021 **Research Scientist**, *IBM Research, Thomas J. Watson Research Center*, Yorktown Heights, NY
Research areas: Optimization, Machine Learning, Deep Learning, Reinforcement Learning, AI Solutions, Explainable AI
- 05/2018 – 08/2018 **Research Intern**, *IBM Research, Thomas J. Watson Research Center*, Yorktown Heights, NY
Research areas: Optimization, Machine Learning, Deep Learning, Reinforcement Learning
- 08/2017 – 05/2018 **Research Co-op**, *IBM Research, Thomas J. Watson Research Center*, Yorktown Heights, NY
Research areas: Optimization, Machine Learning, Deep Learning
- 06/2017 – 08/2017 **Research Intern**, *IBM Research, Thomas J. Watson Research Center*, Yorktown Heights, NY
Research areas: Optimization, Machine Learning, Deep Learning
- 09/2014 – 05/2017 **Research Assistant**, *Lehigh University*, Bethlehem, PA
Research areas: Optimization for Large Scale Problems, Machine Learning, Deep Learning, Stochastic Models, Optimal Control
- 01/2012 – 12/2013 **Graduate (Research) Assistant**, *McNeese State University*, Lake Charles, LA
Research areas: Operations Management and Finance

EDITORSHIP / PROGRAM COMMITTEE / ORGANIZING COMMITTEE

EDITORSHIP (PEER-REVIEWED JOURNALS)

06/2022 – Present	Action Editor , Journal of Machine Learning Research
06/2021 – Present	Action Editor , Machine Learning
01/2022 – Present	Associate Editor , IEEE Transactions on Neural Networks and Learning Systems
06/2022 – Present	Associate Editor , Journal of Optimization Theory and Applications
01/2022 – 12/2022	Action Editor , Neural Networks

AREA CHAIR / META-REVIEWER/ SENIOR PROGRAM COMMITTEE (PEER-REVIEWED CONFERENCES)

2020 – 2023	Area Chair , International Conference on Machine Learning (ICML)
2022 – 2023	Area Chair , Conference on Neural Information Processing Systems (NeurIPS)
2021 – 2024	Area Chair , International Conference on Learning Representations (ICLR)
2021 – 2024	Area Chair , International Conference on Artificial Intelligence and Statistics (AISTATS)
2022 – 2023	Area Chair , Conference on Uncertainty in Artificial Intelligence (UAI)
2023 – 2024	Area Chair , Conference on Computer Vision and Pattern Recognition (CVPR)
2022	Senior Program Committee , AAAI Conference on Artificial Intelligence (AAAI)

ORGANIZING COMMITTEE

2023	Journal Chair , The 37th Conference on Neural Information Processing Systems (NeurIPS 2023)
2023	General Chair & Program Chair , When Machine Learning meets Dynamical Systems: Theory and Applications, AAAI 2023 Workshop
2021	Program Chair , New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership (NFFL 2021), NeurIPS 2021 Workshop

REVIEWER (PROPOSALS)

2022	Reviewer & Panelist , Grant proposals, National Science Foundation (NSF)
2022	Evaluation Member , Grant proposals, AI Singapore (AISG) Research Programme
2021	Reviewer , Workshop proposals, NeurIPS 2021 Workshops

GRANT EXPERIENCE

01/2023 – 12/2025	Principal Investigator , “ <i>Safe Learning for Time Series Problems: Data, Structure and Optimization</i> ”, MIT-IBM Watson AI Lab Foundational Project, \$750K + \$150K IBM PI: Lam M. Nguyen , IBM Co-PI: Subhro Das MIT PI: Luca Daniel, MIT Co-PI: Alexandre Megretski MIT Students: Wang Zhang, Ziwen (Martin) Ma (Harvard)
01/2022 – 12/2022	Principal Investigator , “ <i>Safe AI Certification</i> ”, MIT-IBM Watson AI Lab Project, \$150K IBM PI: Lam M. Nguyen , IBM Co-PI: Subhro Das MIT PI: Alexandre Megretski, MIT Co-PI: Luca Daniel MIT Student: Wang Zhang
01/2021 – 12/2021	Principal Investigator , “ <i>Safety Structures, Certification, and Training for AI in the Feedback Loop</i> ”, MIT-IBM Watson AI Lab Exploratory Project, \$150K. IBM PI: Lam M. Nguyen , IBM Co-PI: Subhro Das, Tsui-Wei Weng MIT PI: Alexandre Megretski, MIT Co-PI: Luca Daniel MIT Student: Wang Zhang
09/2020 – 09/2021	Co-Principal Investigator , “ <i>Hierarchical Disentangled Representations for Scalable Multi-agent Reinforcement Learning</i> ”, MIT-IBM Watson AI Lab Exploratory Project, \$100K. IBM PI: Tsui-Wei Weng, IBM Co-PI: Lam M. Nguyen MIT PI: Cathy Wu MIT Student: Vindula Jayawardana

JOURNAL & PEER-REVIEWED CONFERENCE PAPERS

- [39] On the Convergence to a Global Solution of Shuffling-Type Gradient Algorithms.
Lam M. Nguyen*, Trang H. Tran*
The 37th Conference on Neural Information Processing Systems (NeurIPS 2023), 2023 (26.1% acceptance rate)
- [38] Analyzing Generalization of Neural Networks through Loss Path Kernels.
Yilan Chen, Wei Huang, Hao Wang, Charlotte Loh, Akash Srivastava, **Lam M. Nguyen**, Tsui-Wei Weng
The 37th Conference on Neural Information Processing Systems (NeurIPS 2023), 2023 (26.1% acceptance rate)
- [37] Attacking c-MARL More Effectively: A Data Driven Approach.
Nhan Pham, **Lam M. Nguyen**, Jie Chen, Hoang Thanh Lam, Subhro Das, and Tsui-Wei Weng
The 23rd IEEE International Conference on Data Mining (ICDM 2023), 2023 (19.94% acceptance rate)
- [36] Promoting Robustness of Randomized Smoothing: Two Cost-Effective Approaches.
Linbo Liu, Trong Nghia Hoang, **Lam M. Nguyen**, and Tsui-Wei Weng
The 23rd IEEE International Conference on Data Mining (ICDM 2023), 2023 (19.94% acceptance rate)
- [35] ConCerNet: A Contrastive Learning Based Framework for Automated Conservation Law Discovery and Trustworthy Dynamical System Prediction.
Wang Zhang, Tsui-Wei Weng, Subhro Das, Alexandre Megretski, Luca Daniel, **Lam M. Nguyen**
The 40th International Conference on Machine Learning (ICML 2023), 2023 (27.9% acceptance rate)
- [34] Scalable and Secure Federated XGBoost.
Quang Nguyen, Nhan Khanh Le, **Lam M. Nguyen**.
The 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2023), 2023
- [33] Label-free Concept Bottleneck Models.
Tuomas Oikarinen, Subhro Das, **Lam M. Nguyen**, Tsui-Wei Weng.
The 11th International Conference on Learning Representations (ICLR 2023), 2023
- [32] Optimal Control via Linearizable Deep Learning.
Vinicius Lima, Dzung T. Phan, **Lam M. Nguyen**, Jayant R. Kalagnanam
The 2023 American Control Conference (ACC 2023), 2023
- [31] Nesterov Accelerated Shuffling Gradient Method for Convex Optimization.
Trang H. Tran, Katya Scheinberg, **Lam M. Nguyen**
The 39th International Conference on Machine Learning (ICML 2022), 2022 (21.9% acceptance rate)
- [30] Finite-Sum Smooth Optimization with SARAH.
Lam M. Nguyen, Marten van Dijk, Dzung T. Phan, Phuong Ha Nguyen, Tsui-Wei Weng, Jayant R. Kalagnanam
Computational Optimization and Applications (COAP), 2022
- [29] AI-based Real-time Site-wide Optimization for Process Manufacturing.
Jayant Kalagnanam, Dzung Phan, Pavankumar Murali, **Lam M. Nguyen**, Nianjun Zhou, Dharmashankar Subramanian, Raju Pavuluri, Xiang Ma, Crystal Lui, Giovane Cesar da Silva
INFORMS Journal on Applied Analytics (IJAA), 2022
- [28] StepDIRECT - A Derivative-Free Optimization Method for Stepwise Functions.
Dzung Phan, Hongsheng Liu, **Lam M. Nguyen**
SIAM International Conference on Data Mining (SDM22), 2022 (27.8% acceptance rate)

- [27] Besting the Black-Box: Barrier Zones for Adversarial Example Defense.
Kaleel Mahmood, Phuong Ha Nguyen, **Lam M. Nguyen**, Thanh Nguyen, Marten van Dijk
IEEE Access, 2022
- [26] Interpretable Clustering via Multi-Polytope Machines.
Connor Lawless, Jayant Kalagnanam, **Lam M. Nguyen**, Dzung Phan, Chandra Reddy
The 36th AAAI Conference on Artificial Intelligence (AAAI 2022), 2022 (15% acceptance rate)
- [25] FedDR - Randomized Douglas-Rachford Splitting Algorithms for Nonconvex Federated Composite Optimization.
Quoc Tran-Dinh, Nhan Pham, Dzung T. Phan, **Lam M. Nguyen**
The 35th Conference on Neural Information Processing Systems (NeurIPS 2021), 2021 (26% acceptance rate)
- [24] Ensembling Graph Predictions for AMR Parsing.
Thanh Lam Hoang, Gabriele Picco, Yufang Hou, Young-Suk Lee, **Lam M. Nguyen**, Dzung T. Phan, Vanessa López, Ramon Fernandez Astudillo
The 35th Conference on Neural Information Processing Systems (NeurIPS 2021), 2021 (26% acceptance rate)
- [23] On the Equivalence between Neural Network and Support Vector Machine.
Yilan Chen, Wei Huang, **Lam M. Nguyen**, Tsui-Wei Weng
The 35th Conference on Neural Information Processing Systems (NeurIPS 2021), 2021 (26% acceptance rate)
- [22] A Unified Convergence Analysis for Shuffling-Type Gradient Methods.
Lam M. Nguyen, Quoc Tran-Dinh, Dzung T. Phan, Phuong Ha Nguyen, Marten van Dijk
Journal of Machine Learning Research (JMLR), volume 22, 1-43, 2021
- [21] SMG: A Shuffling Gradient-Based Method with Momentum.
Trang H. Tran, **Lam M. Nguyen**, Quoc Tran-Dinh
The 38th International Conference on Machine Learning (ICML 2021), PMLR 139, 2021 (21.47% acceptance rate)
- [20] Regression Optimization for System-level Production Control.
Dzung T. Phan, **Lam M. Nguyen**, Pavankumar Murali, Nhan H. Pham, Hongsheng Liu, Jayant R. Kalagnanam
The 2021 American Control Conference (ACC 2021), 2021
- [19] Hogwild! over Distributed Local Data Sets with Linearly Increasing Mini-Batch Sizes.
Nhuong V. Nguyen, Toan N. Nguyen, Phuong Ha Nguyen, Quoc Tran-Dinh, **Lam M. Nguyen**, Marten van Dijk
The 24th International Conference on Artificial Intelligence and Statistics (AISTATS 2021), 2021 (29.8% acceptance rate)
- [18] A Hybrid Stochastic Optimization Framework for Stochastic Composite Nonconvex Optimization.
Quoc Tran-Dinh, Nhan H. Pham, Dzung T. Phan, **Lam M. Nguyen**
Mathematical Programming (MAPR), 2021
IBM 2022 Pat Goldberg Memorial Best Paper Award
- [17] Hybrid Variance-Reduced SGD Algorithms for Nonconvex-Concave Minimax Problems.
Quoc Tran-Dinh, Deyi Liu, **Lam M. Nguyen**
The 34th Conference on Neural Information Processing Systems (NeurIPS 2020), 2020 (20.1% acceptance rate)
- [16] A Scalable MIP-based Method for Learning Optimal Multivariate Decision Trees.
Haoran Zhu, Pavankumar Murali, Dzung T. Phan, **Lam M. Nguyen**, Jayant R. Kalagnanam
The 34th Conference on Neural Information Processing Systems (NeurIPS 2020), 2020 (20.1% acceptance rate)

- [15] Inexact SARAH Algorithm for Stochastic Optimization.
Lam M. Nguyen, Katya Scheinberg, Martin Takac
Optimization Methods and Software (GOMS), volume 36(1), 237-258, 2020
- [14] Pruning Deep Neural Networks with L0-constrained Optimization.
Dzung T. Phan, **Lam M. Nguyen**, Nam H. Nguyen, Jayant R. Kalagnanam
The 20th IEEE International Conference on Data Mining (ICDM 2020), 2020 (19.7% acceptance rate)
- [13] Stochastic Gauss-Newton Algorithms for Nonconvex Compositional Optimization.
Quoc Tran-Dinh, Nhan H. Pham, **Lam M. Nguyen**
The 37th International Conference on Machine Learning (ICML 2020), PMLR 119, 2020 (21.8% acceptance rate)
- [12] ProxSARAH: An Efficient Algorithmic Framework for Stochastic Composite Nonconvex Optimization.
Nhan H. Pham, **Lam M. Nguyen**, Dzung T. Phan, Quoc Tran-Dinh
Journal of Machine Learning Research (JMLR), volume 21(110), 1-48, 2020
IBM 2020 Pat Goldberg Memorial Best Paper Competition - Finalist
- [11] A Hybrid Stochastic Policy Gradient Algorithm for Reinforcement Learning.
Nhan H. Pham, **Lam M. Nguyen**, Dzung T. Phan, Phuong Ha Nguyen, Marten van Dijk, Quoc Tran-Dinh
The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS 2020), PMLR 108, 2020
- [10] New Convergence Aspects of Stochastic Gradient Algorithms.
Lam M. Nguyen, Phuong Ha Nguyen, Peter Richtarik, Katya Scheinberg, Martin Takac, Marten van Dijk
Journal of Machine Learning Research (JMLR), volume 20(176), 1-49, 2019
- [9] Tight Dimension Independent Lower Bound on the Expected Convergence Rate for Diminishing Step Sizes in SGD.
Phuong Ha Nguyen, **Lam M. Nguyen**, Marten van Dijk
The 33th Conference on Neural Information Processing Systems (NeurIPS 2019), 2019 (21.17% acceptance rate)
- [8] PROVEN: Verifying Robustness of Neural Networks with a Probabilistic Approach.
Tsui-Wei Weng, Pin-Yu Chen*, **Lam M. Nguyen***, Mark S. Squillante*, Akhilan Boopathy, Ivan Oseledets, Luca Daniel
The 36th International Conference on Machine Learning (ICML 2019), PMLR 97, 2019 (22.5% acceptance rate)
- [7] Characterization of Convex Objective Functions and Optimal Expected Convergence Rates for SGD.
Marten van Dijk, **Lam M. Nguyen**, Phuong Ha Nguyen, Dzung T. Phan
The 36th International Conference on Machine Learning (ICML 2019), PMLR 97, 2019 (22.5% acceptance rate)
- [6] Chief: A Change Pattern based Interpretable Failure Analyzer.
Dhaval Patel, **Lam M. Nguyen**, Akshay Rangamani, Shrey Shrivastava, Jayant Kalagnanam
2018 IEEE International Conference on Big Data (IEEE BigData 2018), 2018
- [5] SGD and Hogwild! Convergence Without the Bounded Gradients Assumption.
Lam M. Nguyen, Phuong Ha Nguyen, Marten van Dijk, Peter Richtarik, Katya Scheinberg, Martin Takac
The 35th International Conference on Machine Learning (ICML 2018), PMLR 80, 2018 (25% acceptance rate)
IBM Research AI – Selected Publications 2018

- [4] SARAH: A Novel Method for Machine Learning Problems Using Stochastic Recursive Gradient.
Lam M. Nguyen, Jie Liu, Katya Scheinberg, Martin Takac
The 34th International Conference on Machine Learning (ICML 2017), PMLR 70:2613-2621, 2017 (25% acceptance rate)
Van Hoesen Family Best Publication Award
- [3] A Queueing System with On-demand Servers: Local Stability of Fluid Limits.
Lam M. Nguyen, Alexander L. Stolyar
Queueing Systems (QUESTA), 1-26, Springer, 2017
- [2] A Service System with Randomly Behaving On-demand Agents.
Lam M. Nguyen, Alexander L. Stolyar
The 42nd International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2016), ACM SIGMETRICS Performance Evaluation Review, 44(1):365-366, 2016 (25% acceptance rate)
- [1] CEO Compensation: Does Financial Crisis Matter?
Prasad Vemala, **Lam Nguyen**, Dung Nguyen, Alekhya Kommasani
International Business Research, 7(4):125-131, 2014

PEER-REVIEWED WORKSHOP PAPERS

- [6] c-MBA: Adversarial Attack for Cooperative MARL Using Learned Dynamics Model.
Nhan H. Pham, **Lam M. Nguyen**, Jie Chen, Hoang Thanh Lam, Subhro Das, Tsui-Wei Weng
The 36th Conference on Neural Information Processing Systems (NeurIPS 2022), ML Safety, 2022
- [5] Fast Convergence for Unstable Reinforcement Learning Problems by Logarithmic Mapping.
Wang Zhang, **Lam M. Nguyen**, Subhro Das, Alexandre Megretski, Luca Daniel, Tsui-Wei Weng
The 39th International Conference on Machine Learning (ICML 2022), Decision Awareness in Reinforcement Learning, 2022
- [4] Robust Randomized Smoothing via Two Cost-Effective Approaches.
Linbo Liu, Trong Nghia Hoang, **Lam M. Nguyen**, Tsui-Wei Weng
The 10th International Conference on Learning Representations (ICLR 2022), PAIR2Struct: Privacy, Accountability, Interpretability, Robustness, Reasoning on Structured Data, 2022
- [3] Addressing Solution Quality in Data Generated Optimization Models.
Orit Davidovich, Parikshit Ram, Segev Wasserkrug, Dharmashankar Subramanian, Nianjun Zhou, Dzung Phan, Pavankumar Murali, **Lam M. Nguyen**
The 36th AAAI Conference on Artificial Intelligence (AAAI 2022), AI for Decision Optimization, AI4DO, 2022
- [2] Automated Decision Optimization: Data and Knowledge Driven Optimization Model Generation with Human-in-the-loop.
Lisa Amini, Arunima Chaudhary, Yishai Feldman, Pavankumar Murali, **Lam M. Nguyen**, Dzung Phan, Aviad Sela, Carolina Spina, Dharmashankar Subramanian, Abel Valente, Long Vu, Dakuo Wang, Segev Wasserkrug, Ritesh Yadav, Nianjun Zhou
The 36th AAAI Conference on Artificial Intelligence (AAAI 2022), AI for Decision Optimization, AI4DO, 2022
- [1] Ensuring the Quality of Optimization Solutions in Data Generated Optimization Models.
Segev Wasserkrug, Orit Davidovich, Evgeny Shindin, Dharmashankar Subramanian, Parikshit Ram, Pavankumar Murali, Dzung Phan, Nianjun Zhou, **Lam M. Nguyen**
The 30th International Joint Conference on Artificial Intelligence (IJCAI 2021), Data Science Meets Optimisation, DSO@IJCAI2021, 2021

PREPRINTS

- [15] Batch Clipping and Adaptive Layerwise Clipping for Differential Private Stochastic Gradient Descent.
Toan N. Nguyen*, Phuong Ha Nguyen*, **Lam M. Nguyen**, Marten van Dijk
Technical report, arXiv preprint, 2023
- [14] Learning Robust and Consistent Time Series Representations: A Dilated Inception-Based Approach.
Anh Duy Nguyen, Trang H. Tran, Hieu H. Pham, Phi Le Nguyen, **Lam M. Nguyen**
Technical report, arXiv preprint, 2023
- [13] An End-to-End Time Series Model for Simultaneous Imputation and Forecast.
Trang H. Tran, **Lam M. Nguyen**, Kyongmin Yeo, Nam Nguyen, Dzung Phan, Roman Vaculin, Jayant Kalagnanam
Technical report, arXiv preprint, 2023
- [12] Generalizing DP-SGD with Shuffling and Batching Clipping.
Marten van Dijk, Phuong Ha Nguyen, Toan N. Nguyen, **Lam M. Nguyen**
Technical report, arXiv preprint, 2022
- [11] Finding Optimal Policy for Queueing Models: New Parameterization.
Trang H. Tran, **Lam M. Nguyen**, Katya Scheinberg
Technical report, arXiv preprint, 2022
- [10] Finite-Sum Optimization: A New Perspective for Convergence to a Global Solution.
Lam M. Nguyen*, Trang H. Tran*, Marten van Dijk
Technical report, arXiv preprint, 2022
- [9] On Unbalanced Optimal Transport: Gradient Methods, Sparsity and Approximation Error.
Quang Minh Nguyen, Hoang H. Nguyen, Yi Zhou, **Lam M. Nguyen**
Technical report, arXiv preprint, 2022
- [8] Differential Private Hogwild! over Distributed Local Data Sets.
Marten van Dijk, Nhung V. Nguyen, Toan N. Nguyen, **Lam M. Nguyen**, Phuong Ha Nguyen
Technical report, arXiv preprint, 2021
- [7] An Optimal Hybrid Variance-Reduced Algorithm for Stochastic Composite Nonconvex Optimization.
Deyi Liu, **Lam M. Nguyen**, Quoc Tran-Dinh
Technical report, arXiv preprint, 2020
- [6] Asynchronous Federated Learning with Reduced Number of Rounds and with Differential Privacy from Less Aggregated Gaussian Noise.
Marten van Dijk, Nhung V. Nguyen, Toan N. Nguyen, **Lam M. Nguyen**, Quoc Tran-Dinh, Phuong Ha Nguyen
Technical report, arXiv preprint, 2020
- [5] Finite-Time Analysis of Stochastic Gradient Descent under Markov Randomness.
Thinh T. Doan, **Lam M. Nguyen**, Nhan H. Pham, Justin Romberg
Technical report, arXiv preprint, 2020
- [4] Convergence Rates of Accelerated Markov Gradient Descent with Applications in Reinforcement Learning.
Thinh T. Doan, **Lam M. Nguyen**, Nhan H. Pham, Justin Romberg
Technical report, arXiv preprint, 2020
- [3] Hybrid Stochastic Gradient Descent Algorithms for Stochastic Nonconvex Optimization.
Quoc Tran-Dinh, Nhan H. Pham, Dzung T. Phan, **Lam M. Nguyen**
Technical report, arXiv preprint, 2019

- [2] When Does Stochastic Gradient Algorithm Work Well?
Lam M. Nguyen, Nam H. Nguyen, Dzung T. Phan, Jayant R. Kalagnanam, Katya Scheinberg
Technical report, arXiv preprint, 2018
- [1] Stochastic Recursive Gradient Algorithm for Nonconvex Optimization
Lam M. Nguyen, Jie Liu, Katya Scheinberg, Martin Takac
Technical report, arXiv preprint, 2017

GRANTED PATENTS

- [4] Optimal Interpretable Decision Trees Using Integer Linear Programming Techniques.
Patent 11676039
Pavankumar Murali, Haoran Zhu, Dung Tien Phan, **Lam M. Nguyen**
- [3] Site-wide Operations Management Optimization for Manufacturing and Processing Control. *Patent 11656606*
Dung Tien Phan, **Lam M. Nguyen**, Pavankumar Murali, and Hongsheng Liu
- [2] A Shuffling-Type Gradient Method for Training Machine Learning models with Big Data.
Patent 11568171
Lam M. Nguyen, Dung Tien Phan
- [1] Prediction Optimization for System-level Production Control. *Patent 11099529*
Dzung T. Phan, **Lam M. Nguyen**, Pavankumar Murali, Jayant R. Kalagnanam

PATENTS APPLICATIONS

- [31] Neural Network-Based Dynamical System Modeling for Contrastively Learned Conservation Laws. *Filed on July 21, 2023*
Lam M. Nguyen, Wang Zhang, Subhro Das, Alexandre Megretski, Luca Daniel
- [30] Generative Modeling and Representational Learning from Multi-Sequence Alignment and Phylogenetic Tree Data. *Filed on June 30, 2023*
Thanh Lam Hoang, Marcos Martínez Galindo, Gabriele Picco, Mykhaylo Zayats, Nhan Huu Pham, **Lam M. Nguyen**, Marco Luca Sbodio, Dzung Tien Phan, Vanessa Lopez Garcia
- [29] Regression-Optimization Control of Production Process with Dynamic Inputs. *Filed on May 11, 2023*
Lam M. Nguyen, Pavankumar Murali, Nianjun Zhou, Binny Winston Samuel
- [28] Time Series Forecasting Using Multivariate Time Series Data with Missing Values. *Filed on January 28, 2023*
Lam M. Nguyen, Trang H. Tran, Kyong Min Yeo, Nam H. Nguyen, Dzung Tien Phan, Roman Vaculin, Jayant R. Kalagnanam
- [27] Multivariable Time-Series Feature Extraction. *Filed on January 27, 2023*
Lam M. Nguyen, Wang Zhang, Subhro Das, Alexandre Megretski, Luca Daniel
- [26] Privacy Enhanced Machine Learning over Graph Data. *Filed on January 23, 2023*
Ambrish Rawat, Naoise Holohan, Heiko H. Ludwig, Ehsan Degan, Nathalie Baracaldo Angel, Alan Jonathan King, Swanand Ravindra Kadhe, Yi Zhou, Keith Coleman Houck, Mark Purcell, Giulio Zizzo, Nir Drucker, Hayim Shaul, Eyal Kushnir, **Lam M. Nguyen**
- [25] Unsupervised Learning from Public Tabular Datasets. *Filed on December 15, 2022*
Thanh Lam Hoang, Gabriele Picco, **Lam M. Nguyen**, Dzung Tien Phan
- [24] Providing Trained Reinforcement Learning Systems. *Filed on December 12, 2022*
Lam M. Nguyen, Wang Zhang, Subhro Das, Alexandre Megretski, Luca Daniel
- [23] Active Learning in Model Training. *Filed on November 22, 2022*
Dzung Tien Phan, Huozhi Zhou, **Lam M. Nguyen**, Chandrasekhara K. Reddy, Jayant R. Kalagnanam

- [22] Automated Decision Optimization for Maintenance of Physical Assets. Filed on October 31, 2022
Nianjun Zhou, Pavankumar Murali, Dzung T. Phan, **Lam M. Nguyen**
- [21] Adversarial Attacks for Improving Cooperative Multi-Agent Reinforcement Learning Systems. Filed on September 23, 2022
Nhan Huu Pham, **Lam M. Nguyen**, Jie Chen, Thanh Lam Hoang, Subhro Das
- [20] Training Neural Networks with Convergence to a Global Minimum. Filed on September 23, 2022
Lam M. Nguyen
- [19] Intelligent Dynamic Condition-based Infrastructure Maintenance Scheduling. Filed on September 21, 2022
Pavankumar Murali, Dzung Tien Phan, Nianjun Zhou, **Lam M. Nguyen**
- [18] Machine Learning-based Decision Framework for Physical Systems. Filed on September 20, 2022
Dzung Tien Phan, **Lam M. Nguyen**
- [17] Certification-based Robust Training by Refining Decision Boundary. Filed on September 19, 2022
Lam M. Nguyen, Wang Zhang, Subhro Das, Pin-Yu Chen, Alexandre Megretski, Luca Daniel
- [16] Training A Neural Network Using an Accelerated Gradient with Shuffling. Filed on July 14, 2022
Lam M. Nguyen, Trang H. Tran
- [15] System and Method for unsupervised Learning of Semantic Graph from textual data and language generation from Semantic graphH via Reinforcement learning. Filed on July 11, 2022
Thanh Lam Hoang, Dzung Tien Phan, Gabriele Picco, **Lam M. Nguyen**, Marco Luca Sbodio, Vanessa Lopez Garcia
- [14] Integrated Machine Learning Prediction and Optimization for Decision-Making. Filed on March 30, 2022
Dzung T. Phan, Long Vu, **Lam M. Nguyen**, Dharmashankar Subramanian
- [13] Interpretable Clustering via Multi-Polytope Machines. Filed on February 18, 2022
Dzung T. Phan, Connor Lawless, Jayant R. Kalagnanam, **Lam M. Nguyen**, Chandrasekhara K. Reddy
- [12] Blending Graph Predictions. Filed on February 08, 2022
Thanh Lam Hoang, Gabriele Picco, Yufang Hou, Young-Suk Lee, **Lam M. Nguyen**, Dzung Tien Phan, Vanessa Lopez Garcia, Ramon Fernandez Astudillo
- [11] Optimal Control of Dynamic Systems via Linearizable Deep Learning. Filed on February 07, 2022
Dung Tien Phan, Jayant R. Kalagnanam, **Lam M. Nguyen**
- [10] Federated Learning for Training Machine Learning Models. Filed on December 21, 2021
Lam M. Nguyen, Dung Tien Phan, Jayant R. Kalagnanam
- [9] Boosting Classification and Regression Tree Performance with Dimension Reduction. Filed on December 14, 2021
Dzung T. Phan, Michael Huang, Pavankumar Murali, **Lam M. Nguyen**
- [8] Optimizer Agnostic Explanation System for Large Scale Schedules. Filed on November 23, 2021
Surya Shravan Kumar Sajja, Kanthi Sarpatwar, **Lam M. Nguyen**, Yuan Yuan Jia, Stephane Michel, Roman Vaculin

- [7] Reasonable Language Model Learning for Text Generation from a Knowledge Graph.
Filed on November 02, 2021
Hoang Thanh Lam, Dzung T. Phan, Gabriele Picco, **Lam M. Nguyen**, Vanessa Lopez Garcia
- [6] Multi-Polytope Machine for Classification. *Filed on September 30, 2021*
Dzung T. Phan, **Lam M. Nguyen**, Jayant R. Kalagnanam, Chandrasekhara K. Reddy, Srideepika Jayaraman
- [5] Site-Wide Optimization for Mixed Regression Models and Mixed Control Variables. *Filed on May 25, 2021*
Dung Tien Phan, Nhan H. Pham, **Lam M. Nguyen**
- [4] System-level Control using Tree-based Regression with Outlier Removal. *Filed on August 20, 2020*
Dung Tien Phan, Pavankumar Murali, **Lam M. Nguyen**
- [3] A Method for Tuning Hyper-Parameters for Classification. *Filed on July 27, 2020*
Dung Tien Phan, Hongsheng Liu, **Lam M. Nguyen**
- [2] A Method and System for Automated Generation of Optimization Model for System-Wide Plant Optimization. *Filed on July 24, 2020*
Dung Tien Phan, **Lam M. Nguyen**, Pavankumar Murali, Nianjun Zhou
- [1] Compression of Deep Neural Networks. *Filed on March 13, 2019. US Patent Application 20200293876*
Dzung T. Phan, **Lam M. Nguyen**, Nam H. Nguyen, Jayant R. Kalagnanam

THESES

- 2018 A Service System with On-Demand Agents, Stochastic Gradient Algorithms and the SARAH Algorithm.
Lam M. Nguyen
PhD dissertation, Lehigh University, Bethlehem, PA
Elizabeth V. Stout Dissertation Award
- 2008 Methods for Detecting Hidden Period in Some Economics Processes.
Lam M. Nguyen
Undergraduate thesis, Lomonosov Moscow State University, Moscow, Russia

ORGANIZING WORKSHOPS

- [2] When Machine Learning meets Dynamical Systems: Theory and Applications.
Lam M. Nguyen, Trang H. Tran, Wang Zhang, Subhro Das, Tsui-Wei Weng
Workshop at The 37th Conference on Artificial Intelligence (AAAI 2023), 2023
- [1] New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership.
Nghia Hoang*, **Lam M. Nguyen***, Pin-Yu Chen, Tsui-Wei Weng, Sara Magliacane, Bryan Kian Hsiang Low, Anoop Deoras
Workshop at The 35th Conference on Neural Information Processing Systems (NeurIPS 2021), 2021

INVITED TALKS

- 10/2023 On the Convergence to a Global Solution of Shuffling-Type Gradient Algorithms.
INFORMS Annual Meeting, Phoenix, AZ
- 10/2022 New Perspective On The Convergence To A Global Solution Of Finite-sum Optimization.
INFORMS Annual Meeting, Indianapolis, IN
- 09/2022 Nesterov Accelerated Shuffling Gradient Method for Convex Optimization.
Johns Hopkins University, Baltimore, MD
- 10/2021 Hogwild! Over Distributed Local Data Sets With Linearly Increasing Mini-batch Sizes.
INFORMS Annual Meeting, Anaheim, CA

11/2020	A Unified Convergence Analysis for Shuffling-Type Gradient Methods. <i>INFORMS Annual Meeting</i> , Virtual Conference
10/2019	Finite-Sum Smooth Optimization with SARAH. <i>INFORMS Annual Meeting</i> , Seattle, WA
11/2018	Inexact SARAH for Solving Stochastic Optimization Problems. <i>INFORMS Annual Meeting</i> , Phoenix, AZ
08/2018	Inexact SARAH for Solving Stochastic Optimization Problems. <i>DIMACS/TRIPODS/MOPTA</i> , Bethlehem, PA
03/2018	When does stochastic gradient algorithm work well? <i>INFORMS Optimization Society Conference</i> , Denver, CO
10/2017	SARAH: Stochastic Recursive Gradient Algorithm. <i>INFORMS Annual Meeting</i> , Houston, TX
08/2017	SARAH Algorithm. <i>IBM Thomas J. Watson Research Center</i> , Yorktown Heights, NY
11/2016	A Queueing System with On-demand Servers: Local Stability of Fluid Limits. <i>INFORMS Annual Meeting</i> , Nashville, TN
08/2016	A Queueing System with On-demand Servers: Local Stability of Fluid Limits. <i>Modeling and Optimization: Theory and Applications</i> , Bethlehem, PA

PROFESSIONAL ACTIVITIES

MEMBER

06/2020 – Present	Editorial Board , Journal of Machine Learning Research
06/2021 – Present	Editorial Board , Machine Learning
01/2022 – Present	Editorial Board , IEEE Transactions on Neural Networks and Learning Systems
06/2022 – Present	Editorial Board , Journal of Optimization Theory and Applications
01/2022 – 12/2022	Editorial Board , Neural Networks
2023	Program Committee , “ <i>When Machine Learning meets Dynamical Systems: Theory and Applications (MLmDS 2023)</i> ”, AAAI 2023 Workshop
2021	Program Committee , “ <i>New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership (NFFL 2021)</i> ”, NeurIPS 2021 Workshop
2020	Program Committee , “ <i>Optimization for Machine Learning (OPT 2020)</i> ”, NeurIPS 2020 Workshop
2018	Program Committee , “ <i>Modern Trends in Nonconvex Optimization for Machine Learning</i> ”, ICML 2018 Workshop

REVIEWER / PROGRAM COMMITTEE (PEER-REVIEWED CONFERENCES)

2017 – 2019	International Conference on Machine Learning (ICML)
2017 – 2021	Conference on Neural Information Processing Systems (NIPS/NeurIPS)
2018 – 2020	International Conference on Learning Representations (ICLR)
2019 – 2020	International Conference on Artificial Intelligence and Statistics (AISTATS)
2021 – 2022	Conference on Learning Theory (COLT)
2019 – 2021	AAAI Conference on Artificial Intelligence (AAAI)
2020	International Joint Conferences on Artificial Intelligence (IJCAI)
2019 – 2022	IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
2019 – 2021	IEEE International Conference on Computer Vision (ICCV)
2020	European Conference on Computer Vision (ECCV)
2019 – 2021	Conference on Uncertainty in Artificial Intelligence (UAI)

REVIEWER (PEER-REVIEWED JOURNALS)

2018 – 2022	Journal of Machine Learning Research
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2020 – 2022	Mathematical Programming
2020 – 2021	SIAM Journal on Optimization
2021	SIAM Journal on Numerical Analysis
2020 – 2021	IEEE Transactions on Neural Networks and Learning Systems
2019 – 2020	IEEE Transactions on Signal Processing
2019	Artificial Intelligence
2018	Optimization Methods and Software
2020	SIAM Journal on Mathematics of Data Science

SESSION CHAIR / ORGANIZER (CONFERENCES)

	International Conference on Machine Learning (ICML)
2022	- Sessions “ <i>OPT: Non-Convex</i> ” and “ <i>Optimization/Reinforcement Learning</i> ”
2021	- Sessions “ <i>Optimization (Stochastic)</i> ” and “ <i>Optimization (Nonconvex)</i> ”
	International Conference on Learning Representations (ICLR)
2021	- Session “ <i>Oral Session 6</i> ”
	International Conference on Artificial Intelligence and Statistics (AISTATS)
2021	- Session “ <i>Theory and Practice of Machine Learning</i> ”
	INFORMS Annual Meeting
2023	- Session “ <i>First-Order Methods for Machine Learning</i> ”
2022	- Session “ <i>Optimization for Machine Learning</i> ”
2021	- Session “ <i>Recent Advances in Stochastic Gradient Algorithms</i> ”
2020	- Session “ <i>Recent Advances in Stochastic Gradient Algorithms for Machine Learning</i> ”
2019	- Session “ <i>Fast and Provable Nonconvex Optimization Algorithms in Machine Learning</i> ”
2018	- Session “ <i>Recent Advances in Optimization Methods for Machine Learning</i> ”
	DIMACS/TRIPODS/MOPTA
2018	- Sessions “ <i>Sparse Optimization</i> ” and “ <i>Stochastic Gradient Descent</i> ”

IBM ACTIVITIES

01/2022 – Present	Champion , International Conference on Machine Learning (ICML)
11/2021 – Present	Member , Invention Development Team (IDT)
07/2021 – Present	Champion , Professional Interest Community (PIC) - Learning
2022	Member , Research AI Pillar Accomplishment Committee
2021 - 2023	Reviewer , Pat Goldberg Memorial Best Paper Competition
2020	Reviewer , IBM Ph.D. Fellowships

SOCIETY MEMBERSHIPS

2022 – Present	Association for the Advancement of Artificial Intelligence (AAAI)
2016 – Present	Society for Industrial and Applied Mathematics (SIAM)
2014 – Present	The Institute for Operations Research and the Management Sciences (INFORMS)
2014 – Present	Beta Gamma Sigma (The International Business Honor Society)

MENTORSHIP

PH.D. STUDENTS

03/2021 – Present	Wang Zhang , Ph.D. student, Department of Mechanical Engineering, <i>Massachusetts Institute of Technology</i> (co-advise with Prof. Luca Daniel).
10/2019 – Present	Trang H. Tran , Ph.D. student, School of Operations Research and Information Engineering, <i>Cornell University</i> (co-advise with Prof. Katya Scheinberg).
08/2018 – 12/2021	Nhan H. Pham , Ph.D. student, Department of Statistics and Operations Research, <i>University of North Carolina at Chapel Hill</i> (co-advise with Prof. Quoc Tran-Dinh). Now at <i>IBM Research</i> , USA.

IBM RESEARCH INTERNS

06/2023 – 09/2023	Quang M. Nguyen , Ph.D. student, Department of Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> .
06/2022 – 09/2022	Tuomas Oikarinen , Ph.D. student, Department of Computer Science and Engineering, <i>University of California San Diego</i> .
05/2022 – 08/2022	Vinicius Lima Silva , Ph.D. student, Department of Electrical and Systems Engineering, <i>University of Pennsylvania</i> .
05/2023 – 08/2023, 05/2022 – 08/2022	Trang H. Tran , Ph.D. student, School of Operations Research and Information Engineering, <i>Cornell University</i> .
05/2021 – 08/2021	Connor Lawless , Ph.D. student, School of Operations Research and Information Engineering, <i>Cornell University</i> .
05/2021 – 08/2021	Huozhi Zhou , Ph.D. student, Department of Electrical and Computer Engineering, <i>University of Illinois Urbana-Champaign</i> .
05/2021 – 08/2021	Nathanael Assefa , Ph.D. student, Department of Computer Science, <i>University of Illinois Urbana-Champaign</i> .
06/2020 – 09/2020	Michael Huang , Ph.D. student, Department of Data Science and Operations, Marshall School of Business, <i>University of Southern California</i> .
06/2020 – 08/2020	Nhan H. Pham , Ph.D. student, Department of Statistics and Operations Research, <i>University of North Carolina at Chapel Hill</i> (student of Prof. Quoc Tran-Dinh) (IBM Research Intern). Now at <i>IBM Research</i> , USA.
05/2019 – 12/2019	Hongsheng Liu , Ph.D. student, Department of Statistics and Operations Research, <i>University of North Carolina at Chapel Hill</i> . Now at <i>Huawei Technologies Co., Ltd.</i> , China.
01/2019 – 08/2019	Haoran Zhu , Ph.D. student, Department of Industrial and Systems Engineering, <i>University of Wisconsin – Madison</i> . Now at <i>Microsoft</i> , USA.

MIT-IBM PROJECTS

04/2023 – Present	Martin Ma , M.E. Student, School of Engineering and Applied Sciences, <i>Harvard University</i> .
03/2021 – Present	Wang Zhang , Ph.D. student, Department of Mechanical Engineering, <i>Massachusetts Institute of Technology</i> (student of Prof. Luca Daniel).
09/2020 – 09/2021	Vindula Jayawardana , Ph.D. student, Department of Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> (student of Prof. Cathy Wu).

MIT SUPERUROP UNDERGRADUATE RESEARCH PROGRAM

09/2023 – 05/2024	Anthony Baez , Undergraduate student, Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> (co-advise with Prof. Luca Daniel).
06/2022 – 05/2023	Angelos Assos , Undergraduate student, Computer Science and Mathematics, <i>Massachusetts Institute of Technology</i> (co-advise with Prof. Luca Daniel).

EXTERNAL STUDENTS

09/2022 – Present	Anh Duy Nguyen , Ph.D. student, Department of Electrical and Computer Engineering, <i>University of Illinois at Urbana-Champaign</i> .
10/2021 – 12/2022	Linbo Liu , Ph.D. student, Department of Mathematics, <i>University of California San Diego</i> .
06/2021 – Present	Quang M. Nguyen , Ph.D. student, Department of Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> .
06/2021 – Present	Hoang H. Nguyen , Ph.D. student, H. Milton Stewart School of Industrial and Systems Engineering, <i>Georgia Institute of Technology</i> .
03/2021 – 12/2022	Yilan Chen , Ph.D. student, Department of Computer Science and Engineering, <i>University of California San Diego</i> (student of Prof. Tsui-Wei Weng).

- 01/2019 – 12/2022 **Toan N. Nguyen**, Ph.D. student, Department of Computer Science and Engineering, *University of Connecticut* (student of Prof. Marten van Dijk).
- 01/2019 – 11/2021 **Nhuong V. Nguyen**, Ph.D. student, Department of Computer Science and Engineering, *University of Connecticut* (student of Prof. Marten van Dijk).

PH.D. THESIS COMMITTEE MEMBERSHIP

- 10/2021 – Present **Trang H. Tran**, Ph.D. student, School of Operations Research and Information Engineering, *Cornell University* (student of Prof. Katya Scheinberg).
- 09/2020 – 06/2022 **Deyi Liu**, Ph.D. student, Department of Statistics and Operations Research, *University of North Carolina at Chapel Hill* (student of Prof. Quoc Tran-Dinh). Now at *Bytedance*, USA.

OTHER WORK EXPERIENCE

- 09/2014 – 05/2015 **Teaching Assistant**, *Lehigh University*, Bethlehem, PA
Courses: Engineering Probability (ISE 111), Applied Engineering Statistics (ISE 121)
- 05/2013 – 08/2013 **Graduate Assistant (Web Developer)**, College of Business, *McNeese State University*, Lake Charles, LA
- 01/2012 – 12/2013 **Graduate (Teaching) Assistant**, *McNeese State University*, Lake Charles, LA
Courses: Human Resource Management (MGMT 310), Staffing (MGMT 315), Strategic Management (MGMT 481), Management Theory and Organizational Behavior (MGMT 604), Issues in Global Business (BADM 218), Entrepreneurial Finance for Small Business (FIN 308)
- 09/2008 – 08/2009 **Software Engineer**, *FPT Software Company*, Ho Chi Minh City, Vietnam
- 09/2007 – 05/2008 **Teaching Assistant**, *Lomonosov Moscow State University*, Moscow, Russia
Courses: Mathematical Analysis (Calculus), Linear Algebra and Analytic Geometry

IBM RESEARCH ACCOMPLISHMENTS

- 2022 Federated Learning Security and Privacy (O-level)
- 2022 Dynamic Approaches for Machine Learning (A-level)
- 2022 Regression Optimization for Heavy Processing Industries (A-level)
- 2022 Combinatorial Sparsity for AI (A-level)
- 2021 Stochastic Gradient Methods: Theory and Applications (A-level)
- 2019 SROM: Smarter Resource & Operations Management (A-level)

HONORS & AWARDS

- 2023 2022 Pat Goldberg Memorial Best Paper Award
- 2023 IBM 9th Plateau Invention Achievement Award
- 2023 IBM Outstanding Technical Achievement Award, “*Dynamic Approaches for Machine Learning*”
- 2023 IBM Outstanding Technical Achievement Award, “*Regression Optimization for Heavy Processing Industries*”
- 2023 IBM Outstanding Technical Achievement Award, “*Federated Learning Security and Privacy*”
- 2023 IBM Outstanding Technical Achievement Award, “*Combinatorial Sparsity for AI*”
- 2023 IBM 8th Plateau Invention Achievement Award
- 2022 IBM Master Inventor
- 2022 IBM 7th Plateau Invention Achievement Award
- 2022 IBM 6th Plateau Invention Achievement Award
- 2022 IBM Outstanding Technical Achievement Award, “*Stochastic Gradient Methods: Theory and Applications*”

2022	IBM 5th Plateau Invention Achievement Award
2022	IBM 4th Plateau Invention Achievement Award
2021	IBM 3rd Plateau Invention Achievement Award
2020	IBM 2nd Plateau Invention Achievement Award
2020	IBM Research Division Award
2020	IBM Outstanding Technical Achievement Award, “ <i>SROM: Smarter Resource & Operations Management</i> ”
2020	IBM 1st Plateau Invention Achievement Award
2019	NeurIPS 2019 Top Reviewers
2019	Elizabeth V. Stout Dissertation Award, <i>Lehigh University</i> , Bethlehem, PA
2018	Van Hoesen Family Best Publication Award, <i>Lehigh University</i> , Bethlehem, PA
2016 – 2017	Dean’s Doctoral Fellowship (RCEAS), <i>Lehigh University</i> , Bethlehem, PA
2014 – 2015	Dean’s Doctoral Assistantship, <i>Lehigh University</i> , Bethlehem, PA
2014	Beta Gamma Sigma (Academic Honor Society)