Juyoung **Wang**

Master of Applied Science in Industrial and Systems Engineering · Mathematical and Computational Engineer

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Education

University of Toronto (UofT) — *Toronto, Ontario, Canada*

Doctor of Philosophy student in Industrial and Systems Engineering (Dropout) — *Sep. 2021 - Sep. 2022*

- **Overall GPA**: 3.9/4.0
- **Advisors**: *Merve Bodur*.
- **Research topic**: Data-driven stochastic optimization.

University of Toronto (UofT) — *Toronto, Ontario, Canada*

Master of Applied Science in Industrial and Systems Engineering — *Jan. 2019 - Aug. 2021*

- **Overall GPA**: 3.8/4.0
- **Advisors**: *Merve Bodur (from University of Toronto)* and *Mucahit Cevik (from Ryerson University)*.
- **Research topic**: Sequential decision-making under uncertainty, Healthcare, Transportation and Logistics, Statistics, Machine learning.
- **Thesis title**: Multistage Stochastic Programming Combined with Deep Learning-based Time series Forecasting: New Methodologies and Applications

Pontifical Catholic University of Chile (PUC-Chile) — *San Joaquin, Santiago, Chile*

Bachelor of Engineering Sciences in Mathematical and Computational Engineering — *Mar. 2014 - Dec. 2017*

- **Overall and Major GPA**: 3.7/4.0 and 3.8/4.0
- Graduated with distinction (highest honors for students with Bachelor's degree)

Work experiences

Scotiabank — *Santiago, Chile*

Data scientist — *Jul. 2018 - Nov. 2018*

- Worked as a data scientist at Canadian International bank the Bank of Nova Scotia, a.k.a. Scotiabank. Hired directly by clients, after working three months as an external consultant.

Groupe SII — *Santiago, Chile*

Consultant — *Apr. 2018 - Jul. 2018*

- Worked as a data science consultant in French consulting company Groupe SII, together with digital banking team of Scotiabank.

Skills

Programming Python, Julia, MATLAB, SQL, R, C++

Packages Tensorflow, Pytorch, Gurobi, CPLEX, Scikit-learn, JuMP, Google OR Tools, SDDP.jl, MSPPy, among others

Languages Korean (Mother tongue), Spanish (Native), English (Advanced, TOEFL iBT 110/120 at 2018)

Publications and Preprints

- Chi, C., Aboussalah, A. M., Khalil, E. B., Wang, J., & Sherkat-Masoumi, Z. (2022). A Deep Reinforcement Learning Framework For Column Generation. Accepted at NeurIPS2022.
- Ozyegen, O., Wang, J. & Cevik, M. (2022). DANLIP: Deep Autoregressive Networks for Locally Interpretable Probabilistic Forecasting. To be Submitted.
- Bodur, M., Cevik, M., Cire, A., Ruschin, M. & Wang, J. (alphabetical ordering by surnames) (2022). Multistage Stochastic Fractionated Intensity Modulated Radiation Therapy Planning. Major revision in Computers and Operations Research.
- Wang, J., Cevik, M., & Bodur, M. (2021). On the impact of deep learning-based time-series forecasts on multistage stochastic programming policies. INFOR: Information Systems and Operational Research, 1-32.
- Wang, J., Cevik, M., Amin, S. H., & Parsaee, A. A. (2021). Mixed-integer linear programming models for the paint waste management problem. Transportation Research Part E: Logistics and Transportation Review, 151, 102343.
- Wang, J. (2021). Multistage stochastic programming combined with deep learning-based time series forecasting: new methodologies and applications (Master dissertation, University of Toronto (Canada)).

Honors and awards

2021-2022 **MIE Doctoral graduate research fellowship,** Awarded by UofT MIE department (CAD 20,000 per year) *Toronto, Canada*

2019-2021 **MIE Masters graduate research fellowship,** Awarded by UofT MIE department (CAD 16,000 per year) *Toronto, Canada*

2017 **Graduated with distinction,** Highest honor available for Engineering bachelor's students at PUC-Chile. *Santiago, Chile*

Academic experiences

Industry-University cooperation projects

- Together with the LG Science Park and research team at Data Science Laboratory of Ryerson University, we worked on neural-network based time-series prediction algorithms, having Merve Bodur and Mucahit Cevik as the principal investigators (Oct. 2019 - Oct. 2020, UofT).
- Together with Vicente Gomez, and José Macherone, we worked with a data-driven consulting company Everis. We mainly worked on developing prediction models for scheduled appointment cancellations, in order to help people to build better schedules (Aug. 2017 - Dec. 2017, PUC-Chile).

Teaching assistant positions

Mar. 2014 - Aug. 2021

- Integer programming applications: Graduate level integer programming course. (2021 Winter, UofT)
- Algorithms & numerical methods: Undergraduate level algorithms course. (2020 Winter, UofT)
- Optimization methods: Undergraduate level continuous optimization and operations research course (2017 Semester I, PUC-Chile)
- Calculus for economists: Undergraduate level course (2017 Semester I, PUC-Chile)
- Single variable calculus: Undergraduate level course (2016 Semester I, PUC-Chile)

Undergraduate research experiences

Jan. 2016 - Dec. 2017

- High-dimensional optimization in non-Euclidean geometry: Studied basics of high-dimensional statistics and optimization algorithms used in such a context, e.g. mirror-descent from a functional analytic viewpoint. The activity was advised by professor Cristobal Guzman. (2017)
- Large-scale continuous optimization: Studied basics of statistical learning and related optimization problems, e.g. best subset selection via modern optimization lens. This research activity was advised by professor Jorge Vera. (2016)

Talks

2021 CORS annual meeting

Online

Presenter *Jun. 2021*

- Gave a talk on Multi-stage stochastic programming approach to Intensity Modulated Radiation Therapy planning problem.

2020 INFORMS annual meeting

Online

Presenter *Nov. 2020*

- Gave a talk on Multi-stage stochastic programming approach to Intensity Modulated Radiation Therapy planning problem.

Optimization days 2019 at HEC Montréal

Quebec, Canada

Presenter *May. 2019*

- Gave a talk with topic of mixed-integer linear programming models for the reverse-logistics of household hazardous wastes.

Relevant courses

Coursera

Online

Massive open online courses

- **Deep learning specialization**: Networks and Deep Learning, Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models
- **GAN specialization**: Build Basic Generative Adversarial Networks, Build Better Generative Adversarial Networks (Ongoing)
- **Probabilistic graphical models specialization**: Representation (Ongoing)
- **Reinforcement learning specialization**: Fundamentals of Reinforcement learning.
- **Natural language processing specialization**: Natural language processing with classification and vector spaces.

University of Toronto

Toronto, Canada

Graduate level courses *Jan. 2019 - Apr. 2022*

- Advanced topics in data-driven optimization (A+), Constraint programming (B+), Duality theory in mathematical optimization (A-), Integer programming (A+), Markov Decision Processes (A+), Machine learning for mathematical optimization (A), Monte Carlo methods (A), Readings on new trends of stochastic optimization (PASS), and Stochastic programming and robust optimization (A+)

Pontifical Catholic University of Chile

Santiago, Chile

Relevant graduate and undergraduate level courses *Mar. 2014 - Dec. 2017*

- **Graduate level courses**: Advanced topics in machine intelligence (A+), Convex optimization (Top graded) and Mathematical foundations of data science (A+)
- **Undergraduate level courses (ordered by course contents)**: Introduction to computer programming, Calculus I, Calculus II, Calculus III, Linear Algebra, Differential equations, Probability and statistics, Statistical inference, Regression analysis, Discrete mathematics, Real analysis, Measure theory, Functional analysis, Numerical analysis, Parallel algorithms for scientific computing, Operations research, Stochastic processes, Optimization methods, and Graduation project