

Sohom Mandal PhD, PEng

Toronto, Canada | Email: sohomiitb@gmail.com | LinkedIn: [linkedin.com/in/sohommandal](https://www.linkedin.com/in/sohommandal) | Phone: (416) 822-3060

Professional Summary

Experienced data science leader with over 10 years of expertise in solving complex business problems and developing data-driven strategies. Skilled in building scalable solutions using cloud computing, machine learning, and advanced analytics to drive business growth and efficiency.

Teaching Experience

Lecturer (Seasonal)

April 2025 – Present

Master of Data Analytics, University of Niagara Falls, Niagara, Canada

- CPSC-510: Data Warehousing & Visualization (Spring' 25, Summer' 25)
- DAMO-611: Financial Data Analytics (Summer' 25)

Lecturer (Seasonal)

Jan 2022 – Present

College of Professional Studies - Northeastern University, Toronto Canada

- ALY 6120 - Leadership in Analytics (Winter' 25, Spring' 25)
- ALY 6015 - Intermediate Analytics (Spring' 23)
- ALY 6070 - Communicate/Visual Data Analysis (Fall' 23)
- ALY 6980 - Experiential Learning Project (Fall' 23, Spring' 25)
- ALY 6080 - Integrative Experiential Learning (Fall' 23)

Lecturer (Seasonal)

Jan 2022 – April 2022

School of Earth, Environment and Society, McMaster University, Hamilton, Canada

- ENVIRSC 2W03 - Physical Hydrology (Winter' 21)

Professional Experience

Data Science Manager

July 2022 – Feb 2025

Four Seasons Hotels and Resorts, Canada

- Developed the guest loyalty program using clustering of k-means, led to a 30% increase in guest engagement.
- Developed a churn model using XGBoost to identify high-value guests at risk of attrition, enabling 10% guest retention.
- Lead a team to design and deploy AI-driven solutions for business optimization.
- Collaborate with cross-functional teams to enable data-driven decision making.

Lead Machine Learning Engineer

Nov 2021 – June 2022

Capgemini Canada

- Developed predictive models based on machine learning algorithms for upsell, cross-sell, churn, and customer segmentation that collectively contributed to a 10% increase in annual revenue.
- Successfully migrated 15+ ML models from SAS to Python, deploying them in an Azure environment, reducing processing time by 40% and lowering operational costs by 20%.
- Led an offshore team of 9 members, improving team productivity by 20% through streamlined project management and agile practices.
- Developed and executed 10+ use cases, achieving 95% on time delivery for product releases in an agile environment.

DevOps and Machine Learning Integration Specialist

March 2021 – Sept 2021

Canadian National Railway, Canada

- Designed and developed the architecture for the DataOps-MLOps-DevOps integration pipeline in Microsoft Azure.
- Built a PoC for image segmentation using deep learning framework Detectron2 and Yolo5.
- Successfully configured and deployed Detectron2 in production, achieving 90% model accuracy.
- Developed PowerBI dashboard for monitoring precision transportation control.

Post Doctoral Fellow

Sept 2018 – March 2021

Great Lakes Institute for Environmental Research, Canada

- Developed a water quality simulation-optimization model for southern Ontario for the Canada-Ontario Great Lakes agreement.
- Developed multiple imputation (MICE) based software for data QA/QC with 95% accuracy using Python.
- Improving the data mining process for big data analysis using principal component analysis (PCA), resulting in a 20% decrease in the processing time.
- Developed interactive reports and dashboards using Power BI to visualize project performance, schedules, and budgets, ensuring data-driven decision-making.

Post Doctoral Fellow

Sept 2017 – Aug 2018

University of Manitoba, Canada

- Applied advanced machine learning techniques (PCA, K-means clustering, and regression analysis) to forecast future hydropower production under climate change scenarios
- Developed simulation optimization model for Arctic Canada using system dynamics.
- Developed dashboard for data visualization using MS-Excel.

Graduate Research Assistant

May 2013 – Dec 2016

University of Western Ontario, Canada

- Developed climate downscaling model using PCA, K-means clustering, and CART
- Utilized Python, and R for data manipulation, visualization, and reporting.
- Wrote five research papers and one technical report to communicate findings effectively.

Environmental Data Consultant

July 2012 – March 2013

Kadam Environmental Consultant, India

- Manipulated and analyzed environmental datasets using MATLAB and Excel.
- Conducted field data sampling for air quality, water quality, and soil, ensuring the accuracy and reliability of collected data, and contributing to environmental studies and regulatory compliance.
- Led a team of 5 technology specialists in the field to collect environmental data efficiently, overseeing the preparation of comprehensive reports that met client specifications and project deadlines.

Education

Ph.D. in Civil Engineering

University of Western Ontario, Canada

May 2013 – June 2017

Masters in Environmental Science and Engineering

Indian Institute of Technology Bombay, India

July 2010 – June 2012

Bachelor of Technology in Agricultural Engineering

Bidhan Chandra Krishi Vishwavidyalaya, India

July 2006 - June 2010

Publications

Publications in Refereed Journals

1. Phillips, A. K., Mandal, S., Mohamed, M., Sorichetti, R. J., Ross, C. A., Thomas, J. L., & Wellen, C. C. (2024). *Is comprehensive event sampling necessary for constraining process models of water quality? A comparison of high and low frequency phosphorus sampling programs for constraining the HYPE water quality model*. Journal of Hydrology, 639, 131502. DOI:10.1016/j.jhydrol.2024.131502
2. Mandal, S., Gaur, A., & Shirkhani, H. (2023). *Editorial: Resiliency of urban systems to water-related disasters*. Frontiers in Water, 5, 1287538. DOI:10.3389/frwa.2023.1287538
3. Yousif, M., Burdett, H., Wellen, C., Mandal, S., Arabian, G., Smith, D., & Sorichetti, R. J. (2022). *An innovative approach to correct data from in-situ turbidity sensors for surface water monitoring*. Environmental Modelling & Software, 155, 105461. DOI:10.1016/j.envsoft.2022.105461
4. Neumann, A., Dong, F., Shimoda, Y., et al., & Mandal, S. (2021). *A review of the current state of process-based and data-driven modelling: Guidelines for Lake Erie managers and watershed modelers*. Environmental Reviews, 29(4). DOI:10.1139/er-2020-0070
5. Aubry-Wake, C., et al., & Mandal, S. (2019). *A new flow for Canadian young hydrologists: Key scientific challenges addressed by research cultural shifts*. Hydrological Processes, 34(8), 2001–2006. DOI:10.1002/hyp.13724
6. Mandal, S., Arunkumar, R., Breach, P. A., & Simonovic, S. P. (2019). *Reservoir operation under changing climate conditions: Hydropower-production perspective*. Journal of Water Resources Planning and Management (ASCE), 145(5), 04019016. DOI:10.1061/(ASCE)WR.1943-5452.0001061
7. Mandal, S., & Simonovic, S. P. (2017). *Quantification of uncertainty in the assessment of future streamflow under changing climate conditions*. Hydrological Processes, 31(11), 2076–2094. DOI:10.1002/hyp.11174
8. Mandal, S., Breach, P. A., & Simonovic, S. P. (2016). *Uncertainty in precipitation projection under changing climate conditions: A regional case study*. American Journal of Climate Change, 5, 116–132. DOI:10.4236/ajcc.2016.51012
9. Mandal, S., Srivastav, R. K., & Simonovic, S. P. (2016). *Use of beta regression for statistical downscaling of precipitation in the Campbell River basin, British Columbia, Canada*. Journal of Hydrology, 538, 49–62. DOI:10.1016/j.jhydrol.2016.04.009

Technical Book

Mandal, S., Breach, P., Gaur, A., & Simonovic, S. P. (2017). *Guidelines for Downscaling Climate Variables: A Technical Manual*. Water Resources Research Report no. 097, The University of Western Ontario. [Link](#)

Non-Technical Book

Sohom Mandal (2025). *Beyond The Garden: A Diary of Vegan Recipes*. Self Published, Amazon KDP, ISBN-13: 979-8289270238. [Link](#)

Conference Publications

1. Mandal, S., Wellen, C., Mohamed, M., & Sorichetti, R. (2019). *Development of a Regional Water Quality Model using HYPE*. IUGG General Assembly, Montreal, Canada. [Link](#)
2. Wellen, C., Lee, J., Pardy, A., Mandal, S. (2019). *Decadal land-use changes and the effect on headwater agricultural phosphorus losses*. CWRA National Conference, Ontario.
3. Mandal, S., Wellen, C., Mohamed, M., & Sorichetti, R. (2019). *Regional Watershed Modelling using HYPE*. CGU Eastern Student Conference, Toronto.
4. Mandal, S., Simonovic, S. P. (2017). *Climate Change Impacts on Canadian Water Resources System*. EnviroCon, Western University, London.
5. Mandal, S., Kushwaha, S., & Karmakar, S. (2012). *An Interval Optimization Approach for River Water Quality Management*. IWA World Congress on Water Climate and Energy, Dublin. [Link](#)

Skills

- Programming: Python, SQL, R, Matlab
- Cloud: Azure (Data Factory, ML, DevOps, Azure AI), Databricks, MLflow
- Machine Learning and AI: Supervised learning, Unsupervised learning, Decision tree, K-means, LLMs, NLPs
- Tools: Tableau, Power BI, Git, Docker, Arc-GIS
- Managing: Project management, stakeholder communication, team leadership, product management

SELECTED OTHER EXPERIENCES AND ACTIVITIES

- **Co-Editor** *Frontiers in Water* (Area: Resiliency of urban systems to water-related disasters), Frontiers publishing.
- **Manuscript Reviewer (selected):** Climate Dynamics — Journal of Earth System Science — Journal of Hydrology — Hydrological Processes — Remote Sensing, MDPI — Water MDPI — American Journal of Climate Change.
- **Session Chair and Reviewer** of Canadian Society for Civil Engineering (CSCE) Annual Conference, London, June 1-4, 2016.
- **Online Course Design:** Designed an advanced hydrology course (online) for *National Programme for Technology Enhanced Learning (NPTEL)*, The Ministry of Human Resource and Development, Govt. of India, with Prof. Subhankar Karmakar (P.I.), IIT Bombay.
- **Western Engineering Open House Volunteer** 2013–2015
- **President**, Graduate Engineering Society (GES), Faculty of Engineering, Western University, Canada. Sept 2013 – Aug 2014
- **Councilor**, Society of Graduate Students (SOGS), Western University, Canada. Sept 2013 – Aug 2014

Certification

- DP-100: Microsoft Azure Data Scientist Associate
- AI-900: Microsoft Azure AI Fundamentals
- Professional Engineer (PEng) from Ontario Professional Engineer