# Viet Anh Nguyen

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## CURRENT EMPLOYMENT

**Chinese University of Hong Kong** (Hong Kong)                                    Dec 2022 –
  Assistant Professor, Department of Systems Engineering and Engineering Management

## PAST EMPLOYMENT

**VinAI Research** (Vietnam)                                    April 2021 – July 2022
  Research Scientist, Machine Learning and Deep Learning Group Lead

## EDUCATION AND ACADEMIC EMPLOYMENT

**Stanford University** (United States)                                    2019 – 2021
  Postdoctoral Researcher
  Advisors: Professor Jose Blanchet, Professor Yinyu Ye

**École Polytechnique Fédérale de Lausanne** (Switzerland)                                    2013 – 2019
  Doctor of Science in Risk Analytics and Optimization
  Advisor: Professor Daniel Kuhn

**Study Center Gerzensee** (Switzerland)                                    2014 – 2015
  Swiss Program for Beginning Doctoral Students in Economics

**National University of Singapore** (Singapore)                                    2011 – 2013
  Master of Engineering in Industrial and Systems Engineering

**École Centrale Paris** (France)                                    2008 – 2013
  Diplôme d'Ingénieur

**National University of Singapore** (Singapore)                                    2006 – 2011
  Bachelor of Engineering in Industrial and Systems Engineering

## SELECTED AWARDS

**First place.** George E. Nicholson Student Paper Competition                                    2018
  • This competition is held each year by INFORMS to identify and honor outstanding papers in the field of operations research and the management sciences written by a student.

**Best Teaching Assistant Award.** École Polytechnique Fédérale de Lausanne                                    2018

## JOURNAL PUBLICATIONS

Y. Wang, **V. A. Nguyen**, and G. A. Hanasusanto, "Wasserstein robust classification with fairness constraints," *Manufacturing & Service Operations Management*, 2024.

J. Blanchet, Y. Kang, J. L. Montiel Olea, **V. A. Nguyen**, and X. Zhang, "Machine learning's dropout training is distributionally robust optimal," *Journal of Machine Learning Research*, 2023.

**V. A. Nguyen**, S. Shafieezadeh-Abadeh, P. Mohajerin Esfahani, and D. Kuhn, "Bridging Bayesian and minimax mean square error estimation via Wasserstein distributionally robust optimization," *Mathematics of Operations Research*, 2023.

**V. A. Nguyen**, D. Kuhn, and P. Mohajerin Esfahani, "Distributionally robust inverse covariance estimation: The Wasserstein shrinkage estimator," *Operations Research*, vol. 70, no. 1, pp. 490 – 515, 2021.
  • First place, George E. Nicholson Student Paper Competition, INFORMS 2018.

C. Ordoudis, **V. A. Nguyen**, D. Kuhn, and P. Pinson, "Energy and reserve dispatch with distributionally robust joint chance constraints," *Operations Research Letters*, vol. 49, no. 3, pp. 291 – 299, 2021.

T. A. Weber, and **V. A. Nguyen**, "A linear-quadratic Gaussian approach to dynamic information acquisition," *European Journal of Operational Research*, vol. 270, no. 1, pp. 260 – 281, 2018.

**V. A. Nguyen**, J. Jiang, K. Ng, and K. Teo, "Satisficing measure approach for vehicle routing problem with time windows under uncertainty," *European Journal of Operational Research*, vol. 248, no. 2, pp. 404 – 414, 2016.

A. Kumar, **V. A. Nguyen,** and K. M. Teo, "Commuter cycling policy in Singapore: A farecard data analytics based approach," *Annals of Operations Research*, vol. 236, pp. 57 – 73, 2016.

## PUBLICATIONS AT MACHINE LEARNING CONFERENCES

B. Nguyen, B. Nguyen, H. Nguyen and **V. A. Nguyen**, "Generative Conditional Distributions by Neural (Entropic) Optimal Transport," in *Proceedings of the 41st International Conference on Machine Learning (ICML)*, 2024.

N. Bui, H. Nguyen, **V. A. Nguyen** and Z. Ying, "Explaining Graph Neural Networks via Structure-aware Interaction Index," in P*roceedings of the 41st International Conference on Machine Learning (ICML)*, 2024.

H. Nguyen, D. Nguyen, K. Doan and **V. A. Nguyen**, "Cold-start Recommendation by Personalized Embedding Region Elicitation," in *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2024.

B. Nguyen, B. Nguyen, and **V. A. Nguyen**, "Bellman Optimal Step-size Straightening of Flow-Matching Models," in *International Conference on Learning Representations (ICLR)*, 2024.

B. Nguyen, and **V. A. Nguyen**, "Efficient Failure Pattern Identification of Predictive Algorithms," in *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2023.

X. Hua, T. Nguyen, T. Le, J. Blanchet, and **V. A. Nguyen**, "Dynamic flows on curved space generated by labeled data," in *International Joint Conference on Artificial Intelligence (IJCAI)*, 2023.

D. Nguyen, N. Bui, and **V. A. Nguyen**, "Distributionally robust recourse action," in *International Conference on Learning Representations (ICLR)*, 2023.
   • Honorable Mention, Undergraduate Operations Research Prize, INFORMS 2022.

D. Nguyen, N. Bui, and **V. A. Nguyen**, "Feasible recourse plan via diverse interpolation," in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023.

J. Li, S. Lin, J. Blanchet, and **V. A. Nguyen**, "Tikhonov regularization is optimal transport robust under martingale constraints," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2022.

D. Nguyen, N. Bui, D. Nguyen, M.-C. Yue, and **V. A. Nguyen**, "Robust Bayesian recourse," in *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2022.

# Viet Anh Nguyen

**Email**: nguyen@se.cuhk.edu.hk     **Website**: http://www.vietanhnguyen.net

H. Vu, T. Tran, M.-C. Yue, and **V. A. Nguyen**, "Distributionally robust fair principal components via geodesic descents," in *International Conference on Learning Representations (ICLR)*, 2022.

N. Bui, D. Nguyen, and **V. A. Nguyen**, "Counterfactual plans under distributional ambiguity," in *International Conference on Learning Representations (ICLR)*, 2022.

T. Le, T. Nguyen, D. Phung, and **V. A. Nguyen**, "Sobolev transport: A scalable metric for probability measures with graph metrics," in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.

X. Hua, H. Xu, J. Blanchet, and **V. A. Nguyen**, "Human imperceptible attacks and applications to improve fairness," in *Winter Simulation Conference,* 2022.

N. Bui, L. Nguyen, **V. A. Nguyen**, and P. T. Do, "A deep reinforcement learning-based adaptive charging policy for wireless rechargeable sensor networks," in *IEEE International Conference on Mobile Ad-Hoc and Smart Systems*, 2022

T. Le, T. Nguyen, M. Yamada, J. Blanchet, and **V. A. Nguyen**, "Adversarial regression with doubly non-negative weighting matrices," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2021.

B. Taskesen, M.-C. Yue, J. Blanchet, D. Kuhn, and **V. A. Nguyen**, "Sequential domain adaptation by synthesizing distributional robust experts," in *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 2021.
  - Oral presentation, top 3% of submissions.

N. Si, K. Murthy, J. Blanchet, and **V. A. Nguyen**, "Testing group fairness via optimal transport projections," in *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 2021.

R. Vreugdenhil, **V. A. Nguyen**, A. Eftekhari, and P. Mohajerin Esfahani, "Principal component hierarchy for sparse quadratic programs," in *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 2021.

B. Taskesen, J. Blanchet, D. Kuhn, and **V. A. Nguyen**, "A statistical test for probabilistic fairness," in *ACM Conference on Fairness, Accountability, and Transparency (FAccT)*, 2021.

**V. A. Nguyen**, F. Zhang, J. Blanchet, E. Delage, and Y. Ye, "Distributionally robust local nonparametric conditional estimation," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.

**V. A. Nguyen**, X. Zhang, J. Blanchet, and A. Georghiou, "Distributionally robust parametric maximum likelihood estimation," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.

**V. A. Nguyen**, N. Si, and J. Blanchet, "Robust Bayesian classification using an optimistic score ratio," in *Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2020.

**V. A. Nguyen**, S. Shafieezadeh-Abadeh, M.-C. Yue, D. Kuhn, and W. Wiesemann, "Optimistic distributionally robust optimization for nonparametric likelihood approximation," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2019.

**V. A. Nguyen**, S. Shafieezadeh-Abadeh, M.-C. Yue, D. Kuhn, and W. Wiesemann, "Calculating optimistic likelihoods using (geodesically) convex optimization," in *Advances in Neural Information Pro-*

*cessing Systems (NeurIPS)*, 2019.

S. Shafieezadeh-Abadeh, **V. A. Nguyen**, D. Kuhn, and P. Mohajerin Esfahani, "Wasserstein distributionally robust Kalman filtering," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2018.
- Spotlight presentation, top 5% of submissions.

## TUTORIALS IN OPERATIONS RESEARCH

J. Blanchet, K. Murthy, and **V. A. Nguyen**, "Statistical analysis of Wasserstein distributional robust estimators," *INFORMS TutORials in Operations Research*, pp. 227 – 254, 2021.

D. Kuhn, P. Mohajerin Esfahani, **V. A. Nguyen**, and S. Shafieezadeh-Abadeh, "Wasserstein distributionally robust optimization: Theory and applications in machine learning," *INFORMS TutORials in Operations Research*, pp. 130–166, 2019.

## PAPERS UNDER REVIEW

**V. A. Nguyen**, F. Zhang, J. Blanchet, E. Delage, and Y. Ye, "Robustifying conditional portfolio decisions via optimal transport," major revision at *Operations Research*.

**V. A. Nguyen**, S. Shafieezadeh-Abadeh, D. Filipovic, and D. Kuhn, "Mean covariance robust risk measurement," major revision at *Management Science*.

J. Blanchet, F. Hernandez, **V. A. Nguyen**, M. Pelger, and X. Zhang, "Bayesian imputation with optimal look-ahead-bias and variance tradeoff," under review.

N. Bui, D. Nguyen, C. Nguyen, M.-C. Yue, and **V. A. Nguyen**, "Covariance-robust minimax probability machines for algorithmic recourse," under review.

J. Blanchet, F. Hernandez, **V. A. Nguyen**, M. Pelger, and X. Zhang, "Time-series imputation with Wasserstein interpolation for optimal look-ahead-bias and variance tradeoff," under review.

B. Taskesen, **V. A. Nguyen**, D. Kuhn, and J. Blanchet, "A distributionally robust approach to fair classification," under review.

X. Zhang, J. Blanchet, Y. Marzouk, **V. A. Nguyen**, and S. Wang, "Wasserstein distributionally robust Gaussian process regression and linear inverse problems," under review.

## GRANTS

CUHK's Improvement on Competitiveness in Hiring New Faculties Funding Scheme
- Amount: 1.4M HKD (~180,000 USD)

CUHK's Direct Grant
- Amount: 150k HKD (~20,000 USD)

## TEACHING EXPERIENCE

**Chinese University of Hong Kong** (Hong Kong SAR)                                      2023
- SEEM3650 Fundamentals of Data and Decision Analytics

# Viet Anh Nguyen

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**Stanford University** (United States)                                                    2020
- Co-lecturer for Optimal Transport: Theory and Applications (PhD's).

**École Polytechnique Fédérale de Lausanne** (Switzerland)                       2015 – 2019
- Co-lecturer for Applied Probability and Stochastic Processes (master's) and Optimal Decision Analysis (master's).
- Teaching assistant for Network Analytics (master's), Microeconomics (master's), Informations: Strategy and Economics (master's level), Financial Accounting (master's).
- Awarded the best teaching assistantship award in 2018.

**National University of Singapore** (Singapore)                                   2010 – 2012
- Tutor and grader for Operations Research 1 (undergraduate) and Probability Models with Applications (undergraduate).
- Nominated for the best teaching assistantship award, Faculty of Engineering (2011).

## SUPERVISIONS

| | |
|---|---|
| Zikun Lin, PhD student at CUHK | 2023 – till date |
| Hieu Nguyen, Research resident at VinAI | 2022 – till date |
| Ngoc Bui, Research resident at VinAI. First position: CS PhD student at Yale Uni. | 2021 – 2023 |
| Duy Nguyen, Research resident at VinAI. | 2021 – till date |
| Hieu Vu, Research resident at VinAI. First position: CS PhD student at Uni. of Iowa | 2021 – 2022 |
| Sirui Lin, PhD student at Stanford University | 2020 – till date |
| Xuhui Zhang, PhD student at Stanford University | 2019 – till date |
| Bahar Taskesen, PhD student at EPFL | 2019 – till date |
| Yves Rychener, Master's student at EPFL | 2019 |

- Thesis title: Distributionally robust maximum likelihood estimation.

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|---|---|
| Andreas Bill, Master's student at EPFL | 2016 |

- Thesis title: Distributionally robust optimization of solar energy planning for Switzerland 2050.

## SELECTED SCHOLARSHIPS

| | |
|---|---|
| Research Fellowship, National University of Singapore | 2010 – 2012 |
| Eiffel Excellence Scholarship. French Ministry of Education | 2008 – 2010 |

- Prestigious merit-based scholarship awarded to outstanding international students.

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| French Embassy Scholarship. French Embassy in Singapore | 2008 |

- Awarded to top students from ASEAN countries to pursue higher education in France.

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|---|---|
| ASEAN Undergraduate Scholarship. Singapore Ministry of Education | 2006 – 2010 |

- Awarded to outstanding students to pursue undergraduate studies in Singapore.

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| Dean's List. Faculty of Engineering, National University of Singapore | 2007 |

## REVIEWING ACTIVITIES

- Reviewer for academic journals in the area of operations research, optimization and control:

Management Science (INFORMS), Operations Research (INFORMS), Mathematical Programming (Springer), Mathematics of Operations Research (INFORMS), Journal on Computing (INFORMS), European Journal of Operational Research (Elsevier), Automatica (Elsevier), Transactions on Automatic Control (IEEE), Transactions on Power Systems (IEEE), Transactions on Signal Processing (IEEE), Operations Research Letters (Elsevier), Transportation Research: Part E (Elsevier), Computers & Industrial Engineering (Elsevier), Journal of Optimization Theory and Applications (Springer), Expert Systems with Applications (Elsevier), Energy Systems (Springer), Computational Optimization and Applications (Springer)

• Reviewer for conferences:

IEEE Conference on Decision and Control 2017, American Control Conference 2019, SIAM Symposium on Discrete Algorithms 2019, NeurIPS 2020/2021/2022, ICLR 2021/2022, ICML 2021/2022/2023, AISTATS 2022/2023, FAccT 2022.

• Area Chair for conferences:

NeurIPS 2023, FAccT 2023/2024.

## ADVANCED COURSES IN ECONOMICS

Financial Stability by Prof. Xavier Vives **(**Gerzensee, Switzerland**)**
Recent Advances in Theoretical Industrial Organization by Prof. Jean Tirole **(**Gerzensee, Switzerland**)**
Bayesian Dynamic Modelling and Forecasting by Prof. Mike West **(**Gerzensee, Switzerland**)**

## ACADEMIC VISIT

| | |
|---|---|
| GERAD **-** Group for Research in Decision Analysis (Canada) | December 2018 |
| Delft University of Technology (the Netherlands) | February 2018 |
| Technical University of Denmark (Denmark) | January 2018 |
| Advanced Digital Sciences Center (Singapore) | October 2012 |

## INVITED PRESENTATIONS

| | |
|---|---|
| Princeton University (ORFE) | 2022 |
| Carnegie Mellon University (Tepper OR) | 2022 |
| Massachusetts Institute of Technology (Sloan) | 2021 |
| Cornell University (ORIE) | 2021 |
| University of Wisconsin-Madison (Engineering) | 2021 |
| Purdue University (Krannert) | 2021 |
| INFORMS Annual Meetings | 2018, 2019 |
| International Conference on Stochastic Programming | 2019 |
| International Conference on Continuous Optimization | 2019 |
| International Symposium on Mathematical Programming | 2018 |
| Conference on Computational Management Science | 2018 |
| 27th European Conference on Operational Research | 2015 |
| Modeling and Optimization: Theory and Applications | 2011 |

## LANGUAGES

English (Fluent), French (Fluent), German (Intermediate), Vietnamese (Native)