# Behind the Algorithm: Al in Media

Gr. 7-12 Activity Write Up



# **Behind the Algorithm: Al in Media**

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#### **About Actua**

Actua is creating a Canada where every child has the skills and confidence they need to achieve their full potential. As a leading science, technology, engineering and mathematics (STEM) outreach organization, Actua includes over 40 universities and colleges, engaging 500,000 youth in 600 communities each year. For 25 years, Actua has focused on identifying and removing the barriers for entry into STEM and now have national programs dedicated to engaging Indigenous youth, girls and young women, Black youth, those facing economic barriers and youth in Northern and remote communities. For more information, please visit us online at www.actua.ca and on social media: Instagram, LinkedIn, Facebook and YouTube! For more information, please visit us online at <a href="https://www.actua.ca">www.actua.ca</a> and on social media: <a href="https://www.actua.ca">Twitter</a>, <a href="https://www.actua.ca">Facebook</a>, <a href="https://www.actua.ca">Instagram</a> and <a href="https://www.actua.ca">YouTube!</a>.



### **Behind the Algorithm: Al in Media**

#### **Activity Summary**

Participants will explore how AI is affecting the media landscape, including how they recommend and generate content. Participants will delve into algorithms and how they function in our daily lives. They will then learn about generative AI to understand how it creates images, text, and other media forms, and how these systems operate. They will assess the implications of AI-generated media, discussing potential biases and ethical concerns.

Developed by Actua, 2025.

Delivery Environment	Activity Duration	Intended Audience	Tech
In-Person	1 Hour and 20 Minutes	Grades 7-12 (Ages 12-18)	Certain activities will require a laptop/tablet. With modifications, it is possible to run this entire lesson in pairs/groups. Facilitators should have access to a laptop, projector, speakers, and a screen or blank wall to project onto.  Projector Speaker Screen/Blank Wall
			<ul> <li>Laptops/Tablets</li> </ul>



#### **Achievement Goals**

#### **Learning Goals**

#### Following this activity, participants will:

- **Understand** how algorithms function to process and recommend content.
- **Explore** how generative AI creates "new" media, such as text and images.
- **Evaluate** the implications of Al's influence on media, and the ethical considerations involved.

#### **Success Criteria**

#### Following this activity, participants can express:

- I can explain how algorithms process and recommend media based on patterns and data.
- I can create Al-generated media using accessible generative tools.
- I can understand potential biases and ethical concerns in AI-generated media.

#### **Logistics (Timing, Group Sizing, Materials)**

Section Title	Time	<b>Group Size</b>	Materials
Opening Hook	5 minutes	Whole	Facilitators
		Group	Al in Media Activity Slide
			Deck (Appendix C)
Section 1:	20	Small	Facilitators
Exploring	minutes	Groups	Al in Media Activity Slide
Algorithms		(3-4)	Deck (Appendix C)
			Per Group
			Algorithm Design Template
			(Appendix C)
			Writing Utensils



Section Title	Time	<b>Group Size</b>	Materials
Section 2:	20	Whole	Facilitators
Generative Al	minutes	Group	Al in Media Activity Slide
and Content			Deck (Appendix C)
Creation			Computer Device with
			Internet Access
			<u>ChatGPT</u> (Account Optional)
			<u>KidGenAl</u> (Account Required)
			Conversations with ChatGPT
			(Appendix C)
Section 3:	15 minutes	Whole	Facilitators
The Ethics of		Group	Al in Media Activity Slide
Generative Al			Deck (Appendix C)
Reflection &	10 minutes	Whole	Facilitators
Debrief		Group	Al in Media Activity Slide
			Deck (Appendix C)
			Al Discussion Questions
			(Appendix C)

#### **Safety Considerations**

Safety considerations have been provided below to support safety during this activity, however they are not necessarily comprehensive. It is important that you review the activity and your delivery environment to determine any additional safety considerations that you should be implementing for the delivery of these activities.

#### **Emotional Safety - Generative AI**

 This activity involves discussions about Generative AI, including its use in creating content like images. Some participants may feel strongly about the ethical implications of AI using creative works for training data without



consent. Facilitators should encourage open, respectful discussions and acknowledge all perspectives. If participants express concerns, validate their feelings and provide space for them to share their thoughts.

#### **Curriculum Links**

This activity aligns with these components found in the <u>UNESCO AI Competency</u>
Framework for Students:

#### **Human-Centered Mindset:** Human Agency

• Learners are expected to be able to recognize that Al is human-led and that the decisions of the Al creators influence how Al systems impact human rights, human-Al interaction, and their own lives and societies (p. 29-30).

#### Ethics of AI: Embodied Ethics

Learners are expected to be able to develop a basic understanding of the
ethical issues around AI, and the potential impact of AI on human rights, social
justice, inclusion, equity and climate change within their local context and
with regard to their personal lives. They will understand, and internalize the
following key ethical principles, and will translate these in their reflective
practices and uses of AI tools in their lives and learning: Do no harm,
Proportionality, Nondiscrimination, Sustainability, Human determination, and
Transparency (p. 31-32).

#### Ethics of Al: Safe and Responsible Use

• Learners are expected to be able to carry out responsible Al practices in compliance with ethical principles and locally applicable regulations. They are expected to be conscious of the risks of disclosing data privacy and take measures to ensure that their data are collected, used, shared, archived and deleted only with their deliberate and informed consent. They are also expected to be conscious of typical Al incidents and the specific risks of certain Al systems, and be able to protect their own safety and that of their peers when using Al (p. 39-41).



#### Al Techniques and Applications: Al Foundations

 Learners are expected to develop basic knowledge, understanding and skills on Al, particularly with respect to data and algorithms, and understand the importance of the interdisciplinary foundational knowledge required for gradually deepening understanding of data and algorithms. They should also be able to connect conceptual knowledge on Al with their activities in society and daily life, concretizing a human-centred mindset and ethical principles through an understanding of how Al works and how Al interacts with humans (p. 32-34).

#### **Activity Procedure**

#### To Do in Advance

SECTION	PREPARATION
General	Think ahead and be ready to adapt:
	<ul> <li>Determine your delivery method and leverage</li> </ul>
	ideas from the delivery recommendations and
	adaptations sections.
	<ul> <li>While estimated times are provided, it will be</li> </ul>
	helpful to think about how much time you
	would like to spend on different activities and
	discussions.
	<ul> <li>While group sizes (individual, pairs, groups) are</li> </ul>
	suggested, many activities are flexible for
	whatever will work in your classroom.
	<ul><li>Prepare for the content:</li></ul>
	<ul> <li>Have answers in mind to share with</li> </ul>
	participants for the various reflection questions
	asked.



SECTION	PREPARATION
	<ul> <li>Examine the provided materials to determine if they are suitable for your participants.</li> <li>Equipment:         <ul> <li>Ensure device, screen and projector are set up.</li> </ul> </li> </ul>
Section 1: Exploring Algorithms	Ensure you have enough Algorithm Design Templates (Appendix C) for the classroom.
Section 2: Generative Al and Content Creation	<ul> <li>Set up either ChatGPT (account optional) and/or KidGenAl (account required) for demonstration.         Familiarize yourself with the interface and think of some example prompts to try out with participants.         <ul> <li>Note: Both ChatGPT and/or KidGenAl are to be used by the facilitator, not the participants. This is to ensure that the prompts used remain safe and appropriate</li> </ul> </li> <li>If you do not have internet access, familiarize yourself with the Conversations with ChatGPT resource (Appendix C) and prepare to display it to participants.</li> </ul>
Debrief	Prepare and cut out the questions in the AI Discussion     Questions Activity Page (Appendix C).

#### **Opening Hook**

- 1. Begin the discussion by inviting participants to reflect on their own media habits with a few guiding questions:
  - a. "Does anyone use a streaming service like YouTube, Netflix, or Spotify?
  - **b.** "Have you ever noticed how after watching or listening to a few things, it starts to recommend content that is similar?"



- **c.** "Any thoughts on how that's possible?" (Slides 3-4 of the AI in Media Activity Slide Deck)
  - i. Behind all of these recommendations is **an algorithm**.
  - ii. An algorithm is a set of rules or instructions a computer follows to make decisions, like figuring out what content you'll enjoy based on your past choices.
  - iii. For content recommendation, algorithms may look at data like time spent listening to genres of music, the amount of articles clicked about a specific topic, or what influencers are followed on social media.

#### **Section 1: Exploring Algorithms**

- 1. Arrange participants into groups of 3 to 4. Explain that each group will be designing an algorithm (a set of instructions). Each group will be assigned a perspective to design their algorithms from.
  - Perspectives can be things like a travel agency, product line, social media, etc.
  - **b.** Groups can also come up with their own perspectives!
- 2. Distribute an Algorithm Design Template (*Appendix C*) and writing utensil to each group and explain that their algorithm should answer the following questions.
  - **a.** What is the **goal** of this algorithm?
    - i. Is it to get more customers, keep users on a platform, or gather information?
  - **b.** What **data** is this algorithm looking for? (3-5 things)
    - i. It could be looking for things like travel interests, age, food, location, etc.
  - **c.** What **rules** will this algorithm follow?
    - i. For example: If a user skips music videos, stop recommending.
  - **d. Who** is this algorithm for?
    - i. If it's for youth, the algorithm may focus on entertaining content.
    - ii. If it's for teachers, it may prioritize educational content.



- **3.** Give participants 5-10 minutes to create their algorithms. Once completed, share the personas they will be "studying" with their algorithms. Let participants know that a persona is a made-up character used for testing things like data collection.
  - a. **Persona 1:** This person has recently looked up information on hiking trails, unique architectural styles, and how to pack light for different climates. On social media, they engage with posts about local cuisine, interesting historical facts, and DIY projects for home improvement. Their bookmarks include articles on urban design, photography tips, and eco-friendly travel gear.
  - b. Persona 2: This person has been exploring tutorials for woodworking, experimenting with digital art apps, and browsing beginner coding courses. On their social feeds, you'll find interactions with tech influencers, artsy memes, and posts about minimalism. They read articles about blending tech-savviness with practical skills and occasionally dive into sustainability hacks for their projects.
  - c. Persona 3: This person has been learning about music production, checking out reviews of electric bikes, and exploring recipes for international dishes. Their social media likes include posts about concert announcements, local events, and quirky science experiments. They have a tendency to jump between interests, always eager to explore something new.
- 4. Using Slides 7-9 of the AI in Media Activity Slide Deck, give the groups a few minutes to gather information from each persona based on their algorithms, and fill out their sheet.
- 5. As a group, review what information each algorithm gathered (Slide 10).

  Compare the information, highlighting how some may overlap, where other details may be completely unique to one algorithm!
  - a. This is a good time to introduce the topic of **bias**. Each group designed the algorithm from a different perspective, which introduced a bias



towards helping that company/persona gather the information it needs to succeed.

- 6. Briefly discuss what each algorithm would recommend based on each persona (Slide 11). Refer to some examples below.
  - a. For Persona 1, a travel agency may recommend a travel package that includes multiple locations with iconic architecture over two weeks.
  - **b.** For Persona 2, a product line may recommend woodworking tools, an electronics kit, or even a subscription to a site like Skillshare.
  - **c.** For Persona 3, a social media platform may recommend musicians for them to follow, and upcoming events in their area!

#### Section 2: Generative AI and Content Creation

- 1. Introduce Artificial Intelligence ask if participants can explain what it is.
  - a. Artificial Intelligence (AI) is the study of creating computer programs that can mimic different parts of human intelligence. This area of study focuses on recreating human abilities that are normally almost impossible for computers, such as decision-making, speech recognition, or translating languages.
  - **b.** You can think of AI as a set of constantly adjusting algorithms. Instead of focusing on one goal, it can change its "purpose" to do different things!
- 2. Do you have any examples of where you might have noticed AI in media, such as social media?
  - a. TikTok, Instagram, Snapchat
- 3. Some AI is designed for tasks in specific fields, like medicine or engineering, while others are designed as a more general, multi-purpose tool. This type of AI is often referred to as Generative AI (or Gen AI).
- 4. There are two main types (or models) of Gen Al. (Slides 15-20)
  - a. Generative Pre-trained Transformers (GPTs) are a type of language model used for text-based generation. These models do not "understand" language the same way we do - they recognize patterns and correlations (connections)! (e.g., the word blue often goes with sky).



- b. Generative Adversarial Networks (GANs) are a visual-based model used for creating custom images and videos. They are composed of two components - a generator and a validator. The generator creates an image based on a prompt, and the validator approves or denies it, and the process repeats!
- 5. Most Generative AI starts with a prompt. This is a line written by the user that functions as a request for the AI to create something. It then considers the information it has access to and creates a response! (Slide 21)
- 6. As a group, demonstrate <a href="ChatGPT">ChatGPT</a> (account optional) and/or <a href="KidGenAl">KidGenAl</a> (account required). Work with participants to create some unique prompts and check what outcomes you get. Prompts can include writing poetry, asking STEM related questions, or just having it tell a joke!
  - a. **Example prompts:** "Create a poem about...", "Write a song about...", "Explain quantum physics, but pretend you're talking to a 5 year old.", "Come up with names for...", "Tell me a joke for youth related to STEM."
  - b. Note: Both ChatGPT and/or KidGenAI are to be used by the facilitator, not the participants. This is to ensure that the prompts used remain safe and appropriate.
- 7. Using Slides 22-36 of the AI in Media Activity Slide Deck, explain to participants that they are going to be shown some real pictures and AI generated images, and they have to guess which one is which!

#### Section 3: The Ethics of Generative Al

- 1. Using Slides 39-41 of the AI in Media Activity Slide Deck, explain that just like how people need to practice and study to get better at a skill, Generative AI "learns" by studying enormous amounts of data, called datasets. The more information it has, the more accurate and efficient it will be when creating content.
  - a. A dataset is a collection of organized information. The difference between any collection of data and a defined dataset is that computers can better interpret a dataset and use it. Datasets are often organized in ways that make the most sense for computer programs to utilize it.



- 2. Ask participants: "Where do you think these datasets come from?"
  - a. Datasets can come from almost anywhere, which introduces an important question who decides what data is used, and how?
  - b. Larger GenAl companies like OpenAl (ChatGPT/Dall-E) or even Google (Gemini) are not always open about where they source their massive datasets from, leading many people to feel as though they are "stealing" content (like original images and writing posted to the internet).
- 3. Ask participants: "Can anyone guess why it may be risky not knowing where the AI is getting its information from?"
  - a. There is the concern that the AI may be learning from biased information. For example, if an AI is trained on information only written by someone who dislikes oranges, that AI may be biased against anything to do with the fruit, without any warning to the user!
- 4. Using Slides 42-51 of the AI in Media Activity Slide Deck, discuss some potential benefits and concerns for Gen AI from different perspectives. These perspectives can include:

#### a. News Outlets / Journalists

- i. <u>Benefit:</u> Can help with faster distribution of information to a wider audience.
- ii. <u>Concern:</u> Al may be studying stories, articles, and information without compensation. They may also unintentionally be introducing bias, depending on the tool used.
- iii. Note: Bill C-18, or the Online News Act, is a Canadian Legislation that came into effect December 2023. Its primary purpose is to ensure that major tech companies, such as Google and Meta, negotiate fair compensation with Canadian news outlets for using their news content on their platforms. As AI continues to develop and improve, more regulations and guidelines will likely continue to emerge and adapt alongside it.



#### b. Education

- Benefit: Can help with ideation, formatting, creating lesson plans, or creating personalized resources for students.
- ii. <u>Concern:</u> Students/Educators may begin to rely too much on Al, potentially reducing critical thinking or creativity.

#### c. Healthcare

- i. <u>Benefit</u>: Can assist medical practitioners by analyzing data, streamlining admin tasks, or summarizing patient notes.
- ii. <u>Concern:</u> Privacy of patient data and how it is used, as well as risk of errors in decision-making/summaries are two major concerns.

#### **Reflection & Debrief**

- 1. Split participants into five groups. Explain that each group is going to draw two questions from Discussion Questions AI (Appendix C), which they will discuss as a group for the next five minutes.
- 2. After five minutes, bring the class back together and spend ten minutes discussing the questions they received, and their answers.
- **3.** Debrief the learning experience:
  - a. How do algorithms shape the media you interact with?
  - **b.** How could artificial intelligence influence media in the future?
  - c. What steps can we take to ensure AI is used responsibly?
- **4.** Discuss the different careers listed in *Appendix A: Career & Mentor Connections*.
- **5.** Encourage participants to share their learnings from this activity with their friends and family.



#### **Delivery Adaptations**

How might you adapt the time, space, materials, group sizes, or instructions to make this activity more approachable or more challenging? **Modifications** are ways to make the activity more accessible, **extensions** are ways to make the activity last longer or more challenging.

#### **Modifications**

#### **SECTION 1: EXPLORING ALGORITHMS**

 To shorten the activity, create one algorithm as a class instead of several within groups.

#### **SECTION 2: GENERATIVE AI AND CONTENT CREATION**

• If you don't have internet access, use the Conversations with ChatGPT supporting resource (*Appendix C*) instead of live-demonstrating it.

#### **Extensions**

#### **SECTION 2: GENERATIVE AI AND CONTENT CREATION**

 Facilitators can work with participants to generate images in <u>KidGenAl</u>. Go around taking suggestions, and check what it comes up with!

#### **SECTION 3: THE ETHICS OF GENERATIVE AI**

 Have participants develop a set of guidelines for using AI in the world of media and content creation.



#### **References & Gratitude**

- Bartels, M. (2024). How to Tell If a Photo Is an Al-Generated Fake. Scientific American. scientificamerican.com/article/how-to-tell-if-a-photo-is-an-ai-generated-fake/
- Center for News, Technology & Innovation. (2024). Artificial Intelligence in Journalism.

  Center for News, Technology & Innovation.

  innovating.news/article/ai-in-journalism/
- Government of Canada, Department of Justice, Electronic Communications. (2023).

  Charter Statement Bill C-18: An Act respecting online communications platforms that make news content available to persons in Canada.

  justice.gc.ca/eng/csj-sjc/pl/charter-charte/c18\_1.html
- Davenport, T., Mittal, N. (2022) How Generative AI Is Changing Creative Work. Harvard Business Review. <a href="https://doi.org/2022/11/how-generative-ai-is-changing-creative-work">https://doi.org/2022/11/how-generative-ai-is-changing-creative-work</a>
- Ismail, K. (2018). Al vs. Algorithms: What's the Difference? CMSWire.com.

  <a href="mailto:cmswire.com/information-management/ai-vs-algorithms-whats-the-difference/">cmswire.com/information-management/ai-vs-algorithms-whats-the-difference/</a>

  <a href="mailto:e/">e/</a>
- Kamali, N., Nakamura, K., Chatzimparmpas, A., Hullman, J., & Groh, M. (2024). How to Distinguish Al-Generated Images from Authentic Photographs. arXiv.org. arxiv.org/abs/2406.08651
- Lawton, G. (2024). What is Gen AI? Generative AI explained. Search Enterprise AI. techtarget.com/searchenterpriseai/definition/generative-AI
- Morrison, S. (2023). The tricky truth about how generative AI uses your data. Vox. <a href="https://www.com/technology/2023/7/27/23808499/ai-openai-google-meta-data-privacy-nope">www.com/technology/2023/7/27/23808499/ai-openai-google-meta-data-privacy-nope</a>
- United Nations Educational, Scientific and Cultural Organization. (2024). UNESCO AI framework: Competency levels. <u>unesdoc.unesco.org/ark:/48223/pf0000391105</u>
- Simon, F. (2024) Artificial Intelligence in the News: How AI Retools, Rationalizes, and Reshapes Journalism and the Public Arena. Columbia Journalism Review.

  <u>cjr.org/tow\_center\_reports/artificial-intelligence-in-the-news.php</u>



#### **Appendices**

#### **Appendix A: Career & Mentor Connections**

#### PROGRAMMER / DEVELOPER

A developer is a computer programmer whose work includes creating, testing
and programming apps for computers, mobile phones, and tablets.
 Developers typically work in teams, and think of ideas for the general public, or
for a specific customer need. Developers understand how to use coding
languages and may work closely with graphic designers and data scientists.

#### RESEARCHER

A researcher can specialize in different areas of study, such as Science,
 Computer Science and Math. They conduct their own research, collect and analyze data in order to solve problems or explore issues. Researchers also review relevant credible and reliable sources related to their own research.



#### **Appendix B: Background Information**

#### **ALGORITHM**

At its core, an **algorithm is a set of instructions** about how to complete a task. For example, "Take a slice of bread out of the bag, put bread in the toaster, turn the toaster on, remove toast from the toaster, eat toast" is an algorithm for how to make and eat toast. Recipes and instruction manuals are great examples of algorithms that we can find in our everyday life.

In computer science, an algorithm is a set of instructions that tells a computer how to complete a task. In a computer, algorithms can be reduced to logical operations like AND, OR, and NOT.

Many algorithms nowadays use a technology called machine learning. These algorithms have the ability to rewrite themselves as they work. They are like a chef that finds a recipe, cooks it and then tastes it, tweaking the recipe just a little each time.

#### **Computer Encoding and Decoding**

Computers are excellent encoders and decoders. Using the programming written for them by programmers and software engineers, computers can "learn" how to interpret information they receive, process it, and return it to a user in a meaningful way.

Computers handle input and generate output. An input is information we give a computer; output is the information a computer gives us back. A simple example is to think of a calculator. Let's say we wanted to calculate the answer to 243 times 342. We give the calculator input data: the number 243, the operation "multiply", the number 342, and then the command to calculate (pressing the equal sign). The calculator is programmed to turn those inputs into binary code, run the calculation we requested, determine the answer, convert the answer to numbers we can read (instead of strings of binary), and display the answer. The output (the answer; 83,106) displayed on the calculator's screen.



#### Examples comparing Input vs. Output:

- A great example of the differences between input and output is digital
  photography. The camera receives a visual input, translates and stores the
  information for later transfer to a computer in binary, which can then be
  presented as a visual output we view on screen. This visual output is presented
  as pixels on the screen that we are able to edit and manipulate. The story gets
  even more exciting when taking videos!
- In another example, when geologists use seismic mapping to study features below the Earth's surface computers receive an input of seismic waves from the sensors. The computer converts this information to binary code, and then converts that code into displays of graphical information to the survey technician (the output).

Computers encode inputs to binary data (for example, when we type a letter on a keyboard the computer codes that letter with ASCII) and then decodes binary data to outputs that are easy for us to interpret based on what their programs tell them to do. In this activity, we'll explore a little more about how computers can encode and decode different types of inputs and outputs.

#### ARTIFICIAL INTELLIGENCE

**Artificial intelligence (AI)** is a branch of Computer Science that deals with a machine's ability to simulate intelligent behaviour. This includes cognitive functions we associate with human minds, such as perceiving, reasoning, learning, and adapting.

Al is becoming increasingly vital in our lives. From digital assistants, GPS navigation, and autonomous vehicles to tools like Siri/Google Home and generative Al tools (e.g., OpenAl's Chat GPT), its impact on our daily lives is growing. Al plays a crucial role in various aspects of work, enhancing efficiency, and taking on hazardous or monotonous tasks. As Al applications grow, discussions on Al ethics and responsible practices are increasingly important.

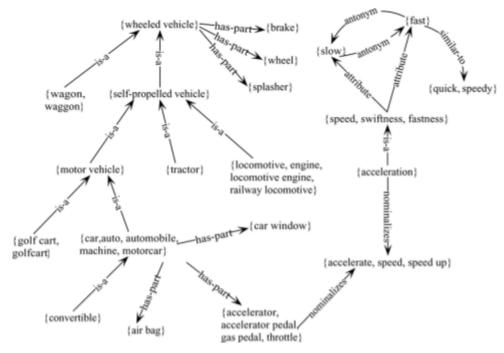


#### **Semantic Networks**

Semantic networks are a type of knowledge representation structure. In the context of AI, they are organised maps of information that help computers understand and process things more effectively, similar to how we organise our thoughts to make sense of the world around us.

Semantic networks are organised using two components:

- Nodes (Representing Entities or Concepts): Known as the basic building blocks, each node acts as a data point showing a specific idea or concept. For example, if we are talking about vehicles, we might have nodes for "wheeled vehicle", "brake", "wheel", "wagon", and "tractor"
- Edges (Representing Relationships): Edges in a semantic network connect knowledge, showing how various ideas and concepts are related. They represent actions, associations, or attributes that link the nodes together. For example, we can have an edge to show that "brake" and "wheel" are parts of a "vehicle". We might also connect "wagon" and "tractor" as a type of "vehicle".



Navigli, R. (2009). An excerpt of the WordNet semantic network. [Journal]. In ResearchGate.

researchgate.net/publication/220566219\_Word\_Sense\_Disambiguation\_A\_Survey



Semantic networks are able to show complex ideas in a simple manner. It is similar to a structured map of knowledge that AI systems can use to make sense of things. If we ask a digital assistant (e.g., Siri / Alexa) a question such as, "What are other ways to say fast?", it uses semantic networks to understand what you're asking, find the relevant information (in this case, quick and speed can also mean fast), and give you the right answer.

It is important that our semantic networks can deal with ambiguity and handle very large knowledge bases. Uncertainty happens when a node or relationship can mean different things, and making a network bigger to fit more knowledge can make it more complicated (for example, accelerator, accelerator pedal, gas pedal, throttle are all the same part but different words).

#### **General and Narrow Al**

Narrow AI (or specific intelligence) refers to an AI or intelligence that can only do one particular task. A chess-playing computer, a Spotify playlist generator, or a calculator are all examples of specific intelligence. They can do one task very well, but if you asked a chess-playing computer to drive you to work, it would probably end in an accident. Even an advanced computer like IBM's Watson is an example of narrow AI; it is only good at one thing, beating humans at Jeopardy.

General intelligence or general AI is intelligence that is more human and much broader. Something with general intelligence could use its intelligence to solve any problem it was faced with. A human being can play Jeopardy, but can also drive themselves home and cook themselves dinner. General intelligence can learn from their environment and experiences and apply those lessons to different environments and experiences.

Today, we have only created machines capable of narrow intelligence. However, many scientists and engineers are working on creating general intelligence for future use.



#### **General and Narrow Al**

There are enormous ethical implications for the creation of AI. Below is a short list with brief explainers.

- **Unemployment**: As Al, computers, and robots become better and doing jobs that only humans were traditionally able to do, more and more people may find themselves without work. How will we address the lack of jobs that could result from this? Is it ethical for a machine to take the job of a human?
- Privacy: As AI improves technologies like facial recognition, governments and
  other organizations can track and store more data about people, their
  movement and their habits. Is it ethical for a government to have this data
  about people?
- Artificial Negative Behaviours: All is not perfect, they are only as good as the programmers who created them and the data they are fed. All can be "taught" behaviours and thoughts by programmers, even those who do not do it intentionally, introducing an "unconscious" bias. Furthermore, All can still make mistakes, as they are constantly learning. Who is responsible for an Al-driven car that kills a passenger or pedestrian in a crash?
- Unintended Consequences: Programmers are already beginning to notice the AI they create arrive at conclusions they never expected or intended. These create the possibility of unintended consequences, most famously explored in the Terminator movies. Though it is generally thought to be unlikely, no one really knows where AI could go or what they might do or think as they become more and more complex.
- Al Rights: If a robot is arguably as intelligent as a human, what rights do they deserve? Should they be considered autonomous, can they be owned, can they own objects, and should they be paid? Al creates a huge, uncharted ocean of questions about rights, autonomy and the very definition of "alive."



#### **Appendix C: Additional Resources**

#### **GENERAL**

Activity Slide Deck

• Al in Media Activity Slide Deck

#### **SECTION 1: EXPLORING ALGORITHMS**

Activity Page(s)

• Algorithm Design Template (refer below)

#### **SECTION 2: GENERATIVE AI AND CONTENT CREATION**

#### Webpages

- ChatGPT (Account Optional)
- <u>KidGenAl</u> (Account Required)

Supporting Resources

Conversations with ChatGPT (refer below)

#### **DEBRIEF**

Activity Page(s)

• Al Discussion Questions (refer below)





# **Behind the Algorithm: Al in Media**

Algorithm Design	
(1) Algorithm For	
(2) What is the algorithm's goal?	6
Examples: Get more customers, keep users on a platform, purchase an item, etc.	
(3) What data is the algorithm looking for? (3 - 5 things)	
Examples: Travel interests, age, food preferences, location, etc.	

(4) What rules will the algorithm follow?	五季五
Example: If a user skips music, stop recommending	宝宝
(5) Who is the algorithm for?	
Examples: Educators, youth, parents, etc. Prioritize recommending content based on this group!	
Personas	
Persona 1	
What does your algorithm notice?	



Persona 2	
What does your algorithm notice?	
Persona 3	
What does your algorithm notice?	



Artificial Intelligence

# **Conversations with ChatGPT**

Behind the Algorithm: Al in Media

CCTUC

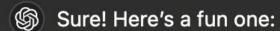
Youth · STEM · Innovation
Jeunesse · STIM · Innovation



Tell me a joke for kids!







Why did the bicycle fall over?

Because it was two-tired! 🔏 😄







Can you tell me how many litres of water are in the arctic ocean?

The Arctic Ocean contains approximately 18.75 million cubic kilometers of water.

To express this in liters, we can use the fact that one cubic kilometer equals one trillion (1,000,000,000,000) liters. Therefore, the Arctic Ocean holds about 18.75 quintillion liters of water, which is 18,750,000,000,000,000,000 liters.

Sources (i)

Wow, thats a lot. How many pools would that fill?!

The Arctic Ocean could fill approximately 7.5 trillion Olympic-sized swimming pools! 
That's a lot of water! [>]



Can you write a short song explaining the acronym for STEAM?



#### **STEAM Song**

(To the tune of "Twinkle, Twinkle, Little Star")



S is for Science, it helps us explore,
T is for Technology, opening doors.
E is for Engineering, building so strong,
A is for Arts, where creativity belongs.
M is for Math, the logic we need,
Together in STEAM, we all can succeed!





Suggest three creative names for a robot that helps clean your room.

- \$
- Here are three fun and creative names for a room-cleaning robot:
- 1. TidyTron 3000 Because it sounds high-tech and ready to tackle any mess!
- Dusty Buster A playful name for a bot that keeps dust and dirt away.
- 3. **Neat-o-Matic** Perfect for a robot that makes cleaning automatic and neat!

Let me know which one's your favorite!



Explain how rainbows form, but pretend you're talking to a 5-year-old.

\$ Alright, imagine this: the sky is like a giant piece of paper, and the sun is a big flashlight. When it rains, teeny-tiny water drops hang out in the air like little glass balls.

Now, when sunlight shines through those water drops, something magical happens! The light bends and splits into all its colors—red, orange, yellow, green, blue, indigo, and violet. It's like the water drops are tiny prisms, breaking the sunlight apart into a beautiful rainbow.

So, a rainbow is like nature's way of painting the sky after the rain! 🌈 🦙







# **Behind the Algorithm: Al in Media**

# **AI Discussion Questions**

What do you think makes AI different from other types of technology you use every day?
What are some tasks you think AI would struggle with, and why?
If AI can recognize patterns in data, do you think it can ever truly be "creative"? Why or why not?
How would you improve GenAI's responses? What kind of data or training might it need?
Can you think of a profession or hobby where Generative AI could be helpful? How?
If you could create your own AI tool, what would it be designed to do? Why?
If AI creates a news article or a piece of art, who should get the credit for it: the AI, its developers, or the person who wrote the prompt? Why?
What are some risks of relying on AI for important tasks? How could these risks be reduced?
Do you think AI can ever truly understand human emotions? Why or why not?
What do you think happens to jobs when AI can do tasks faster or cheaper than people? How could we prepare for this?