# ESHTA BHARDWAJ

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Driven researcher and PhD student with vast experience working with large datasets to perform various forms of data manipulation and analysis. Extensive educational background in data science and analytics, information visualization, and research techniques. Research interests include the use of data analytics and visualization in climate change studies, sustainability design, data quality evaluation, environmental modelling, and application of data curation in machine learning research.

## EDUCATION

**PhD** University of Toronto, Information — Ongoing

**MA** York University, Information Systems and Technology — May 2022
Thesis: "Data Analytics in Climate Change Studies"

**BA** York University, Information Technology — May 2020
Specialized Honours

## HONORS AND AWARDS

**WDS-ITO Student Travel Award for Research Data Alliance Plenary** 2023
This competitive travel award was granted to attend the Research Data Alliance 20th Plenary Meeting.

**Digital Curation Institute (DCI) Fellowship** 2022
The DCI Fellowship offers students and researchers the ability to lead research at the intersection of sustainability, computing and technology, and curation activities. As part of the DCI, I am currently establishing a baseline platform for data curation and modelling for Toronto based on the infrastructure of Curbcut Montreal (open source web application developed by McGill Sustainability Systems). By developing and deploying predictive analytics on Curbcut, my research joins a growing community of local instances in several cities that enables knowledge and information-sharing on urban sustainability.

## RESEARCH EXPERIENCE

**Thesis**, York University 2022

- Successfully defended master's thesis on data analytics in climate change studies with a focus on developing a data analysis framework and visualization tool for climatic analysis on a regional scale to compare climate models with the corresponding observed values. Thesis was nominated for the annual Thesis Prize.
- Performed all steps of data analysis process on large climatic datasets using best practice principles and techniques.
- Gained expertise in formulating research questions, selecting research designs to analyze data, and evaluating research proposals and projects.

## TEACHING EXPERIENCE

**University of Toronto**
**Teaching Assistant,** Faculty of Information — Ongoing

- Provided feedback on student assignments, presentations, and projects for HCI and Systems Architecture courses for master's students.
- Collaborated with professors to develop engaging assignment material based on each cohort of students and their research interests.

**York University** 2020 – 2022
**Teaching Assistant,** Information Technology

- Designed and delivered lectures on practical topics for introductory IT courses averaging 140 students per semester. Effective lecturing techniques were applied, such as: straightforward content organization, ample visuals, examples to explain theories, and an engaging demeanor.
- Produced assignments with a focus on improving student learning. Students were provided with relevant background information, tasks, and clearly defined evaluation criteria.
- Graded over 400 assignments and midterms per semester, including: detailed and timely feedback, grade breakdown, and suggestions for improvement.

## PUBLICATIONS

### *Journal Papers*

Bhardwaj, E., & Khaiter, P. (2023). What data analytics can or cannot do for climate change studies: An inventory of interactive visual tools. Ecological Informatics, 101918.

### *Journal Papers in Review*

Bhardwaj, E. & Khaiter, P. "How can WARM be useful for climate informatics?" In progress for submission to: Environmental Modelling and Software.

## CONFERENCE PRESENTATIONS

Bhardwaj, E. & Khaiter, P. "Data Analytics Approach to Climate Change Studies". In 2021 International Congress on Modelling and Simulation, Sydney, Australia.

Bhardwaj, E. & Khaiter, P. "Visualization tools for climate data analytics." In 2022 International Congress on Environmental Modelling and Software and Science Based Decision Making, Brussels, Belgium.

## PROFESSIONAL TRAINING

**Ontario Shores Centre for Mental Health Sciences**, Data Analyst 2021 – 2022

- Performed data extraction, cleaning, and analysis for various reporting needs across a wide range of users.
- Collaborated with various principal investigators (PIs) to understand research questions and requirements to provide valuable data for research requests.
- Developed and maintained Power BI reports for multiple corporate strategic projects and stakeholders across the hospital.
- Provided interpretation and presentation of data as part of ongoing and ad hoc decision support duties.
- Aided in the collection and development of an operational use case to be presented at the HIMSS Adoption Model for Analytics Maturity (AMAM) assessment to achieve Stage 7 validation.
- Acted as coordinator for the Mental Health and Addictions Quality Initiative by aiding in the collection and combination of various performance indicators for over 20 mental health care hospitals in Ontario on a quarterly basis.

**Toronto Humane Society**, Data Analyst 2020 – 2021

- Extracted and transformed raw data into meaningful information for decision-making about shelter care such as incidence of shelter-acquired disease (SAI). The SAI metrics provided insight into areas of improvement for shelter management to better animal health.

- Navigated complex database schemas and developed queries to retrieve useful information for ongoing and ad hoc reports.
- Implemented thorough data preprocessing (cleaning, integrating, transforming) and analysis with an in-depth understanding of the underlying data structure. Conducted comprehensive quality checks to ensure data accuracy.
- Established automation for monthly, biannual, and annual reports. Other reporting tasks included: distribution, issues resolution, and adding additional features as requested.
- Presented comprehensive reports and evolving analytics efforts to executive members.

## TECHNICAL SKILLS

- **Python 3:** NumPy, Pandas, Matplotlib, Plotly
- **Databases:** SQL (MS-SQL, MySQL, PL/SQL), MS Access
- **BI Software:** Power BI, Tableau
- **Web Technologies:** Basic HTML, CSS, and JavaScript (D3)
- **Advanced Excel:** Knowledge of advanced functions, conditional formatting, pivot tables, and graph manipulation
- **Other:** SPSS Statistics, Matlab, R Studio