

2024 Women in AI Canada Hackathon Challenge

WAI Canada Hackathon is a virtual collaboration event between **September 28 and October 26, 2024, with the final event happening on October 28, 2024**. We invite diverse talents and teams to harness the power of AI in crafting solutions that address social issues or market gaps, in line with the World Economic Forum's vision for the [Fourth Industrial Revolution for the Earth](#) or [commitment to Diversity, Equity, and Inclusion \(DEI\)](#). Teams can choose to develop a conceptual program, product prototype, or business model.

Theme 1:

"Data-Driven Innovation for a Sustainable and Equitable Future"

We challenge you to use AI to tackle some of the most pressing problems facing humanity and the planet, such as climate change, poverty, health, education, gender equality, and social justice. You will have the opportunity to learn from experts, mentors, and peers, as well as showcase your innovative ideas to a panel of judges and potential investors. Join us in this exciting journey of creating a positive impact with AI!

Theme 2:

"Rebuilding Trust: Harnessing AI to Foster Global Cooperation and Security"

Aligned with the [World Economic Forum's focus](#), this hackathon challenges you to harness AI to enhance transparency and accountability across societal, political, and international domains. Tackle critical issues such as cybersecurity, misinformation, and socio-political instability. Engage with AI ethics and global diplomacy experts, and showcase your solutions to a panel of judges. This event provides a platform for you to actively participate in creating a safer, more cooperative global community through innovative technology.

How to participate?

- The Call for Abstract Submission is open till September 13, 2024.
- You are required to submit your application, with the details of your group of size 1-3, along with the abstract of the problem and solution you are submitting.
- Your solution should be plagiarism-free and also adhere to the theme of this

year's Challenge - World Economic Forum's vision for the [Fourth Industrial Revolution for the Earth](#) or [commitment to Diversity, Equity, and Inclusion \(DEI\)](#)

- If we require you to change your problem or solution, we will contact you via email before the Challenge opens formally on September 28, 2024.
- You will be paired with a mentor, to help you guide throughout the development of your proposed solution.
- The Challenge period will be between September 28 - October 26, 2024, where you will attend weekly mentoring sessions and relevant technical workshops.
- On October 28, 2024, there will be a final Hackathon Ceremony where you will submit and present your use case and solutions to the Jury Members

The solution will be evaluated based on the following:

- Addressing a relevant problem that is impactful
- Innovation
- AI Element
- Responsible AI
- Feasibility of execution and scalability
- Must be plagiarism-free

Read the [Terms and Conditions](#)

Sample Ways to Prepare a Use Case for the Hackathon

Challenges for Theme 1

1. Healthcare: Precision Medicine for Underrepresented Communities

Problem Statement:

Healthcare disparities persist in underrepresented communities, leading to unequal health outcomes and access to personalized treatments.

Potential Datasets:

<https://physionet.org/about/database/>

<https://mimic.mit.edu/>

Potential Solutions:

Approach #1 (Traditional AI):

Solution: Community Health Risk Prediction Model

Description: Develop an AI model that predicts health risks specific to underrepresented communities, enabling proactive and personalized healthcare interventions.

Technical Aspects: Utilize machine learning to analyze community-specific health data and predict risk factors, incorporating socio-economic and environmental variables.

Approach #2 (Generative AI):

Solution: Tailored Treatment Plan Generator

Description: Create a generative AI system that designs personalized treatment plans based on the genetic, lifestyle, and environmental factors of individuals in underrepresented communities.

Technical Aspects: Use generative models to simulate and generate personalized treatment recommendations, continuously refined with real-time patient feedback and outcomes.

2. Education: Enhancing Learning for Students with Special Needs

Problem Statement:

Students with special needs often struggle to find educational resources that cater to their unique learning requirements, resulting in a lack of personalized educational support.

Potential Datasets:

<https://ies.ed.gov/ncser/>

<https://data.ed.gov/dataset?topics=special-education>

Potential Solutions:

Approach #1 (Traditional AI):

Solution: AI-Powered Individualized Education Program (IEP) Assistant

Description: Develop an AI assistant that helps educators create and manage personalized education plans for students with special needs.

Technical Aspects: Utilize machine learning to analyze student performance data and recommend tailored educational strategies and resources.

Approach #2 (Generative AI):

Solution: Interactive Learning Content Generator

Description: Create a generative AI tool that produces interactive and personalized learning content for students with special needs, adapting to their progress and feedback.

Technical Aspects: Use generative models to design customized educational materials that respond dynamically to student interactions and learning pace.

3. Retail: Sustainable Consumer Behavior Analytics

Problem Statement:

Retailers face challenges in promoting sustainable consumer behaviour, as many customers lack awareness or motivation to choose eco-friendly products.

Potential Datasets:

<https://www.openlca.org/>

Potential Solutions:

Approach #1 (Traditional AI):

Solution: Sustainable Purchase Recommendation Engine

Description: Develop an AI engine that recommends eco-friendly products to customers based on their purchasing history and preferences.

Technical Aspects: Use machine learning to analyze transaction data and predict customer preferences, highlighting sustainable alternatives.

Approach #2 (Generative AI):

Solution: Personalized Eco-Incentive Campaigns

Description: Create a generative AI system that designs personalized marketing campaigns to incentivize sustainable purchasing behavior among consumers.

Technical Aspects: Utilize generative models to craft customized promotional messages and incentives, tailored to individual consumer profiles and behaviors.

4. Legal: AI for Justice and Fairness

Problem Statement:

Biases in legal processes and documentation can lead to unfair treatment and outcomes, especially for marginalized groups.

Potential Datasets:

<https://www.courtlistener.com/>

Potential Solutions:**Approach #1 (Traditional AI):****Solution: Bias Detection in Legal Documents**

Description: Develop an AI system that scans legal documents to identify and highlight potential biases, ensuring fair legal processes.

Technical Aspects: Implement natural language processing (NLP) and machine learning to analyze legal texts and detect biased language or unfair patterns.

Approach #2 (Generative AI):**Solution: Fairness-Aware Legal Document Generator**

Description: Create a generative AI tool that drafts legal documents with built-in fairness checks, ensuring equitable language and provisions.

Technical Aspects: Use generative models to produce legal documents that comply with fairness guidelines, dynamically adapting based on context and feedback.

5. Transportation: Inclusive Public Transit Solutions

Problem Statement:

Public transportation systems often fail to adequately serve individuals with disabilities, leading to accessibility challenges.

Potential Datasets:

<https://www.cts.umn.edu/programs/ao>

<https://www.bts.gov/ntad>

<https://citygeographics.org/>

Potential Solutions:

Approach #1 (Traditional AI):

Solution: Accessibility Optimization Platform

Description: Develop an AI platform that analyzes public transportation data to improve accessibility for individuals with disabilities.

Technical Aspects: Use machine learning to analyze patterns in public transport usage, identifying and addressing accessibility gaps and optimizing services for better inclusion.

Approach #2 (Generative AI):

Solution: Dynamic Route Generation System

Description: Create a generative AI system that dynamically generates public transport routes and schedules optimized for accessibility and minimal congestion.

Technical Aspects: Implement generative models to simulate and create optimized transport routes and schedules, considering real-time data and user feedback to enhance accessibility.

6. Education: AI-Enhanced Tools for Dyslexia

Problem Statement:

Students with dyslexia face significant challenges in reading and writing, often requiring specialized educational tools to support their learning.

Potential Datasets:

<https://oercommons.org/>

<https://data.uis.unesco.org/>

Potential Solutions:

Approach #1 (Traditional AI):

Solution: Dyslexia-Friendly Reading Assistant

Description: Develop an AI-powered reading assistant that helps students with dyslexia by providing real-time reading support and adaptive learning resources.

Technical Aspects: Use natural language processing (NLP) to analyze text and offer reading assistance, such as text-to-speech and highlighting.

Approach #2 (Generative AI):**Solution: Interactive Dyslexia Learning Platform**

Description: Create a generative AI platform that generates personalized learning activities and exercises tailored to the needs of students with dyslexia.

Technical Aspects: Utilize generative models to design interactive and engaging educational content, adapting to the student's progress and feedback.

7. Finance Challenge: AI-Enhanced Microfinance Credit Scoring for Underserved Populations**Problem Statement:**

Access to credit remains a significant barrier for individuals in underserved communities, particularly in regions where traditional banking infrastructure is limited or non-existent. These individuals often lack the credit history required by traditional financial institutions, making it difficult for them to obtain loans for personal or business purposes.

Potential Datasets:

<https://databank.worldbank.org/source/global-financial-inclusion>

<https://www.worldbank.org/en/publication/globalindex>

Potential Solutions:**Approach #1 (Traditional AI):****Solution: Alternative Data Credit Scoring Model**

Description: Develop an AI system that uses alternative data sources to assess the creditworthiness of individuals in underserved communities. This system would analyze non-traditional data points such as mobile phone usage, utility payments, and other digital footprints to create reliable credit scores.

Technical Aspects: Use machine learning to process and analyze large datasets of non-traditional financial behaviours. The model would employ classification algorithms to predict credit risk and determine creditworthiness based on patterns less apparent in traditional models.

Approach #2 (Generative AI):

Solution: Simulated Credit Scenario Generator

Description: Create a generative AI tool that simulates various financial scenarios for individuals without extensive credit histories. This tool would help financial institutions understand how potential borrowers might handle different credit situations, such as emergency expenses or business investments.

Technical Aspects: Utilize generative adversarial networks (GANs) to generate synthetic financial scenarios based on limited user data. This system would help in predicting how these individuals manage debt, payments, and financial stress, providing a dynamic assessment of their creditworthiness.

Challenges for Theme 2

Theme:

In an era where trust in institutions, governance, and international relations is waning, we challenge you to leverage the power of AI to forge stronger bonds of trust across borders. Tackle key issues such as cybersecurity, misinformation, political instability, and social inequalities using innovative AI solutions. Participants will have the unique opportunity to collaborate with experts, mentors, and peers, learning from leaders in AI ethics, data security, and global diplomacy. Showcase your pioneering solutions to a panel of judges and connect with potential investors. Join us in this pivotal endeavour to use technology to restore trust and build a more secure and cooperative global community.

1. Economic Resilience and Growth Challenge: AI for Crisis Management and Economic Recovery

Problem Statement:

Economic downturns and crises disproportionately affect vulnerable populations. AI can play a critical role in identifying risks and recovery options to rebuild trust in economic systems.

Potential Datasets:

[Economic indicators from the International Monetary Fund \(IMF\)](#)

[Crisis response transaction data from humanitarian organizations](#)

Potential Solutions:

Approach #1 (Traditional AI):

Solution: Economic Resilience Predictor

Description: Develop an AI model that predicts economic vulnerabilities and suggests interventions for crisis mitigation.

Technical Aspects: Use time series forecasting and anomaly detection techniques to identify potential economic downturns and recovery mechanisms.

Approach #2 (Generative AI):

Solution: Scenario Planning Tool

Description: Create a generative AI tool that models economic crisis scenarios and recovery strategies, helping policymakers visualize potential outcomes and plan accordingly.

Technical Aspects: Employ generative adversarial networks (GANs) to simulate various economic scenarios based on current data trends.

2. Social Cohesion Challenge: AI for Bridging Cultural Divides

Problem Statement:

Cultural misunderstandings and conflicts erode trust within and between communities. AI can be used to foster understanding and social cohesion.

Potential Datasets:

[Social media data on cultural interactions on Kaggle](#)

[Demographic data from census bureaus](#)

Potential Solutions:

Approach #1 (Traditional AI):

Solution: Cultural Insight Analyzer

Description: Develop an AI system that analyzes cultural trends and conflicts to propose solutions for enhancing social cohesion.

Technical Aspects: Use natural language processing (NLP) and sentiment analysis to understand and bridge cultural sentiments and misunderstandings.

Approach #2 (Generative AI):

Solution: Interactive Cultural Simulation

Description: Create an AI-driven simulation that allows users to experience and interact within different cultural contexts virtually.

Technical Aspects: Utilize generative AI to create dynamic, interactive scenarios that reflect diverse cultural interactions and outcomes.

3. Environmental Sustainability Challenge: AI for Sustainable Resource Management**Problem Statement:**

Mismanagement of natural resources leads to environmental degradation, undermining trust in our ability to protect our planet.

Potential Datasets:

[Satellite imagery of land use](#)

[Environmental impact data from governmental and non-governmental organizations](#)

Potential Solutions:**Approach #1 (Traditional AI):**

Solution: Resource Optimization Model

Description: Develop an AI system that optimizes the use of natural resources to minimize waste and maximize sustainability.

Technical Aspects: Implement machine learning algorithms for efficient resource allocation based on predictive modeling of resource depletion rates.

Approach #2 (Generative AI):

Solution: Virtual Ecosystem Modeling

Description: Use AI to generate virtual models of ecosystems that can predict the impact of different environmental management strategies.

Technical Aspects: Use generative models to create detailed simulations of ecosystems under various management scenarios to forecast long-term sustainability outcomes.

For any questions email us at: hackathon-canada@womeninai.co