SMDHU and Artificial Intelligence: Proper Use of AI and Machine Learning Applications

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Introduction

Generative artificial intelligence (AI) is a type of artificial intelligence that is capable of generating content including text, video, and images through learning patterns from preexisting data. Generative AI systems train on a variety of datasets including text, code, images, molecules, music, or multiple models acquired from existing resources, user input and online content. In response to a user's prompt, command or question, the system (such as ChatGPT (CHAT Generative Pre-trained Transformer or Anthropic) generates new content that is similar to the training data. General purpose AI models such as ChatGPT are built on top of large language models (LLM) that can recognize, analyze, translate, summarize and generate language. Generative AI models combine large numbers of datasets through iterative processing allowing them to learn new information and gather insights. The large amount of collected datasets (hundreds of billions of words in some cases), once refined, is used to create new data or content. Generative AI tools often use input data to train their model, therefore potentially exposing confidential data, violating contract terms and/or privacy legislation, and placing SMDHU at risk of litigation or causing damage to the organization.

Machine learning encompasses the use of algorithms and statistical models to enable systems and applications to perform tasks without the need for explicit computer programming. This branch of AI focuses on the imitation of the way in which humans learn where the goal of such applications is the gradual improvement in accuracy. Examples of applications that use machine learning are vast, with programs assisting with predictive analytics, data analysis and decision support systems. In several applications, both generative AI and machine learning intersect.

This Policy and Procedure provides the parameters for the use of generative AI and machine learning at SMDHU.

Purpose

"To establish a responsible governance framework for the ethical, transparent, and accountable use of artificial intelligence (AI), including generative AI and machine learning, across the Simcoe Muskoka District Health Unit (SMDHU). This policy supports innovation in public health programming while ensuring compliance with privacy legislation, safeguarding data integrity, and promoting equity, safety, and effectiveness in AI application development and use."

Legislative Authority

Provincial:

Bill 194, Strengthening Cyber Security and Building Trust in the Public Sector Act, 2024

Municipal Freedom of Information and Protection of Privacy Act

Ontario Health Equity Guideline, 2018

Ontario's Trustworthy Artificial Intelligence (AI) Framework

Federal:

Government of Canada Guide on the use of Generative AI

Canada Copyright Act

Government of Canada Responsible use of artificial intelligence (AI)

The Artificial Intelligence and Data Act (AIDA)

Policy Definitions and Interpretation

Artificial Intelligence (AI): A machine-based system that, for explicit or implicit objectives, infers from input to generate outputs—such as predictions, content, recommendations, or decisions—that can influence physical or virtual environments.

Generative AI: A class of AI that creates new content (e.g., text, images, audio, or code) based on patterns learned from training datasets. Common examples include ChatGPT and image generators like DALL·E.

Machine Learning (ML): A subset of AI focused on developing algorithms that improve performance or accuracy as they are exposed to more data, without being explicitly programmed.

Large Language Model (LLM): A type of generative AI trained on massive text datasets that can understand and produce human-like language. LLMs power tools like ChatGPT and other conversational assistants.

Personal Information (PI): Any recorded or unrecorded information about an identifiable individual, including demographic, employment, or personal identifiers.

Personal Health Information: Any information about an individual's physical or mental health, including health services received, that can identify the individual, as governed by PHIPA.

Algorithmic Bias: Systematic and unfair discrimination in AI outputs resulting from biased data, assumptions, or models, which can disproportionately impact certain groups.

Explainability: The degree to which an AI system's decision-making process can be understood by humans, particularly non-technical stakeholders.

Privacy Impact Assessment (PIA): A structured process used to assess and mitigate privacy risks associated with projects that involve the use or handling of personal information.

Policy

Employees that use artificial intelligence, generative AI and machine learning applications must adhere to applicable SMDHU policies and procedures and core principles. The data used in generative AI prompts is used to train (teach) the Generative AI. Generative AI tools and machine learning application are inherently biased, as they are limited by the objectivity of the data consumed. Therefore, it is important to understand the limitations of generative AI and machine learning applications. Unless otherwise guided by a SMDHU approved data sharing agreement, sharing data containing confidential or identifiable information including personal information, personal health information and proprietary information with generative AI (e.g., ChatGPT) and machine learning applications is prohibited in accordance with SMDHU policy and Ontario privacy legislation. When using a generative chatbot or machine learning application, SMDHU staff are to be aware of the terms of service and adhere to SMDHU policy and procedures.

Procedures

1. Prior to using generative AI and machine learning applications for SMDHU business, SMDHU staff shall evaluate the use of AI application against Appendix A whereby all criteria are addressed prior to commencing use of generative AI and machine learning applications.
2. Following review of Appendix A evaluation criteria and where all criteria are met/adhered to, if generative AI or machine learning is used for the purpose of SMDHU business, staff are required to validate the AI-generated content using other means of factual validation (e.g., peer reviewed research, SMDHU HealthSTATS, etc.) prior to use in SMDHU operations.
3. While SMDHU may use generative AI or machine learning for the purposes of question or query (e.g., "What is the best Excel formula for…"), generative AI shall not be used for the purposes of data analysis by SMDHU staff where personal or confidential information is a part of the dataset unless otherwise approved by the Privacy Officer and guided by a Privacy Impact Assessment. Adding to or uploading personal or confidential data to generative AI or machine learning platforms is prohibited unless otherwise approved by SMDHU for such uses.
4. The use of generative AI or machine learning shall be cited by staff in accordance with appropriate citation requirements (e.g., APA, MLA) if used for the purposes of SMDHU work. While peer reviewed literature shall be used as a first option for citing ideas, concepts and research, if AI or machine learning is used, it shall be cited. An example of proper citation includes:
    a. *OpenAI's ChatGPT, Response to "Explain to general audiences the possible causes and effects of climate change." ChatGPT, OpenAI, February 15, 2023, https://chatgpt.pro/*
5. "Prior to initiating the development of any AI application (internally or through an external vendor) for SMDHU business purposes, submitting staff must:

    a) Complete Appendix B (Evaluation Criteria for AI Development)

    b) Submit the completed proposal to the Departmental VP in addition to the **SMDHU Chief Innovation Officer and Manager of IT**. The **SMDHU Chief Innovation Officer** will:

        i. Convene a project team which includes the SMDHU Privacy Officer and representatives from IT, and relevant program areas contingent on the project scope.

Oversee a structured project lifecycle with the project managers that includes privacy, ethical, and security assessments in accordance with Appendix B

Coordinate with the Executive Committee for final approval where required

c) Ensure that AI-generated outputs are validated using reliable sources (e.g., peer-reviewed research, SMDHU HealthSTATS)

d) Include a risk assessment, governance plan, and ongoing monitoring strategy in the AI project charter, privacy impact assessment and any other supporting documentation.

e) Prohibit the use of AI for any personal or confidential data analysis unless an approved privacy and threat risk assessment has been completed.

6. In the event of a privacy breach within a generative AI application, SMDHU staff shall follow the requirements of IM0108 Personal Information Including Personal Health Information Privacy - Privacy Breach

Related Policies

IMO108 Information Privacy and Security Incident Management Policy,

IMO119 Information Privacy and Security Assessment,

IMO101 Personal Health Information Privacy Policy

PP0103 Public Health Research Planning, Approval and Conduct,

IM0110 Records Management,

TQ0101 Electronic Monitoring and Acceptable Use Policy.

Related Forms

Appendix

Appendix A
Evaluation criteria for the use of open-sourced AI applications (AI applications available for public use) for the purposes of SMDHU business

Appendix B
Evaluation criteria for the development of AI applications via internal development or development through an external vendor for the purposes of SMDHU business.

FAQ for Staff

Final Approval Signature: _____

Review/Revision History:

Appendix A Evaluation criteria for the use of open-sourced AI applications (AI applications available for public use) for the purposes of SMDHU business.

If any questions are responded to as NO, do not use application.

Evaluation Criteria Questions	YES/NO
The use of AI application adheres to SMDHU's obligations under the Municipal Freedom of Information and Protection of Privacy Act, the Personal Health Information and Protection of Privacy Act, and relevant SMDHU policies and procedures.	
The AI application provides documentation on its sources of data, analysis/output and bias, data use/retention, security policy (e.g., encryption), policies on content restriction and limitations.	
The use of the AI application and its solutions will be evaluated against established research and best-practice methods (e.g., AI results compared to results from peer-reviewed studies and/or sources).	
The use of the AI application adheres to SMDHU IT policies and procedures.	
Development of applications within the AI application adheres to all evaluation criteria provided within Appendix B.	

Appendix B: Evaluation criteria for the development of AI applications via internal development or development through an external vendor for the purposes of SMDHU business – Evaluation criteria and action to be included within project charter and/or approval briefing note to SMDHU Executive.

Evaluation Criteria	Action	YES/NO	If NO, provide mitigation strategies
Privacy: Data containing personal information, personal health information, SMDHU proprietary information or information combined with other data that may identify SMDHU populations must be protected	The use of Generative AI adheres to SMDHUs obligations under the Municipal Freedom of Information and Protection of Privacy Act, the Personal Health Information and Protection of Privacy Act, and relevant SMDHU policies and procedures. Use of personal health information shall be approved through the SMDHU Privacy Impact Assessment and be approved by the Privacy Officer.		
Fairness and Bias Detection: The AI application must treat SMDHU staff and clients in a fair and equitable manner without discrimination. Data is unbiased in order to produce predictions that are fair and equitable.	The uses of the application are represented in testing data. Results have been evaluated for bias based on testing plan in association with project charter/outline.		
Explainability, disclosure and transparency: Decisions or predictions are explainable. A human can explain and understand how the model arrived at its decision. Where AI is used for public-facing applications, the public is made aware via disclosure.	Disclosure is made available to the user in disclosing the use of the AI application. The AI model is clear in the manner in which it makes a decision and can be explained in nontechnical terms		

Safety and Security: The system is secure, safe to use, and robust. The model does not harm the users or SMDHU.	SMDHU IT has analyzed the application for the purposes of adherence to SMDHU IT policy specific to safety and security.		

Evaluation Criteria	**Action**	**YES/NO**	**If NO, provide mitigation strategies**
Validity and Reliability: The data and the model are monitored.	A monitoring and evaluation plan is in place to ensure validity and reliability of the application.		
Accountability: A person or team is assigned to be responsible for its use and results including any decisions that are made as a result of the model.	The project plan and application outline provide clarity in association with roles and responsibilities for application use and operability.		
Governance: AI and data governance is developed, updated as required and enforced.	Use of the application adheres to SMDHU policy, procedures and by-laws especially with regards to technology, information and privacy.		
AI application serves as a tool for the public good and individuals have access to alternative processes should they want to use them.	An alternative means to provide the service should SMDHU staff or a client chose not to engage with AI is provided.		