Gracia **Dong**

STATISTICIAN

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Summary

- PhD Statistician with experience in higher education, design and analysis of surveys and experiments, risk modelling, and data science.

- **Programming Languages:** Python, R, MATLAB

Experience

Polyalgorithm Machine Learning
Waterloo, ON, Canada

DATA SCIENTIST
October 2022 - Present

- Benchmarked the performance of a proprietary feature importance algorithm in terms of model fairness and explainability.
- Wrote and presented white papers on proprietary model fairness and explainability techniques to board members and potential clients.

University of Toronto
Toronto, ON, Canada

POSTDOCTORAL FELLOW – CENTRE FOR GLOBAL HEALTH RESEARCH, ST. MICHAEL'S HOSPITAL
September 2022 - Present

- Working under Dr. Patrick Brown (University of Toronto) and Dr. Laura Cowen (University of Victoria), my research includes:
  - Enumerating and quantifying homeless populations using eletronic health data and modelling COVID-19 prevalence in homeless populations,
  - Creating methods to identify spikes in air pollution and forecasting health effects caused by spikes in air pollutions after forest fires,
  - Using graph community detection and NLP clustering to compare patterns of service usage between different patient groups.

University of Waterloo
Waterloo, ON, Canada

GRADUATE RESEARCH ASSISTANT – DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
September 2017 - August 2022

- Working under Dr. Christiane Lemieux, my research was on quasi-random number generation for high-dimensional function estimation, simulation, and stochastic processes. Real-world applications include reducing error for high-dimensional finance problems.
- Supervised an undergraduate research assistant, who performed simulation experiments regarding quasi-random number generation in Python.

University of Waterloo
Waterloo, ON, Canada

TEACHING ASSISTANT – FACULTY OF MATHEMATICS
May 2014 - August 2022

- Supported instructors at the University of Waterloo for in person and online courses at the undergraduate and graduate level by hosting office hours, monitoring courses' Piazza forums and Slack channels, conducting tutorials, creating assignments, tests, solution keys and marking schemes.

University of Waterloo
Waterloo, ON, Canada

EVALUATION CONSULTANT – STUDENT SUCCESS OFFICE
February 2021 - April 2022

- Streamlined student surveys to less than half their original length via internal consistency measurements, dimension reduction and factor analysis.
- Analyzed and visualized student success initiative data to provide faculty-, program-, and demographic- specific recommendations to students and instructors to help students succeed in their post-secondary education.
- Evaluated the utilization of Waterloo Ready, a program helping incoming students transition to university, across faculties and demographic groups.
- Communicated significant results to technical (at conferences) and non-technical (to stakeholders) audiences to improve student support.

University of Waterloo
Waterloo, ON, Canada

SESSIONAL LECTURER – AFM 113, ANALYTIC METHODS 2 FOR BUSINESS
May 2021 - August 2021

- Managed graduate level teaching assistants to support non-major students taking an introductory statistics course in an online learning environment.
- Overall instructor rating of 4.6/5 on anonymous student course evaluation, with 50% completion rate.

Internships

SCOTIABANK – ASSOCIATE BUSINESS ANALYST – RISK MANAGEMENT INFORMATION TECHNOLOGY	*September 2016 - December 2016*
MANULIFE – ACTUARIAL STUDENT – AUDIT SERVICES	*January 2016 - April 2016*
UNIVERSITY OF WATERLOO – RESEARCH ASSISTANT – DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE	*May 2015 - August 2015*
AURIGEN REINSURANCE – ACTUARIAL STUDENT – PRICING AND VALUATION	*January 2014 - December 2014*
CITY OF MARKHAM – CO-OP STUDENT – DEVELOPMENT SERVICES	*September 2012 - December 2012*

Education

University of Waterloo
Waterloo, ON, Canada

PHD IN STATISTICS	*September 2018 - August 2022*
MMATH IN STATISTICS	*September 2017 - August 2018*
BMATH IN STATISTICS & ACTUARIAL SCIENCE WITH FINANCE OPTION; COMPUTER SCIENCE MINOR	*January 2013 - April 2017*

Completed the Certificate in University Teaching (April 2022) and Fundamentals of University Teaching (August 2020) programs.

Publications

Randomized quasi-Monte Carlo methods on triangles: extensible lattices and sequences

DONG, G. Y., E. HINTZ, M. HOFERT, & LEMIEUX C. (2022)

WORKING PAPER

We use the scrambled van der Corput sequence to construct a stratified sampling scheme, and give an extensible lattice construction on the triangle.

A negative dependence framework to assess different forms of scrambling

H. FAURE, DONG, G. Y. & LEMIEUX C. (2022)

ARXIV PREPRINT

We evaluate multiple choices of factors to generalize the Faure sequence using negative dependence as a tool.

Developing a contextualized version of the Motivated Strategies for Learning Questionnaire for use as a student support tool

MUGON, J., DONG, G. Y., KIM, N.H., & JOBIDON, E. (2022)

SUBMITTED TO *Collected Essays on Learning and Teaching*

We adapted the Motivated Strategies for Learning Questionnaire for first year students in the Faculty of Arts, and we describe the psychometric properties of the adapted questionnaire.

Dependence Properties of Scrambled Halton Sequences

DONG, G. Y., & LEMIEUX C. (2022)

PUBLISHED IN *Mathematics and Computers in Simulation*

We give the joint probability density function for point sets based on the Halton sequence, and show that such point sets have the property of negative dependence.

On the dependence structure and quality of scrambled (t, m, s)-nets

WIART, J., LEMIEUX, C., & DONG, G. Y. (2021)

PUBLISHED IN *Monte Carlo Methods and Applications*

We show that (0,m,s)-nets have the property of negative dependence, and introduce a criterion to compare point sets.

Presentations

Adapting the Motivated Strategies for Learning Questionnaire (MSLQ) for first-year Faculty of Health students	*Ottawa, ON, Canada*
2022 STLHE ANNUAL CONFERENCE	*June 9, 2022*
Randomized Quasi-Monte Carlo Methods on triangles: Extensible lattices and sequences	*Vancouver, BC, Canada*
CORS/INFORMS INTERNATIONAL CONFERENCE	*June 7, 2022*
Assessing a modified version of the Motivated Strategies for Learning Questionnaire as a student development tool	*Virtual*
UNIVERSITY OF WATERLOO TEACHING AND LEARNING CONFERENCE	*April 27, 2022*
Adapting the Motivated Strategies for Learning Questionnaire to help students take control of their learning	*Virtual*
SOCIETY FOR TEACHING AND LEARNING IN HIGHER EDUCATION UNCONFERENCE	*June 9, 2021*
Halton sequences and negative dependence	*Waterloo, ON, Canada*
UNIVERSITY OF WATERLOO STUDENT SEMINAR SERIES	*February 3, 2021*
Variance estimation of quasi-Monte Carlo integration without replication	*Waterloo, ON, Canada*
WATERLOO STUDENT CONFERENCE IN STATISTICS, ACTUARIAL SCIENCE AND FINANCE	*October 18, 2019*