

# Lam M. Nguyen

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(Updated on 03/30/2022)

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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

- 04/2021 – Present **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: 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)

- 06/2021 – Present **Action Editor**, Machine Learning
- 01/2022 – Present **Action Editor**, Neural Networks
- 01/2022 – Present **Associate Editor**, IEEE Transactions on Neural Networks and Learning Systems

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

2020 – 2022	<b>Area Chair</b> , International Conference on Machine Learning (ICML)
2022	<b>Area Chair</b> , Conference on Neural Information Processing Systems (NeurIPS)
2021 – 2022	<b>Area Chair</b> , International Conference on Learning Representations (ICLR)
2021 – 2022	<b>Area Chair</b> , International Conference on Artificial Intelligence and Statistics (AISTATS)
2022	<b>Area Chair</b> , Conference on Uncertainty in Artificial Intelligence (UAI)
2022	<b>Senior Program Committee</b> , AAAI Conference on Artificial Intelligence (AAAI)

## ORGANIZING COMMITTEE

2021	<b>Chair</b> , New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership (NFFL 2021), NeurIPS 2021 Workshop
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## REVIEWER (PROPOSALS)

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

## GRANT EXPERIENCE

01/2022 – Present	<b>Principal Investigator</b> , “ <i>Safe AI Certification</i> ”, MIT-IBM Watson AI Lab Project. IBM PI: <b>Lam M. Nguyen</b> , Subhro Das MIT PI: Alexandre Megretski, Luca Daniel MIT Student: Wang Zhang
01/2021 – 12/2021	<b>Principal Investigator</b> , “ <i>Safety Structures, Certification, and Training for AI in the Feedback Loop</i> ”, MIT-IBM Watson AI Lab Exploratory Project, \$150K. IBM PI: <b>Lam M. Nguyen</b> , Subhro Das, Tsui-Wei Weng MIT PI: Alexandre Megretski, Luca Daniel MIT Student: Wang Zhang
09/2020 – 09/2021	<b>Co-Principal Investigator</b> , “ <i>Hierarchical Disentangled Representations for Scalable Multi-agent Reinforcement Learning</i> ”, MIT-IBM Watson AI Lab Exploratory Project, \$100K. IBM PI: Tsui-Wei Weng, <b>Lam M. Nguyen</b> MIT PI: Cathy Wu MIT Student: Vindula Jayawardana

## JOURNAL & PEER-REVIEWED CONFERENCE PAPERS

[29]	<u>AI-based Real-time Site-wide Optimization for Process Manufacturing.</u> Jayant Kalagnanam, Dzung Phan, Pavankumar Murali, <b>Lam M. Nguyen</b> , Dharmashankar Subramanian, Raju Pavuluri, Xiang Ma, Crystal Lui <i>INFORMS Journal on Applied Analytics (IJAA)</i> , 2022
[28]	<u>StepDIRECT - A Derivative-Free Optimization Method for Stepwise Functions.</u> Dzung Phan, Hongsheng Liu, <b>Lam M. Nguyen</b> <i>SIAM International Conference on Data Mining (SDM22)</i> , 2022 (27.8% acceptance rate)
[27]	<u>Besting the Black-Box: Barrier Zones for Adversarial Example Defense.</u> Kaleel Mahmood, Phuong Ha Nguyen, <b>Lam M. Nguyen</b> , Thanh Nguyen, Marten van Dijk <i>IEEE Access</i> , 2022
[26]	<u>Interpretable Clustering via Multi-Polytope Machines.</u> Connor Lawless, Jayant Kalagnanam, <b>Lam M. Nguyen</b> , Dzung Phan, Chandra Reddy <i>The 36th AAAI Conference on Artificial Intelligence (AAAI 2022)</i> , 2022 (15% acceptance rate)

- [25] FedDR - Randomized Douglas-Rachford Splitting Algorithms for Nonconvex Federated Composite Optimization.  
Quoc Tran-Dinh, Nhan Pham, Dzong 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**, Dzong 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, Dzong 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, Dzong T. Phan, **Lam M. Nguyen**  
*Mathematical Programming (MAPR)*, 2021
- [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, Dzong 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**, Dzong 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**, Dzong 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, Dzong 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

- [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

- [13] Nesterov Accelerated Shuffling Gradient Method for Convex Optimization.  
 Trang H. Tran, **Lam M. Nguyen**, Katya Scheinberg  
*Technical report, arXiv preprint*, 2022
- [12] 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
- [11] On the Convergence of Gradient Extrapolation Methods for Unbalanced Optimal Transport.  
 Quang Minh Nguyen, Hoang H. Nguyen, Yi Zhou, **Lam M. Nguyen**  
*Technical report, arXiv preprint*, 2022
- [10] Evaluating Robustness of Cooperative MARL: A Model-based Approach.  
 Nhan H. Pham, **Lam M. Nguyen**, Jie Chen, Hoang Thanh Lam, Subhro Das, Tsui-Wei Weng  
*Technical report, arXiv preprint*, 2022
- [9] 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

- [8] An Optimal Hybrid Variance-Reduced Algorithm for Stochastic Composite Nonconvex Optimization.  
Deyi Liu, **Lam M. Nguyen**, Quoc Tran-Dinh  
*Technical report, arXiv preprint, 2020*
- [7] Asynchronous Federated Learning with Reduced Number of Rounds and with Differential Privacy from Less Aggregated Gaussian Noise.  
Marten van Dijk, Nhuong V. Nguyen, Toan N. Nguyen, **Lam M. Nguyen**, Quoc Tran-Dinh, Phuong Ha Nguyen  
*Technical report, arXiv preprint, 2020*
- [6] 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*
- [5] 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*
- [4] Hybrid Stochastic Gradient Descent Algorithms for Stochastic Nonconvex Optimization.  
Quoc Tran-Dinh, Nhan H. Pham, Dzong T. Phan, **Lam M. Nguyen**  
*Technical report, arXiv preprint, 2019*
- [3] Finite-Sum Smooth Optimization with SARAH.  
**Lam M. Nguyen**, Marten van Dijk, Dzong T. Phan, Phuong Ha Nguyen, Tsui-Wei Weng, Jayant R. Kalagnanam  
*Technical report, arXiv preprint, 2019*
- [2] When Does Stochastic Gradient Algorithm Work Well?  
**Lam M. Nguyen**, Nam H. Nguyen, Dzong 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

- [1] Prediction Optimization for System-level Production Control. *Patent 11099529*  
Dzung T. Phan, **Lam M. Nguyen**, Pavankumar Murali, Jayant R. Kalagnanam

## PATENTS APPLICATIONS

- [17] Integrated Machine Learning Prediction and Optimization for Decision-Making. *Filed on March 30, 2022*  
Dzung T. Phan, Long Vu, **Lam M. Nguyen**, Dharmashankar Subramanian
- [16] 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
- [15] 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
- [14] Optimal Control of Dynamic Systems via Linearizable Deep Learning. *Filed on February 07, 2022*  
Dung Tien Phan, Jayant R. Kalagnanam, **Lam M. Nguyen**
- [13] Federated Learning for Training Machine Learning Models. *Filed on December 21, 2021*  
**Lam M. Nguyen**, Dung Tien Phan, Jayant R. Kalagnanam

- [12] Boosting Classification and Regression Tree Performance with Dimension Reduction. Filed on December 14, 2021  
Dzung T. Phan, Michael Huang, Pavankumar Murali, **Lam M. Nguyen**
- [11] 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
- [10] 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
- [9] Multi-Polytope Machine for Classification. Filed on September 30, 2021  
Dzung T. Phan, **Lam M. Nguyen**, Jayant R. Kalagnanam, Chandrasekhara K. Reddy, Srideepika Jayaraman
- [8] 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**
- [7] A Shuffling-Type Gradient Method for Training Machine Learning models with Big Data. Filed on December 01, 2020  
**Lam M. Nguyen**, Dung Tien Phan
- [6] Site-wide Operations Management Optimization for Manufacturing and Processing Control. Filed on August 20, 2020  
Dung Tien Phan, **Lam M. Nguyen**, Pavankumar Murali, and Hongsheng Liu
- [5] System-level Control using Tree-based Regression with Outlier Removal. Filed on August 20, 2020  
Dung Tien Phan, Pavankumar Murali, **Lam M. Nguyen**
- [4] A Method for Tuning Hyper-Parameters for Classification. Filed on July 27, 2020  
Dung Tien Phan, Hongsheng Liu, **Lam M. Nguyen**
- [3] 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
- [2] Optimal Interpretable Decision Trees using Integer Linear Programming Techniques. Filed on February 20, 2020  
Pavankumar Murali, Haoran Zhu, Dung Tien Phan, **Lam M. Nguyen**
- [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*



## WORKSHOPS

- [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

- 10/2021 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.  
*INFORMS Annual Meeting*, Virtual Conference
- 10/2019 Finite-Sum Smooth Optimization with SARAH.  
*INFORMS Annual Meeting*, Seattle, WA
- 11/2018 Inexact SARAH for Solving Stochastic Optimization Problems.  
*INFORMS Annual Meeting*, Phoenix, AZ
- 08/2018 Inexact SARAH for Solving Stochastic Optimization Problems.  
*DIMACS/TRIPODS/MOPTA*, Bethlehem, PA
- 03/2018 When does stochastic gradient algorithm work well?  
*INFORMS Optimization Society Conference*, Denver, CO
- 10/2017 SARAH: Stochastic Recursive Gradient Algorithm.  
*INFORMS Annual Meeting*, Houston, TX
- 08/2017 SARAH Algorithm.  
*IBM Thomas J. Watson Research Center*, Yorktown Heights, NY
- 11/2016 A Queueing System with On-demand Servers: Local Stability of Fluid Limits.  
*INFORMS Annual Meeting*, Nashville, TN
- 08/2016 A Queueing System with On-demand Servers: Local Stability of Fluid Limits.  
*Modeling and Optimization: Theory and Applications*, 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**, Neural Networks
- 01/2022 – Present **Editorial Board**, IEEE Transactions on Neural Networks and Learning Systems
- 2021 **Program Committee**, “*New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership (NFFL 2021)*”, NeurIPS 2021 Workshop
- 2020 **Program Committee**, “*Optimization for Machine Learning (OPT 2020)*”, NeurIPS 2020 Workshop
- 2018 **Program Committee**, “*Modern Trends in Nonconvex Optimization for Machine Learning*”, 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
2020 – 2021	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
2022	Transactions on Machine Learning Research

#### **SESSION CHAIR / ORGANIZER (CONFERENCES)**

	International Conference on Machine Learning (ICML)
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
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	<b>Champion</b> , International Conference on Machine Learning (ICML)
11/2021 – Present	<b>Member</b> , Invention Development Team (IDT)
07/2021 – Present	<b>Champion</b> , Professional Interest Community (PIC) - Learning
2020	<b>Reviewer</b> , IBM Ph.D. Fellowships

#### **SOCIETY MEMBERSHIPS**

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**

#### **IBM RESEARCH INTERNS**

05/2022 – 08/2022	<b>Trang H. Tran</b> , Ph.D. student, School of Operations Research and Information Engineering, <i>Cornell University</i> .
05/2022 – 08/2022	<b>Tuomas Oikarinen</b> , Ph.D. student, Department of Computer Science and Engineering, <i>University of California San Diego</i> .

05/2021 – 08/2021	<b>Connor Lawless</b> , Ph.D. student, School of Operations Research and Information Engineering, <i>Cornell University</i> .
05/2021 – 08/2021	<b>Huozhi Zhou</b> , Ph.D. student, Department of Electrical and Computer Engineering, <i>University of Illinois Urbana-Champaign</i> .
05/2021 – 08/2021	<b>Nathanael Assefa</b> , Ph.D. student, Department of Computer Science, <i>University of Illinois Urbana-Champaign</i> .
06/2020 – 09/2020	<b>Michael Huang</b> , Ph.D. student, Department of Data Science and Operations, Marshall School of Business, <i>University of Southern California</i> .
06/2020 – 08/2020	<b>Nhan H. Pham</b> , 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	<b>Hongsheng Liu</b> , 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	<b>Haoran Zhu</b> , Ph.D. student, Department of Industrial and Systems Engineering, <i>University of Wisconsin – Madison</i> .

#### MIT-IBM PROJECTS

03/2021 – Present	<b>Wang Zhang</b> , Ph.D. student, Department of Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> (student of Prof. Luca Daniel).
09/2020 – 09/2021	<b>Vindula Jayawardana</b> , Ph.D. student, Department of Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> (student of Prof. Cathy Wu).

#### EXTERNAL STUDENTS

10/2021 – Present	<b>Linbo Liu</b> , Ph.D. student, Department of Mathematics, <i>University of California San Diego</i> .
06/2021 – Present	<b>Quang M. Nguyen</b> , Ph.D. student, Department of Electrical Engineering and Computer Science, <i>Massachusetts Institute of Technology</i> .
06/2021 – Present	<b>Hoang H. Nguyen</b> , Ph.D. student, H. Milton Stewart School of Industrial and Systems Engineering, <i>Georgia Institute of Technology</i> .
03/2021 – Present	<b>Yilan Chen</b> , Ph.D. student, Department of Computer Science and Engineering, <i>University of California San Diego</i> (student of Prof. Tsui-Wei Weng).
10/2019 – Present	<b>Trang H. Tran</b> , Ph.D. student, School of Operations Research and Information Engineering, <i>Cornell University</i> (student of Prof. Katya Scheinberg).
01/2019 – Present	<b>Toan N. Nguyen</b> , Ph.D. student, Department of Computer Science and Engineering, <i>University of Connecticut</i> (student of Prof. Marten van Dijk).
01/2019 – 11/2021	<b>Nhuong V. Nguyen</b> , Ph.D. student, Department of Computer Science and Engineering, <i>University of Connecticut</i> (student of Prof. Marten van Dijk).
08/2018 – 12/2021	<b>Nhan H. Pham</b> , Ph.D. student, Department of Statistics and Operations Research, <i>University of North Carolina at Chapel Hill</i> (student of Prof. Quoc Tran-Dinh). Now at <i>IBM Research</i> , USA.

#### PH.D. COMMITTEE MEMBERSHIP

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

#### OTHER WORK EXPERIENCE

09/2014 – 05/2015	<b>Teaching Assistant</b> , <i>Lehigh University</i> , Bethlehem, PA Courses: Engineering Probability (ISE 111), Applied Engineering Statistics (ISE 121)
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05/2013 – 08/2013	<b>Graduate Assistant (Web Developer)</b> , College of Business, <i>McNeese State University</i> , Lake Charles, LA
01/2012 – 12/2013	<b>Graduate (Teaching) Assistant</b> , <i>McNeese State University</i> , 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	<b>Software Engineer</b> , <i>FPT Software Company</i> , Ho Chi Minh City, Vietnam
09/2007 – 05/2008	<b>Teaching Assistant</b> , <i>Lomonosov Moscow State University</i> , Moscow, Russia Courses: Mathematical Analysis (Calculus), Linear Algebra and Analytic Geometry

## HONORS & AWARDS

2022	IBM 5th Plateau Invention Achievement Award
2022	IBM 4th Plateau Invention Achievement Award
2021	IBM Research Accomplishment on “ <i>Stochastic Gradient Methods: Theory and Applications</i> ”
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
2020	IBM 1st Plateau Invention Achievement Award
2019	IBM Research Accomplishment on “ <i>SRM: Smarter Resource &amp; Operations Management</i> ”
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)