Nam Ho-Nguyen

Research on optimization methodologies and applications in quantitative decision making

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Experience

August 2019 – Present	**University of Wisconsin-Madison**, *Postdoctoral Research Associate* Role: conducting research on adversarial machine learning and data-driven optimization
Jun 2018 – Aug 2018	**Deutsche Bank**, *Quantitative Associate Summer Intern* Role: researching optimal algorithms for order routing problems on the electronic trading desk; implemented a prototype in C++
May 2017 – Aug 2017	**IBM Research**, *Research Intern* Role: designing an optimization framework for black-box cost functions with monotonic structure; applications to solution design of IT service contracts.
Dec 2016 – Mar 2017	**Predictive Analytics Group**, *Data Science Intern* Role: assisting with client projects involving machine learning, optimization, forecasting and data visualization.

Education

Aug 2014 – May 2019	**Carnegie Mellon University** *Doctor of Philosophy in Operations Research* Dissertation: Models and Efficient Algorithms for Convex Optimization under Uncertainty Advisor: Fatma Kılınç-Karzan
Aug 2014 – May 2016	**Carnegie Mellon University** *Master of Science in Operations Research* GPA: 4.12/4.0
Feb 2010 – Dec 2013	**Australian National University** *Bachelor of Philosophy (Honours)* Major: Mathematics Grade: 95/100 First Class Honours Advisors: Mark Reid and Dale Roberts

Publications

Journal Papers

Online First-Order Framework for Robust Convex Optimization, N. Ho-Nguyen and F. Kılınç-Karzan, *Operations Research*, 66(6), 1670-1692, 2018, https://doi.org/10.1287/opre.2018.1764
Honourable mention in the INFORMS Optimization Society Best Student Paper Prize 2018.

Primal–Dual Algorithms for Convex Optimization via Regret Minimization, N. Ho-Nguyen and F. Kılınç-Karzan, *IEEE Control Systems Letters*, 2(2), 284-289, 2018, https://doi.org/10.1109/LCSYS.2018.2831721
Jointly accepted at the Conference for Decision and Control, 2018

Exploiting Problem Structure in Optimization under Uncertainty via Online Convex Optimization, N. Ho-Nguyen and F. Kılınç-Karzan, *Mathematical Programming*, 177(1-2), 113-147, 2019, https://doi.org/10.1007/s10107-018-1262-8

A Second-Order Cone Based Approach for Solving the Trust-Region Subproblem and its Variants, N. Ho-Nguyen and F. Kılınç-Karzan, *SIAM Journal on Optimization*, 27(3), 1485-1512, 2017, https://doi.org/10.1137/16M1065197

Workshop Proceedings

Performance Evaluation of Iterative Methods for Solving Robust Convex Quadratic Problems, C. Kroer, N. Ho-Nguyen, G. Lu and F. Kılınç-Karzan, *Optimization for Machine Learning workshop at NeurIPS*, 2017

Preprints

Coordinate Descent Without Coordinates: Tangent Subspace Descent on Riemannian Manifolds, D. H. Gutman and N. Ho-Nguyen, *December 2019*, https://arxiv.org/abs/1906.11809

Dynamic Data-Driven Estimation of Non-Parametric Choice Models, N. Ho-Nguyen and F. Kılınç-Karzan, *February 2017; revised July 2019*, https://arxiv.org/abs/1702.05702

Risk Guarantees for End-to-End Prediction and Optimization Processes, N. Ho-Nguyen and F. Kılınç-Karzan, *June 2019*, http://www.optimization-online.org/DB_HTML/2019/06/7235.html

In Preparation

Generalized Coordinate Descent on Manifolds, D. H. Gutman, N. Ho-Nguyen

Adversarial Classification via Distributionally Robust Chance Constraints, N. Ho-Nguyen, S. Wright

Black-Box Combinatorial Optimization with Monotonic Structure, N. Ho-Nguyen, G. Nannicini and A. Megahed

Optimal Allocation Algorithms for Smart Order Routing with Cardinality and Integrality Constraints, N. Ho-Nguyen, M. Sotiropoulos

Honours and Awards

May 2019	Gerald L. Thompson Doctoral Dissertation Award in Management Science
Aug 2018	Honourable mention in the INFORMS Optimization Society Best Student Paper Prize 2018
June 2017	MIP Workshop Student Funding Award
May 2017	SIAM Student Travel Award
Aug 2014 – May 2019	William Larimer Mellon Fellowship
May 2016 – Aug 2016	Dean's Doctoral Research Grant
Dec 2013	Hanna Neumann Prize for Mathematics IV Honours
Feb 2013 – Oct 2013	Boyapati Computer Science & Mathematical Honours Scholarship
Dec 2012	Boyapati Computer Science & Mathematical Prize

Presentations

Risk Guarantees for End-to-End Prediction and Optimization Processes

- *INFORMS Annual Meeting 2019, October 2019, Seattle WA*

A Dynamic Primal-Dual Framework for Convex Optimization Problems under Uncertainty,

- *University of Sydney Business School, August 2019*
- *International Conference on Continuous Optimization, August 2019, Berlin, Germany*
- *IBM Research, October 2018, Yorktown Heights, NY*

Primal–Dual Algorithms for Convex Optimization via Regret Minimization, *Conference on Decision and Control, December 2018, Miami, FL*

Black-Box Combinatorial Optimization with Monotonic Structure, *INFORMS Annual Meeting, November 2018, Phoenix, AZ*

Exploiting Problem Structure in Optimization under Uncertainty via Online Convex Optimization,

- *MOPTA, August 2018, Bethlehem, PA*
- *Minisymposium on Optimizing Big Data: Acceleration, Randomization, and Parallelism, SIAM Conference on Optimization, May 2017, Vancouver, Canada*

First-Order Framework for Robust Convex Optimization,

- *International Symposium on Mathematical Programming, July 2018, Bordeaux, France*
- *International Conference on Continuous Optimization, August 2016, Tokyo, Japan*
- *INFORMS International Conference, June 2016, Waikoloa, HI*
- *INFORMS Annual Meeting, November 2015, Philadelphia, PA*

Solving Uncertain Programs via Online Convex Optimization (poster),

- *Bridging Mathematical Optimization, Information Theory, and Data Science Workshop, May 2018, Princeton, NJ*
- *NemFest, May 2018, Atlanta, GA*

Dynamic Data-Driven Estimation of Non-Parametric Choice Models,

- *INFORMS Annual Meeting, October 2017, Houston, TX*
- (poster) *MIP Workshop, June 2017, Montréal, Canada*

A Second-Order Cone Based Approach to Solving the Trust-Region Subproblem,

- *INFORMS Annual Meeting, November 2016, Nashville, TN*
- *INFORMS Optimization Society Conference, March 2016, Princeton, NJ*

Teaching Experience

Fall 2017	Mathematical Models for Consulting 70-460 (Undergraduate elective), CMU, Main Instructor
Fall 2016	Applications of Operations Research 45-850 (MBA elective), CMU, Teaching Assistant
Fall 2016	Linear Programming 47-834 (PhD core course), CMU, Teaching Assistant
S1 2014	Mathematics and Applications 1 Honours MATH1115 (undergraduate core course), ANU, Teaching Assistant
S2 2013	Algebra 1 MATH2322 (undergraduate core course), ANU, Teaching Assistant
S1 2013	Mathematics and Applications 1 MATH1013 (undergraduate core course), ANU, Teaching Assistant
S2 2012	Algebra 1 MATH2322 (undergraduate core course), ANU, Teaching Assistant
S1 2012	Mathematics and Applications 1 MATH1013 (undergraduate core course), ANU, Teaching Assistant

Professional Service

INFORMS CMU Student Chapter: Vice President 2016–2017, Secretary 2017–present

Paper reviewer: Computational Optimization and Applications, SIAM Journal on Optimization

Volunteer at local organisation of ISMP Pittsburgh, 2015

Relevant Coursework

Machine Learning, Probability, Statistics, Linear Programming, Convex Optimization, Integer Programming, Graph Theory, Networks and Matchings, Queueing Theory, Constraint Programming, Functional Analysis, Abstract Algebra

Computer Skills

Programming languages: Python, R, Julia, C++, MATLAB, Mathematica

Optimization software: CPLEX, Gurobi, Mosek, CVX, JuMP, Microsoft Excel Risk Solver Platform

Languages

English (native)

Vietnamese (fluent)

References

Available on request.