

EDUCATION

McMaster University

M.Sc in Statistics (Thesis - [Available Online](#))

– CGPA: **12/12**

Hamilton, ON

September 2024 - October 2025

University of Toronto

H.B.Sc, Applied Statistics Specialist and Mathematical Sciences Major

– CGPA: **3.92/4.0**

Mississauga, ON

September 2019 - June 2024

EXPERIENCE

McMaster University Department of Mathematics & Statistics

R Programmer (Research Assistant)

Hamilton, ON

June 2025 - Present

- Contributed 35+ merged pull requests and 160+ commits to [lme4](#), a widely used R package for mixed-effects modeling with (**43.4+ million downloads**) and **10k+ GitHub stars**.
- Engineered high-impact numerical features, notably **internal auto-scaling** for estimation stability and **MLE initialization** for large-scale data, reducing computation time and improving convergence for high-dimensional research models.
- Resolved critical bugs in core functions, including a complex matrix-subsetting fix to ensure accurate standard errors.

University of Toronto Department of Mathematical & Computational Sciences

Sessional Instructor

Mississauga, ON

January 2026 - April 2026

- Directed the third-year Computational Statistics (STA380H5) curriculum for 96 students, achieving an **Institutional Composite Mean (ICM) of 4.4/5.0**, significantly exceeding the departmental (3.9) and divisional (4.0) averages.
- Developed a project-based pedagogy requiring students to engineer production-style **R packages** and **Shiny applications**; improved students' subject-matter understanding and provided meaningful opportunities for skill demonstration.
- Maintained a **4.7/5.0 rating for enthusiasm and instructional clarity**; recognised by students for bridging theoretical-practical gaps through live-coding, step-by-step visualisations, and a positive learning atmosphere.

University of Toronto Department of Statistical Sciences

Statistical Web Application Developer (Research Assistant)

Toronto, ON

Nov 2022 - August 2024

- Deployed a full-stack **R Shiny** web application implementing Bayesian ROC/AUC analysis based on a published research paper, enabling researchers to perform relative belief ratio inference across multiple diagnostic models and sampling regimes.

Epson Canada

Data and Evaluation Specialist Intern

Markham, ON

May 2022 - August 2023

- Developed predictive financial models in **Excel VBA** for COGS forecasting, enabling accurate & rapid cost analysis of 3D computer vision solutions for management.
- Applied **Python** and **R** to build visualizations and analyze feasibility data for 10+ computer vision business concepts, including waste detection and robotic bin-picking applications, informing go/no-go decisions for the Business Development team.
- Conducted outreach to companies and professionals, evaluating demand for 3D vision software & hardware solutions, resulting in at least a 40-hour efficiency gain for the Business Development team.

SKILLS

- **Programming Languages:** R, Python, SAS, HTML/CSS, SQL, Excel VBA.
- **Machine Learning/Statistics:** GLMs, logistic regression, linear mixed models, ensemble methods (random forest, boosting, bagging, BART), clustering (k-means, agglomerative, hierarchical), PCA, factor analysis.
- **R Libraries:** Shiny, Tidyverse (ggplot2, dplyr, tidyr, purrr, tibble), Easystats.
- **Python Libraries:** Matplotlib, NumPy, Pandas, SciPy, Seaborn, Plotly.
- **Tools:** Git, LaTeX, Qualtrics.

PUBLICATIONS

Under Review

1. **Ly, A.**, & Davies, K. (Under review). Pitman Closeness of Maximum Likelihood Estimators under Type-II Hybrid Censoring with Exponential Lifetimes. *Journal of Statistical Computation and Simulation*.
2. Al-Labadi, L., & **Ly, A.** (Under review). Students' Experiences with R Shiny Development and AI Tools in Undergraduate Computational Statistics. *Teaching Statistics*.
3. Al-Labadi, L., **Ly, A.**, & Kirusheva, S. (Under review). Student Perceptions of AI and Virtual Populations in a Project-Based Experimental Design Course. *Teaching Statistics*.

Peer-Reviewed Journal and Conference Papers

1. Zhu, T., Engineer, R., Prempeh, X., **Ly, A.**, Craig, M., & Petersen, A. (2025). Comparing physical analogue and traditional videos for learning and emotional engagement. *Discover Education*, 4(1), 71. <https://doi.org/10.1007/s44217-025-00454-1>
2. Al-Labadi, L., & **Ly, A.** (2025). Enhancing statistics education through Project-Based Learning (PBL) and the emergence of ChatGPT. *Teaching Statistics*. <https://doi.org/10.1111/test.12405>
3. Al-Labadi, L., Fazeli-Asl, F., & **Ly, A.** (2024). Evaluating model fit for type II censored data: a Bayesian non-parametric approach based on the Kullback-Leibler divergence estimation. *Communications in Statistics-Simulation and Computation*, 1-15. <https://doi.org/10.1080/03610918.2024.2417808>
4. Al-Labadi, L., & **Ly, A.** (2024). A Short Note on Generating a Random Sample from Finite Mixture Distributions. *Axioms*, 13(5), 307. <https://doi.org/10.3390/axioms13050307>
5. **Ly, A.**, Zhu, T., & Petersen, A. (2024, March). Evaluating Storytelling Videos Using YouTube Analytics. In *Proceedings of the 55th ACM Technical Symposium on Computer Science Education V. 2* (pp. 1730-1731). <https://doi.org/10.1145/3626253.3635503>
6. Liut, M., **Ly, A.**, Xu, J. J. N., Banson, J., Vrbik, P., & Hardin, C. D. (2024, March). "I Didn't Know": Examining Student Understanding of Academic Dishonesty in Computer Science. In *Proceedings of the 55th ACM Technical Symposium on Computer Science Education V. 1* (pp. 757-763). <https://doi.org/10.1145/3626252.3630753>
7. Al-Labadi, L., Hamlili, M., & **Ly, A.** (2023). Bayesian estimation of variance-based information measures and their application to testing uniformity. *Axioms*, 12(9), 887. <https://doi.org/10.3390/axioms12090887>
8. Zavaleta Bernuy, A., **Ly, A.**, Harrington, B., Liut, M., Sharmin, S., Zhang, L., & Petersen, A. (2023, June). "I Am Not Enough": Impostor Phenomenon Experiences of University Students. In *Proceedings of the 2023 Conference on Innovation and Technology in Computer Science Education V. 1* (pp. 313-319). <https://dl.acm.org/doi/abs/10.1145/3587102.3588779>
9. Zavaleta Bernuy, A. M. Z., **Ly, A.**, Harrington, B., Liut, M., Petersen, A., Sharmin, S., & Zhang, L. (2022). Additional Evidence for the Prevalence of the Impostor Phenomenon in Computing. In *SIGCSE (1)* (pp. 654-660). <https://dl.acm.org/doi/10.1145/3478431.3499282>
10. **Ly, A.**, Parkinson, J., Cutts, Q., Liut, M., & Petersen, A. (2021, November). Spatial skills and demographic factors in CS1. In *Proceedings of the 21st Koli Calling International Conference on Computing Education Research* (pp. 1-10). <https://dl.acm.org/doi/10.1145/3488042.3488049>
11. **Ly, A.**, Edwards, J., Liut, M., & Petersen, A. (2021, October). Revisiting syntax exercises in CS1. In *Proceedings of the 22nd Annual Conference on Information Technology Education* (pp. 9-14). <https://doi.org/10.1145/3450329.347685>

CONFERENCES

1. **International Association for Statistical Education (IASE) - July 2023**
Poster Presenter: Thinking Beyond Numbers - Statistical Perceptions of Communicating Statistics Through the Arts
2. **Joint Statistical Meetings (JSM) - Aug 2023**
Panelist: Pedagogical Perspectives on Teaching and Communicating Statistical Sciences Through the Arts

SCHOLARSHIPS AND AWARDS

- Ashbaugh Graduate Scholarship 2025
The Ashbaugh Graduate Scholarships were established in 1987 by the bequest of F.K. Ashbaugh in memory of Mary Eliza Kingston, to support committed graduate students in their academic pursuits.
- Milos Novotny Fellowship 2024
This award was established as a result of the generosity of Dr.M.Novotny, who received his PhD in Mathematics from McMaster in 1972, and is particularly designed to encourage promising graduate students in analysis.
- Ontario Graduate Scholarship (OGS) 2024
The Ontario Graduate Scholarship (OGS) programs provide funding to full-time students at the master's and doctoral levels with an A- or above average, and are hand-selected from the department.
- NSERC Undergraduate Student Research Awards (USRA) 2023
A scholarship which allows students to obtain valuable research experience to encourage students to consider graduate studies and pursue careers in the natural sciences and engineering.
- UTM Undergraduate Research Grant 2022
These grants are provided for undergraduate student-initiated research projects supervised by UTM faculty members.
- Dean's List Scholar 2020, 2021, 2022
Conferred only on students who have achieved a cumulative grade point average of 3.50 at the end of each session in which the fifth, tenth, fifteenth or twentieth course has been passed at the University of Toronto.
- Mathematical and Computational Sciences Honor Roll 2021, 2022
Awarded to students for achieving A+ in 5 mathematical sciences courses at the University of Toronto. This award was discontinued in 2023.
- President's Scholars of Excellence Scholarship 2019
Awarded to 150 most qualified students applying to first year of direct-entry at the University of Toronto.
- Governor General's Academic Bronze Medal 2019
Awarded to the student who achieves the highest average in their graduating class in high school.
- Dr. Angelo Albanese Memorial Scholarship 2019
Awarded to a student who best demonstrates a mature approach to academics and a determination to succeed.