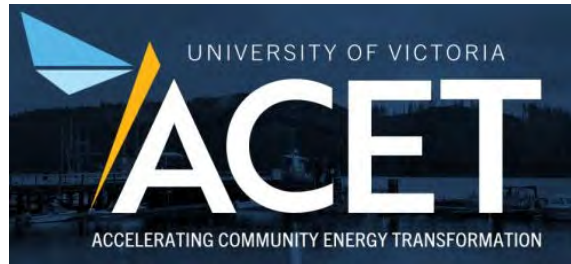


# A Review of AI Techniques And Their Application to Stakeholder Engagement



Impact Assessment  
Agency of Canada

Agence d'évaluation  
d'impact du Canada



**Ridhee Gupta**

*Master's Student, University of Victoria  
Canada*

*LinkedIn: [Ridhee Gupta](#)*



# Why

## Canada opportunities concerns

Published: October 2021

Despite the  
Mines and  
process in a

While this  
responsible  
Court nulli  
Resources s

The comm  
neighbouri  
consultatio  
consultatio  
express the



## al

# ment?

E) is to advance equality with respect to sex, sexual  
clusion of people of all genders, including women, in  
nder equality, WAGE is the Government of Canada  
or the advancement of equality goals in all  
he Impact Assessment process helps unpack,  
tity and other factors and their intersections. Factors  
ndigenous origin or identity, age, sexual orientation,

## 7 and

g-

ial  
ie

ies to

le areas, the following issues should be

ous groups with respect to decision-making,  
is norms, values, and rights. What are the

nd negative impacts on diverse people be  
ure that the needs of diverse people are

eflected? Do diverse populations get a fair  
ne disproportionately affected by the  
Will historical gaps and perceptions prevent

**e manner:** Have people and particularly  
views and perspectives of these people help

What will be done to ensure that the Project  
rse groups and individuals?

ss the identified needs of various people? Do  
ving equality and not perpetuating norms and

the business have equality, anti-harassment  
or other relevant policies in place? Is the current workforce diverse? Is there a history of abuses or  
infractions as it relates to social justice issues? Is training provided on issues related to equality,  
diversity and inclusion to ensure that the implementation team has **the skill, knowledge, and  
commitment to positive change** to bridge gaps in a lasting manner?

## Text

To ca  
exer

Rega

Why

"Sub

The l

.

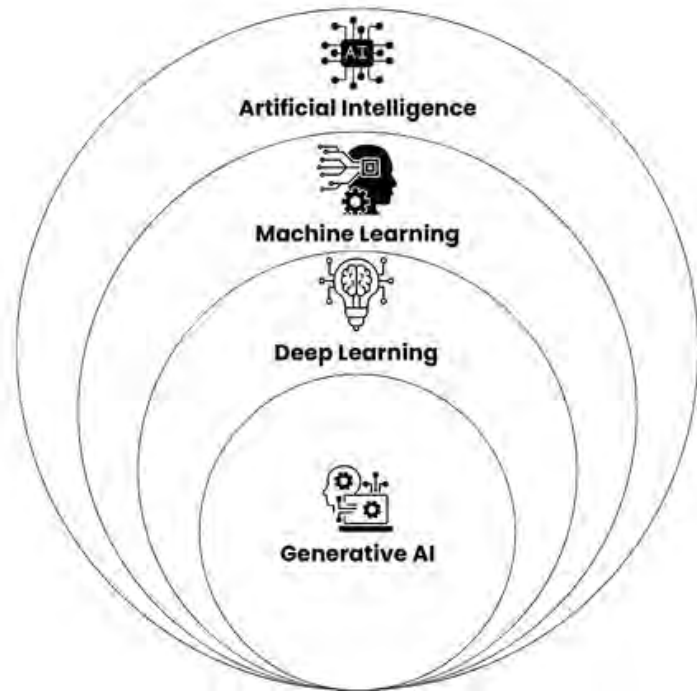
Please share why Wildlife and Wild  
summary of potential effects to th

Please preserve the trees at this loca  
project. Please do not use animal tes  
water-on-laboratory-fishPlease only  
Coyotes program with the animal w  
lethal ways to manage wildlife. There  
<https://thefurbearers.com/download/fbclid=IwAR1fP2wOYQKbWREX0E5Q>  
<https://www.humanesociety.org/resources/humanely-scare-away-canada-geese>  
<https://www.peta.org/wp-content/uploads/2021/06/humane-goose-control-pdf.pdf>  
<https://www.humanesociety.org/resources/what-do-about-canada-geese>  
<https://margosupplies.com/ca-en/>

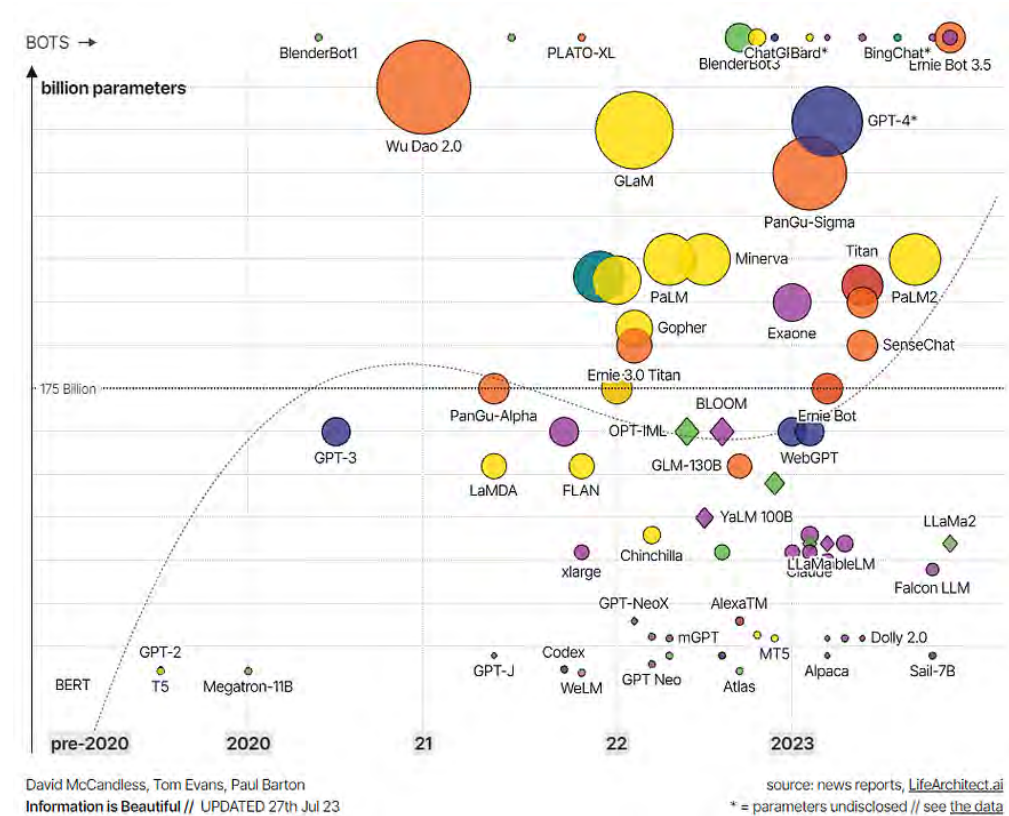
Please share why Avian Resources  
potential effects to this valued co

Please preserve the trees at this loca  
project. Please do not use animal tes  
water-on-laboratory-fishPlease only  
Coyotes program with the animal w  
lethal ways to manage wildlife. There  
<https://thefurbearers.com/download/fbclid=IwAR1fP2wOYQKbWREX0E5Q>  
<https://www.humanesociety.org/resources/humanely-scare-away-canada-geese>  
<https://www.canadageese.org/nlcontrol.html>  
<https://www.peta.org/wp-content/uploads/2021/06/humane-goose-control-pdf.pdf>  
<https://www.humanesociety.org/resources/what-do-about-canada-geese>  
This company makes non lethal products.  
<https://margosupplies.com/ca-en/>

# What are Language Models?



Source: Shrivastava, 2024



Source: Cabello, 2023

# AI Methods

Method	What it does
Topic Modelling	Groups comments by theme
Named Entity Recognition	Identifies who/what is mentioned
Sentiment Analysis	Detects tone and feelings
Coreference Resolution	Connects references across text



# The Matrix

Aim to map AI methods to common engagement processes to understand which methods are the most versatile, which processes are the most complex, and where do key opportunities to leverage AI lie.

- Additional AI Methods:
  - Text Classification
  - Machine Translation
  - Text Summarization
  - Question Answering
- Engagement Processes:
  - Identify & categorize stakeholders
  - Identify communications channels
  - Evaluate concerns raised in engagement
  - Evaluate responses to concerns given in engagement
- What we wanted to answer:
  - Can the given AI method be applied to the given step? +1
  - Are there real-world examples where the given AI method has been applied to the given step (most likely from a different field)? +1
  - Are there any risks associated with using this method on this step? -1

	Identify + Categorize Stakeholders
Text Classification	2
Named Entity Recognition	2
Machine Translation	0
Text Summarization	0
Question Answering	0
Sentiment Analysis	0
Coreference Resolution	1
Language Modelling	1
Topic Modelling	0

AI x Engagement Matrix

	Communication Channels Used
<b>Text Classification</b>	1
<b>Named Entity Recognition</b>	0
<b>Machine Translation</b>	0
<b>Text Summarization</b>	0
<b>Question Answering</b>	0
<b>Sentiment Analysis</b>	0
<b>Coreference Resolution</b>	1
<b>Language Modelling</b>	2
<b>Topic Modelling</b>	0

AI x Engagement Matrix

	Concerns Raised
Text Classification	0
Named Entity Recognition	0
Machine Translation	0
Text Summarization	2
Question Answering	1
Sentiment Analysis	2
Coreference Resolution	0
Language Modelling	1
Topic Modelling	2

AI x Engagement Matrix



	Responses to Concerns
Text Classification	0
Named Entity Recognition	0
Machine Translation	0
Text Summarization	2
Question Answering	2
Sentiment Analysis	1
Coreference Resolution	0
Language Modelling	2
Topic Modelling	1

AI x Engagement Matrix

	Identify + Categorize Stakeholders	Communication Channels Used	Concerns Raised	Responses to Concerns
Text Classification	2	1	0	0
Named Entity Recognition	2	0	0	0
Machine Translation	0	0	0	0
Text Summarization	0	0	2	2
Question Answering	0	0	1	2
Sentiment Analysis	0	0	2	1
Coreference Resolution	1	1	0	0
Language Modelling	1	2	1	2
Topic Modelling	0	1	2	1

## AI x Engagement Matrix

# Risks

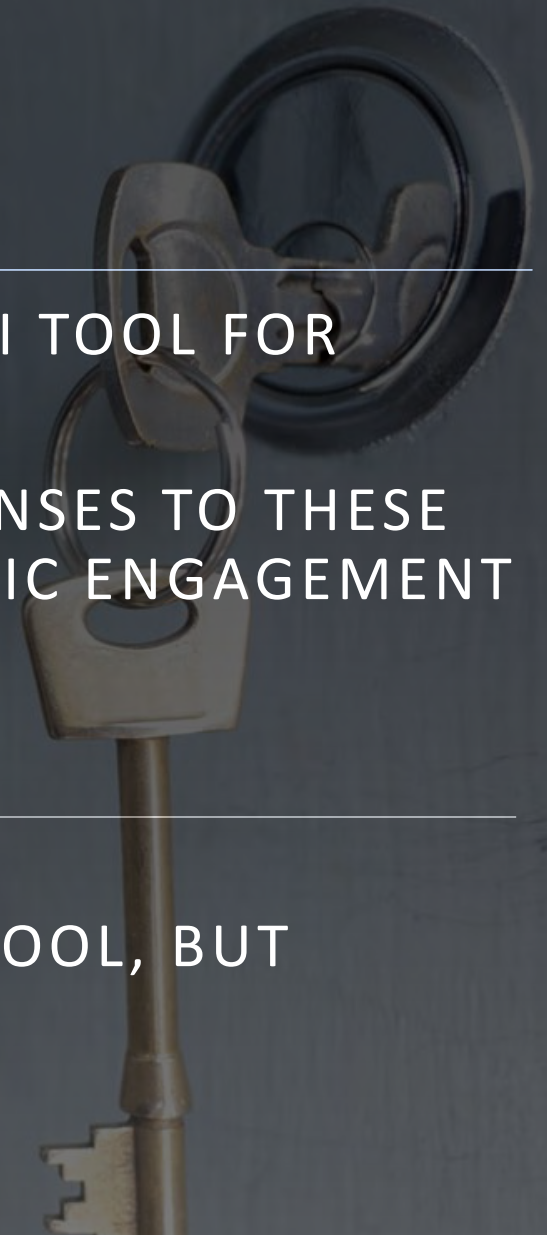
---

- Models can perpetuate social, cultural, and linguistic biases present in training data and has to do with an imbalance in training data
- Models struggle with long documents – they tend to truncate input or lose meaning across sections. Most prominent in language models
- LLMs also can generate plausible but false content (hallucinations)
- Large models (like GPT) can be slow to respond, renders them unsuitable for real-time public engagement
- There is a risk of generating toxic, biased, or harmful content without strong moderation
- Models often fail to handle complex and multi-step logic, or conditional statements. Eg: “I support this project, but I am concerned about its impact on biodiversity.”

# Key Takeaways!

---

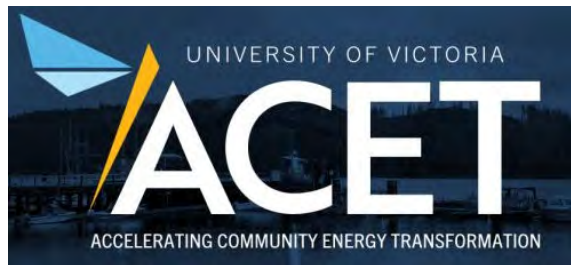
- LANGUAGE MODELLING IS THE MOST VERSATILE AI TOOL FOR PUBLIC ENGAGEMENT PROCESSES
  - EVALUATING STAKEHOLDER CONCERNS AND RESPONSES TO THESE CONCERNS ARE THE MOST COMPLEX TASKS IN PUBLIC ENGAGEMENT THAT REQUIRE A VARIETY OF TOOLS
    - 5 out of the 9 we evaluated
- 
- AI MUST BE USED STRATEGICALLY: IT IS A USEFUL TOOL, BUT CANNOT REPLACE HUMAN JUDGEMENT





# Let's continue the conversation!

Message me your questions or comments in the IAIA25 app.



Impact Assessment  
Agency of Canada

Agence d'évaluation  
d'impact du Canada

**Ridhee Gupta**

*Master's Student, University of Victoria  
Canada*

LinkedIn: [Ridhee Gupta](#)

[ridheeg@uvic.ca](mailto:ridheeg@uvic.ca)

**#iaia25**