

Research Report Focus on Data Science



Letter from the Associate Dean Research

A very human approach to data science



The University of Toronto Data Sciences Institute launched this year, a multidisciplinary hub for research, teaching and innovation around data science. This launch responds to the current data revolution, where massive amounts of data are being collected and generated, and techniques are being developed to analyze and understand the data. Whether we like it or not, algorithms and decision makers use this data and this understanding to influence many aspects of our life.

We thought this made it an especially good time to highlight some of the data-related research being done here at the Faculty of Information, where our focus is on human-centred data science. Along with covering a key Covid-related data science initiative (page 4), we would also like to introduce you to some of the other innovative and important research being conducted by our newest faculty members. Their work explores everything from climate change (page 6) and the replication crisis (page 8) to child welfare (page 10).

Because data science is just one part of what we do, we are also bringing you a special section on the latest books written by our professors (page 12). I think you'll be amazed at our faculty members' range of expertise, and we look forward to covering it in future issues of the Research Report. Our next edition, out early next year, will feature research in the digital humanities and cultural heritage sector.

In the meantime, you can keep up with the latest news by visiting the research pages of the Faculty of Information website at ischool.utoronto.ca/research.

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RESEARCH REPORT

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A periodic digest of research at the Faculty of Information

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Intersecting Networks

An Associate Professor of Data and Cities at the Institute of Communication, Culture, Information and Technology at UTM and the Faculty of Information, Beth Coleman was named inaugural director of U of T's Black Research Network, which launched in October.

"This year, we're focusing on supporting research collaborations in data science and the Temerty Faculty of Medicine—partly because STEM has been historically a difficult place for Black researchers," Coleman told U of T News in a launch interview. "We have \$1 million to support research projects developed within the network but we are fundraising to support larger-scale research endeavours to enable the network to grow."

The new network is also looking to forge ties with groups like Black in AI, whose co-founder, Timnit Gebru, spoke at the launch event.

Coleman – whose research focuses on smart technology, machine learning, urban data and civic engagement – directs the City as Platform Lab. An example of a past project is the King Street Pilot in downtown Toronto where graduate students assessed the Internet of Things instruments used to gather data, including how fast cars were going and how many people were moving around in the downtown core. One of the goals was to gauge public engagement with the built infrastructure. More recently, Coleman has been reflecting on the impact of Covid-19 on Toronto.

Among other research affiliations, Coleman is a Faculty Affiliate at the University's Schwartz Reisman Institute for Technology and Society.



Research team wins best paper for 'VisuEls'

Congratulations to post-doctoral researcher Gaël Bernard and Assistant Professor Periklis Andritsos, who won the Best Demo from the International Conference on Process Mining earlier this year for their demo paper, <u>VisuELs: Visualization of Event Logs.</u>

In the paper, Bernard and Andritsos propose a technique to transform event logs of any size into compact visualizations that they call VisuELs, short for Visualization of Event Logs. VisuELs are particularly useful in the exploratory phase of a process mining project to extract key insights about an event log, as Bernard explains in a YouTube video.

Andritsos' research focuses on solving challenging problems that have to do with the analysis, extraction and summarization of semi-structured content. From clustering and schema discovery to redundancy quantification and predictive analytics, his interest is to teach and research how machines can help students, researchers and business managers acquire the most from their data.

He and Bernard are currently working together to develop new techniques to better understand the "customer journey" using process mining, business process management and machine learning techniques. They are academic co-founders of Odaia Intelligence, an AI-fuelled customer data platform.



O1 Associate Professor Beth Coleman



02 Postdoctoral Fellow Gaël Bernard



O2 Assistant Professor Periklis Andritsos