

# Lam M. Nguyen

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(Updated on 05/19/2018)

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## FIELDS OF INTEREST

Optimization for Large Scale Problems, Machine Learning, Deep Learning, Reinforcement Learning

## EDUCATION

2014 – 2018	<b>Ph.D.</b> in Operations Research, Department of Industrial and Systems Engineering, <i>Lehigh University</i> , Bethlehem, PA Thesis advisor: Dr. Katya Scheinberg Research areas: Optimization for Large Scale Problems, Machine Learning, Deep Learning, Stochastic Models, Optimal Control
2011 – 2013	<b>M.B.A.</b> (honors), College of Business, <i>McNeese State University</i> , Lake Charles, LA
2004 – 2008	<b>B.S.</b> in Applied Mathematics and Computer Science, Faculty of Computational Mathematics and Cybernetics, <i>Lomonosov Moscow State University</i> , Moscow, Russia Thesis advisor: Prof. Vladimir I. Dmitriev

## RESEARCH EXPERIENCE

05/2018 – Present	<b>Research Intern</b> , <i>IBM T.J. Watson Research Center</i> , Yorktown Heights, NY Research areas: Optimization, Machine Learning, Deep Learning, Reinforcement Learning
08/2017 – 05/2018	<b>Research Co-op</b> , <i>IBM T.J. Watson Research Center</i> , Yorktown Heights, NY Research areas: Optimization, Machine Learning, Deep Learning <ul style="list-style-type: none"><li>Implementing a Python (TensorFlow) library for sparsification of deep neural networks</li><li>Improving machine learning algorithms for training deep neural networks</li></ul> Technical: Python, TensorFlow
06/2017 – 08/2017	<b>Research Intern</b> , <i>IBM T.J. Watson Research Center</i> , Yorktown Heights, NY Research areas: Optimization, Machine Learning, Deep Learning <ul style="list-style-type: none"><li>Developing sparsification methods for deep neural networks using optimization models</li></ul> Technical: Python, TensorFlow
08/2014 – Present	<b>Research Assistant</b> , <i>Lehigh University</i> , Bethlehem, PA Research areas: Optimization for Large Scale Problems, Machine Learning, Deep Learning, Stochastic Models, Optimal Control <ul style="list-style-type: none"><li>Developing and improving machine learning algorithms in order to solve complex problems such as some structured prediction problems and neural network learning</li><li>Proposed a new algorithm named SARAH, which can solve convex and non-convex large scale optimization finite-sum problems</li><li>Developed stochastic models of service systems with on-demand agent invitations and designed real-time adaptive agent invitation schemes to minimize both waiting-times of customers and agents</li></ul>

12/2011 – 12/2013	Technical: MATLAB, Python, PyTorch, TensorFlow, C++ <b>Research Assistant, McNeese State University, Lake Charles, LA</b> Research areas: Operations Management and Finance <ul style="list-style-type: none"> <li>○ Published a paper related on investigating the effect of the financial crisis on CEO compensation using regression analysis to analyze the real data</li> <li>○ Developed a simulation model based on the given data from Calcasieu Parish School Board and provided suggestions to improve the performance of the system, which reduced 40% cost for employees</li> </ul> Technical: SAS, MATLAB, Arena Simulation
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## TEACHING EXPERIENCE

08/2014 – 05/2015	<b>Teaching Assistant, Lehigh University, Bethlehem, PA</b> Courses: Engineering Probability (ISE 111), Applied Engineering Statistics (ISE 121)
12/2011 – 12/2013	<b>Teaching Assistant, McNeese State University, Lake Charles, LA</b> 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)
09/2007 – 05/2008	<b>Teaching Assistant, Lomonosov Moscow State University, Moscow, Russia</b> Courses: Mathematical Analysis (Calculus), Linear Algebra and Analytic Geometry

## OTHER WORK EXPERIENCE

05/2013 – 08/2013	<b>Web Developer, McNeese State University, Lake Charles, LA</b> <ul style="list-style-type: none"> <li>○ Developed and maintained a website for College of Business</li> </ul> Technical: PHP, JavaScript
09/2008 – 09/2009	<b>Software Engineer, FPT Software Company, Ho Chi Minh City, Vietnam</b> <ul style="list-style-type: none"> <li>○ Analyzed functional requirements, developed and tested software applications</li> </ul> Technical: Java, C++, SQL, .NET (C#), JavaScript

## PUBLICATIONS

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| [5] | <b>Lam M. Nguyen</b> , Phuong Ha Nguyen, Marten van Dijk, Peter Richtarik, Katya Scheinberg, and Martin Takac. SGD and Hogwild! Convergence without the bounded gradients assumption. <i>The 35th International Conference on Machine Learning (ICML 2018)</i> , PMLR 80, 2018 (25% acceptance rate)                                     |
| [4] | <b>Lam M. Nguyen</b> , Jie Liu, Katya Scheinberg, and Martin Takac. SARAH: A novel method for machine learning problems using stochastic recursive gradient. <i>The 34th International Conference on Machine Learning (ICML 2017)</i> , PMLR 70:2613-2621, 2017 (25% acceptance rate)<br><b>Van Hoesen Family Best Publication Award</b> |
| [3] | <b>Lam M. Nguyen</b> , and Alexander L. Stolyar. A queueing system with on-demand servers: local stability of fluid limits. <i>Queueing Systems</i> , 1-26, Springer, 2017                                                                                                                                                               |
| [2] | <b>Lam M. Nguyen</b> , and Alexander L. Stolyar. A service system with randomly behaving on-demand agents. <i>The 42nd International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2016)</i> , ACM SIGMETRICS Performance Evaluation Review, 44(1):365-366, 2016 (25% acceptance rate)                          |
| [1] | Prasad Vemala, <b>Lam Nguyen</b> , Dung Nguyen, and Alekhya Kommasani. CEO                                                                                                                                                                                                                                                               |

compensation: Does financial crisis matter? *International Business Research*, 7(4):125-131, 2014

## E-PRINTS & WORKING PAPERS

- [3] **Lam M. Nguyen**, Katya Scheinberg, and Martin Takac. Inexact SARAH for large scale machine learning problems. *In preparation*
- [2] **Lam M. Nguyen**, Nam H. Nguyen, Dzung T. Phan, Jayant R. Kalagnanam, and Katya Scheinberg. When does stochastic gradient algorithm work well? *arXiv preprint, 2018*
- [1] **Lam M. Nguyen**, Jie Liu, Katya Scheinberg, and Martin Takac. Stochastic recursive gradient algorithm for nonconvex optimization. *arXiv preprint, 2017*

## INVITED TALKS

- 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 T.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

## SELECTED PROJECTS & UNDERGRADUATE THESIS

- 2016 Random matrices. *Optimization Methods in Machine Learning*, Lehigh University
  - o Developed methods for constructing second order regression models in order to solve stochastic optimization problems
- 2015 Compressed Sensing. *Computational Methods in Optimization*, Lehigh University
  - o Used of  $l_1$ -regularized lasso model to recover pictures with 50-70% missing pixels
- 2015 A MATLAB Package: Algorithms for unconstrained optimization problems. *Nonlinear Optimization*, Lehigh University
  - o Implemented multiple algorithms including steepest descent, Newton's method, quasi-Newton (SR1 and BFGS) with backtracking line search and Wolfe line search, and trust region method with conjugate gradient subproblem solver
- 2012 Calcasieu Parish School Board technical center operations. *Real project*
  - o Developed a simulation model based on the given data from Calcasieu Parish School Board to evaluate the performance of the center
  - o Provided suggestions to improve the performance of the system, which reduced 40% cost for employees
- 2008 Methods for detecting hidden period in some economics processes. *Undergraduate thesis*, Lomonosov Moscow State University, Moscow, Russia
  - o Collected and analyzed the data of Nikkei 225 (stock market index) from 01/01/2000 to 03/31/2008 using some theoretical methods to predict correctly that Nikkei 225 would decrease during the period of 03/2008 – 03/2009

## PROFESSIONAL ACTIVITIES

2018	<b>Session Chair</b> , “Recent Advances in Optimization Methods for Machine Learning”, INFORMS Annual Meeting 2018
2018	<b>Session Chair</b> , TRIPODS/MOPTA 2018
2018	<b>Reviewer</b> , The 32nd Annual Conference on Neural Information Processing Systems (NIPS 2018)
2018	<b>Reviewer</b> , “Modern Trends in Nonconvex Optimization for Machine Learning”, ICML 2018 Workshop
2018	<b>Reviewer</b> , The 35th International Conference on Machine Learning (ICML 2018)
2017	<b>Reviewer</b> , The 6th International Conference on Learning Representations (ICLR 2018)
2017	<b>Reviewer</b> , The 31st Annual Conference on Neural Information Processing Systems (NIPS 2017)
2017	<b>Reviewer</b> , The 34th International Conference on Machine Learning (ICML 2017)

## PROFESSIONAL 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)

## HONORS & AWARDS

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)
2011 – 2013	Dore Graduate Stipends, <i>McNeese State University</i> , Lake Charles, LA

## SKILLS & QUALIFICATIONS

<b>Technical</b>	Python, TensorFlow, PyTorch, MATLAB C++, Java, SAS, AMPL, SQL, C#, JavaScript, PHP, Linux
<b>Language</b>	Vietnamese (Native), English (Proficient), Russian (Proficient), French (Basic)
<b>Leadership</b>	Chief Administrator, Olympia Vietnam Forum and Community (2005 – 2015)

## REFERENCES

Dr. **Katya Scheinberg** (Research Advisor), Harvey E. Wagner Endowed Chair Professor  
Department of Industrial and Systems Engineering, Lehigh University  
katyas@lehigh.edu  
<http://coral.ise.lehigh.edu/katyas/>

Dr. **Martin Takáč** (Research Co-advisor), Assistant Professor  
Department of Industrial and Systems Engineering, Lehigh University  
takac@lehigh.edu  
<http://mtakac.com/>

**Dr. Alexander Stolyar** (Previous Advisor), Professor

Department of Industrial and Enterprise Systems Engineering, University of Illinois, Urbana-Champaign

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