What is Artificial Intelligence?

Grade 8-12 Activity Write Up

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DAY OF AI

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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 www.actua.ca and on social media: Instagram, Facebook, LinkedIn, TikTok and YouTube!

What is Artificial Intelligence?

Activity Summary

In this activity, participants will learn what algorithms are and how they help machines follow step-by-step instructions to complete tasks. Through engaging, unplugged activities, they'll also be introduced to Artificial Intelligence (AI), spot examples of AI in the world around them, then envision (and even pitch) their own AI system.

Developed by Actua, 2025.

Delivery Environment	Activity Duration	Intended Audience	Tech
In-Person	90 minutes	Grades 8-12 (*Ages 13-18*)	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 • Laptops/Tablets

Achievement Goals

Learning Goals

Following this activity, participants will:

- **Understand** that an algorithm is a series of coded steps.
- **Recognize** how AI is used in everyday tools and technology.
- **Describe** how AI can process data to perform different tasks.

Success Criteria

Following this activity, participants can express:

- **I can explain** how many everyday routines are algorithms and involve a series of steps.
- **I can identify** examples of AI in my daily life.
- **I can explain** how AI can take in information and act based on what it learns or senses.

Logistics (Timing, Group Sizing, Materials)

Section Title	Time	Group Size	Materials
Opening Hook	15 minutes	*Whole Group*	**Facilitators** • What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*)
Section 1: Digital Dishes	25 minutes	*Small Groups (3) or Pairs*	**Facilitators** • What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*) **Per Individual** • Recipe to Algorithm - Activity Page (*Appendix C*) • Writing Utensil • Computer Device or Tablet with Internet Access (optional)
Section 2: All About Intelligence	15 minutes	*Whole Group*	**Facilitators** • What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*) • Artificial intelligence explained i... (KI-Campus, 2:23s)

Section Title	Time	Group Size	Materials
Section 3: My AI System	25 minutes	*Small Groups (3) or Pairs*	**Facilitators** • What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*) **Per Small Group or Pair** • My AI System Blueprint (*Appendix C*) • Writing Utensil • Computer Device or Tablet with Internet Access (optional)
Reflection & Debrief	10 minutes	*Whole Group*	**Per Small Group or Pair** • My AI Robot Blueprint (*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.

Electronic and Technology Use

- Participants are to be advised about safe practices for handling electronic devices such as laptops/computers. This includes guidelines for avoiding liquids, using devices in safe locations to prevent accidental falls and damage.
- Facilitators should check cords and electronic components for damage before distributing them to participants.

Emotional Safety

- Facilitators should understand that participants have different lived experiences and prior knowledge about AI safety, AI, and digital citizenship. This activity may involve or lead to discussions of sensitive topics, such as ethical implications of AI. Facilitators should encourage open, respectful

discussions and acknowledge all perspectives. Facilitators should always keep the participants' emotional safety in mind in these discussions, and defer to training from their institution and training received.

Online Safety

Some components of this activity require the use of devices connected to the internet.

- Facilitators should review the provided videos and read/explore provided websites and materials to determine if they are suitable for your participants.
- Where applicable, facilitators should remind participants to stay on task and only use the links provided within this activity.
- Facilitators should also model and encourage appropriate online behaviour by all participants in the group (e.g., using chat boxes to answer and ask questions, using positive and encouraging language, using devices for the purpose of the task).

Curriculum Links

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

Human-Centered Mindset: Human Agency

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

AI Techniques and Applications: AI Foundations

- Learners are expected to develop basic knowledge, understanding and skills on AI, 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 AI with their activities in society

and daily life, concretizing a human-centred mindset and ethical principles through an understanding of how AI works and how AI interacts with humans (p. 32-34).

This activity can be connected to the following subject areas:

Science

- Understanding the role of science and technology in society and daily life.
- Applying the design processes to develop solutions to problems.

Community Connections

Community connections are suggestions from Actua, grounded in our approach, on how facilitators can adapt the activity to reflect the strengths, interests, and priorities of the community where or with whom it is delivered. Consider the following guiding questions to adapt the activity in meaningful ways:

- **Consult with community:** Are there local organizations, Knowledge Keepers, or community members who could contribute insight or context to this topic?
- **Draw on youth experience:** How can you give participants opportunities to share, reflect on, and apply how this learning is relevant to them or their community? Invite participants to identify what knowledge, who, and where they already learn from.
- **Integrate local examples:** How can you tailor this activity to local or regional interests, industries, or community priorities (e.g. land and environment, health, technologies)?

Activity Procedure

To Do in Advance

SECTION	PREPARATION

General	• **Think ahead and be ready to adapt:**
	  ◦ Determine your **delivery method** and leverage ideas from the delivery recommendations and adaptations sections.
	  ◦ While **estimated times** are provided, it will be helpful to think about how much time you would like to spend on different activities and discussions.
	  ◦ While **group sizes** (individual, pairs, groups) are suggested, many activities are flexible for whatever will work in your classroom.
	• **Prepare for the content:**
	  ◦ Have **answers in mind** to share with participants for the various reflection questions asked.
	  ◦ Examine the provided materials to determine if they are **suitable** for your participants.
	• **Equipment:**
	  ◦ Ensure device, screen and projector are set up.

Section 1: Digital Dishes	• Prepare printed copies of the Recipe to Algorithm - Activity Page (*Appendix C*) and have a sample ready to guide participants. • If possible, ask participants to think of or bring in a recipe they want to follow.

SECTION	PREPARATION
Section 3: My AI System	• Prepare printed copies of the My AI System Blueprint - Activity Page (*Appendix C*) and have a sample ready to guide participants.

Opening Hook

1. Display the What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*). Let participants know that we're going to explore how computers can use information and follow instructions to do things.
2. Ask participants: "What information do you notice or use every day to help you make choices?"
    a. Possible responses: colours of traffic lights, the weather or temperature, ingredients for a meal, sounds around you (e.g. alarms or music), messages or notifications, what is happening in a game or video.
3. Explain to participants that just like you notice things in your day to understand what's happening and make decisions, computers also need **information** to understand the world and decide what to do. This information is called **data**.
    a. Data can be anything a computer or machine can use to understand the world and make decisions, like numbers, pictures, words, or sounds.
    b. Some examples of how computers use data include:
        i. Pictures: A computer can observe photos or images to recognize objects, like identifying animals or reading signs.
        ii. Numbers: A computer can use numbers like the temperature outside or the score in a game to figure out what to do next.
        iii. Words: A computer can read text messages, instructions, or stories to understand what's being said.
4. Now that we know computers need data to understand the world, let's think about **how they actually use that information**. Just like you follow steps to

complete a task in your day, computers follow step-by-step instructions to get things done.

5. Ask participants: “Can you think of something you do each day, step by step?”
    a. Possible responses: Baking pastries, cooking a meal, morning and bedtime routines, logging into an account or app.
6. Share an example of a routine activity which requires a series of steps (e.g., creating a post on social media).
    a. Facilitators can reenact each step and describe what they are doing.
    b. Explain that this is a **sequence** or a step-by-step instructions that we follow in order to complete a task. This is what we call an **algorithm** - a set of instructions or steps that we follow to complete a task. The sequence of steps we do in our daily routines is an algorithm.
7. Explain that computers or devices also follow algorithms. They need clear, step-by-step instructions to know what to do, just like you follow your bedtime routine or a recipe. And when computers use algorithms, they also use the data they have (i.e. the numbers, pictures, words, or sounds) to decide what actions to take.Without algorithms, computers wouldn’t know how to work or solve problems. Some examples include:
    a. Playing a Game: When you press a button, the computer decides what happens next and shows it on the screen.
    b. Understanding What You Say: The computer listens to your voice, figures out the words, and turns them into text or actions.
    c. Showing a Video: The computer follows steps to load the video, play the pictures in order, and play sound.
8. Highlight that computers are very literal - they follow directions exactly as written, so the instructions must be clear and specific. Demonstrate how computers follow algorithms through the following scenario:
    a. The facilitator will act as the “computer”. Let participants know their task is to help the “computer” get from one point of the space to another by giving a series of step-by-step instructions (or an algorithm).
    b. As a group, have participants call out one instruction at a time.

i. If participants say “Take a step forward,” “Turn left,” etc., the “computer” will carry out each instruction precisely as given - nothing more, nothing less.
ii. If instructions are vague, incorrect, or missing details (e.g., “Go to the door”), respond as a computer would; either do nothing, perform the wrong action, or stop moving. This demonstrates what happens when a computer receives unclear instructions.

c. Introduce the idea of **debugging**. It is what we do when we find and fix these mistakes in the steps or instructions. Just like when you helped fix the order of growing a plant, computer programmers debug their code (algorithms for computers) to make sure the computer follows the right step.
d. Let the group try again, now more aware of the need to be specific (e.g., “Take 3 small steps forward,” “Turn 90 degrees to your right”).
e. Repeat as needed until the group gives a successful algorithm that gets the facilitator to the door.

Section 1: Digital Dishes

1. Inform participants that they will now create an algorithm based on a recipe of their choice.
    a. Just like a computer follows a set of instructions to complete a task, a recipe gives us a list of ingredients, these are the **inputs**, or the information and materials we need. The recipe also provides a clear sequence of steps to follow in order to make a dish, this is the **output**, or the final result of following those instructions correctly.
2. Ask participants: “If we had unclear recipe instructions or missing ingredients, what do you think might happen?”
    a. We might get a dish that doesn't taste as intended or doesn't come together properly!
    b. We can debug this by rewriting a vague instruction, adjusting a measurement, or adding a missing step to help everything work as intended.

3. Display a simple cake recipe from the What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*)
    a. Ask participants: “How could we represent this recipe as an algorithm?”
    b. Introduce the idea of a **flowchart**. Show a simple example where each step of the recipe is put in a box, connected by arrows.
        i. Circles are used to show the start and end.
        ii. Rectangles are used for regular steps (like ‘Mix ingredients’ or ‘Preheat oven’).
        iii. Diamonds are for decisions (like ‘Is the cake fully baked?’). This shape helps us show a yes/no path.
4. Distribute the Recipe to Algorithm - Activity Page (*Appendix C*) and invite participants to think of a familiar recipe they would like to convert into an algorithm that a “computer” can follow.
    a. Invite them to think about some recipes they know well. These could be dishes they’ve made before, family favourites, or simple snacks. Ask them to list a few of these recipes on their worksheet and then choose one recipe to focus on for this activity.
        i. ***Note:*** If computer devices are available, encourage participants to search for simple recipes online to use for their algorithm.
    b. Have participants write down all the ingredients needed for their chosen recipe, as well as any tools or utensils required, such as a knife, bowl, or oven. Encourage them to be as detailed as possible, since these are the inputs that a “computer” would need to start the process.
    c. Ask participants to list all the actions involved in making the recipe, such as chopping, mixing, preheating, baking, or serving. These are the step-by-step instructions the “computer” will follow.
    d. Guide participants to create a flowchart that visually represents the sequence of steps in their recipe. They can use boxes to show each action and arrows to indicate the order in which the steps happen.
5. Pair up participants or form small groups and have them exchange their recipe flowcharts. Each participant should follow the other’s instructions

exactly, acting as a “computer” executing the code by reading the steps aloud or acting them out.

   a. Ask them to note any parts that are unclear, confusing, or missing information. Did the “computer” end up with the expected outcome (i.e. the correct dish or process)? If not, where did the instructions break down?
   b. If time permits, encourage participants to revise and debug the algorithms to improve clarity and accuracy.

Section 2: All About Intelligence

1. Ask participants: "What comes to mind when you think of the word ‘artificial’?"
   a. Explain that **artificial** means something that people make, instead of it growing or happening on its own in nature.
2. Share the slide showing the different examples of what is artificial (made by people) and natural (happens on its own)
   a. Polar Bear
      i. The toy bear is artificial because it’s made from fabric and stuffing.
      ii. The real polar bear is natural because it lives in the wild and was not made by people.
   b. Vanilla
      i. Natural vanilla comes from a plant.
      ii. Artificial vanilla is made by people in a lab. Point out the product label that says “artificial” to help make the connection.
3. Ask participants: “Are computers natural?”
   a. No. They are made by people. Humans give computers algorithms so they can perform tasks.
4. Ask participants: "What comes to mind when you think of the word ‘intelligence’?"
   a. Explain that **intelligence** means being able to learn, solve problems, and understand things. It’s about remembering information, making good decisions, and finding ways to fix or improve things.

b. People can become more intelligent by practicing skills such as reading, playing, or asking questions.
c. Machines can also act intelligent when they're given data (information), patterns, and instructions to follow.

5. Connect these two ideas together to explain **Artificial Intelligence (AI)**
   a. Artificial Intelligence (or AI) refers to algorithms created by people that help machines act smart, they can learn, solve problems, and make decisions. These algorithms teach computers to use the data they have, like pictures, sounds, or repeated experiences, to recognize patterns, make predictions, and improve over time.
   b. Explain to participants that it follows instructions from the data, but they don't understand or think like humans. This means that even though AI can make predictions or suggest decisions, it doesn't have feelings, opinions, or awareness like we do, it's just using the information and rules it's been given.
   c. Show the following video to participants:
   Artificial intelligence explained in 2 minutes: What exactly is AI? (KI-Campus, 2:23s)
6. Explain that we will play a game to use what we learned about AI. Together, we'll explore whether different tools and technologies around us are AI or not.
   a. Using the What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*), we will go through each example as a class and discuss if it is AI or not.
   b. After each example, show the next slide to explain why that tool or technology is AI (or why it is not).

Section 3: My AI System

1. Ask participants: "What do you know about robots? Can they think on their own? Do they have a brain?"
   a. Robots have computers for brains! These computers control how they move and work, similar to how our brain controls our body. These

computers follow detailed instructions written in special languages (called **code**).

   b. Some robots can recognize patterns and improve how they work by updating their instructions based on new information. This ability is called **machine learning**, which is part of artificial intelligence (AI).
   c. Some examples of robots include robot vacuum cleaners, drones, robotic arms used in factories, and robots designed for exploring places like the Arctic or deep underwater

2. Using the What is Artificial Intelligence 8-12 - Activity Slide Deck (*Appendix C*), explain that for a machine to be considered artificially intelligent, it performs some or all of the following five abilities: **perceive, reason, learn, interact, and impact**. Use the example of a self-driving car to illustrate each ability.
3. Distribute the My AI System Blueprint (*Appendix C*) and a writing utensil to each small group. Let them know they'll be planning an AI system to solve a real-world problem in their community.
   a. Encourage each group to identify and describe an AI system that could assist them at home, at school, or in their community.
   b. Guide groups to explore and clearly define each of the five AI abilities (perceive, reason, learn, interact, and impact)
      i. **Perceive:** "What does your AI need to 'see' or 'hear' to do its job?"
      ii. **Reason:** "How does your AI make decisions?"
      iii. **Learn**: "How does your AI improve over time?"
      iv. **Interact:** "How does your AI communicate or respond to people?"
      v. **Impact:** "Who might benefit or be affected by your AI system?"

Reflection & Debrief

1. Have each small group or pair “pitch” their AI system by explaining how it perceives, reasons, learns, interacts, and what impact it may have.
2. Gather participants for a group discussion to reflect on what they learned.
    a. Ask participants: “How do you think AI will change the world in the future?”
    b. Ask participants: “How do we keep AI safe and fair for people?”
3. Discuss the different careers listed in *Appendix A: Career & Mentor Connections*.

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

GENERAL

- Each part of this activity can be delivered as a short, 10–20 minute session, spread out over multiple days / class sessions.

OPENING HOOK

- Show the following videos to participants to explain algorithms and debugging:
  - Explainer: What Is an Algorithm? (Stanford Graduate School of Business, 1:47s)
  - How To Debug (Code.org, 2:12s)

SECTION 1: DIGITAL DISHES

- Instead of having participants pick their own recipe, give everyone the same simple recipe (e.g., a fruit salad or baking bread).
- Ask participants to write only 3-5 key steps and list just a few main ingredients and tools.
- Have participants work in small groups to create one shared algorithm.

SECTION 2: ALL ABOUT INTELLIGENCE

- If time is limited, choose 2 to 4 examples of different tools and technologies to discuss whether they are AI or not.

SECTION 3: MY AI SYSTEM

- Instead of designing their own AI systems, participants can analyze existing AI systems to explore how they perform or demonstrate the five key abilities. Examples include:
    - Generative AI chatbots
    - Virtual assistants like Siri, Alexa, or Google Assistant
    - AI used in medicine or other STEM fields
    - AI in gaming
    - AI recommendation systems
- Concentrate on two to three fundamental AI abilities, such as perceive, learn, and interact, instead of addressing all five.

Extensions

OPENING HOOK

- In pairs or small groups, have participants take turns acting as the “computer” and the computer programmer, with the programmer giving step-by-step instructions and the computer following them exactly as stated.
    - Be mindful of your participants and their physical limitations. Allow participants to participate as far as they feel comfortable. As an alternative to physically walking to the door, participants can give or follow instructions for drawing a simple image, building a small object, or completing a task at their desk.

SECTION 1: DIGITAL DISHES

- If computer devices are available, encourage participants to find recipes online or create a digital flowchart (e.g. Google Slides / Powerpoint) to represent their recipe algorithm.
- Include timing or loops: Have participants add steps that repeat, like stirring every 5 minutes or baking for 20 minutes.

- Ask participants to consider if their recipe algorithm includes cleanup steps for tidiness, precise ingredient amounts for taste, and efficient steps to make it as fast as possible.

SECTION 2: ALL ABOUT INTELLIGENCE

- Present pairs of similar tools (one with AI and one without) and have participants spot the differences. Examples include:
    - Traditional and smart thermostats
    - Regular and robot vacuum cleaners
    - Manual and Self Driving Car

SECTION 3: MY AI SYSTEM

- If computer devices are available, encourage participants to research and explore more details about their chosen AI system.
- Add a business pitch component where participants present their AI system as a solution to potential stakeholders, emphasizing its value, functionality, and impact.
- Encourage participants to identify potential ethical issues, biases, or unintended consequences associated with their AI system, and to propose strategies for addressing them.

References & Gratitude

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Appendices

Appendix A: Career & Mentor Connections

AI/MACHINE LEARNING ENGINEER

- Builds and trains artificial intelligence systems that can learn from data to make predictions or perform complex actions. They support the machine learning researcher.

COMPUTER PROGRAMMER

- Computer programmers write, modify, and test code and scripts in a variety of programming languages that allow computer software and applications to function properly.

MACHINE LEARNING RESEARCHER / DATA SCIENTIST

- Machine learning researchers or data scientists clean and interpret data while building models using a combination of that data and machine learning algorithms.

Appendix B: Background Information

DATA AND DATASETS

Data comes in many forms, including numbers, images, words, and other types of information. They provide insights about individuals, groups, and the world around us. It is a key resource for understanding patterns, making decisions, and predicting outcomes. Specifically, data can be used to:

- Identify correlations and trends that might not be obvious at first glance.
- Develop a deeper understanding of complex systems and behaviors.
- Inform decisions in real time or future planning.
- Make decisions based on past patterns or observed information.

Datasets are also essentials for creating algorithms, which are sets of instructions or rules that a computer follows to solve problems or make decisions. By analyzing and learning from data, algorithms can help humans understand and act on information more effectively.

Some applications of how data drives algorithms include:

- **Traffic and navigation apps:** Analyzing road and traffic patterns to suggest the fastest routes.
- **Outer space and weather systems**: Studying patterns to predict astronomical events or weather changes.
- **Shopping and media recommendations**: Using purchase and viewing history to suggest products or content that people may like.
- **Healthcare and diagnostics**: Analyzing medical data to identify health risks, suggest treatments, or support research.

COMPUTATIONAL THINKING AND ALGORITHMS

As is described by its name, computational thinking is an approach and a way of thinking. It is structured and systematic and therefore lends itself well to computer science. However, computational thinking is useful beyond computer science as an

approach to learning and problem solving. The four stages of computational thinking are:

- **Decomposition:** Breaking down the information into manageable parts.
- **Pattern Recognition:** What is the data doing?
- **Abstraction:** Identifying the rules that dictate the observed patterns.
- **Algorithm Design:** Developing the steps to solve the problem.

An **algorithm** is a set of steps to be taken in order to complete a task. Think of it like a recipe: a set of precise steps that, if followed correctly, will lead to a desired outcome, whether it's baking a cake or sorting a list of names.

In computer science, these are created with a programming language (a language that a computer can understand) in order to input commands and write complex programs. They are the logical blueprints that tell computers how to do things. Algorithms make up our search engines (like Google), our GPS systems, the video games we play and even control our homes.

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.

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

AI and How it Senses the World

For a machine or devices to be artificially intelligent, it can usually do some or all of these five things:

Day of AI. (2024). What is AI?: Ages 8-11 - Teacher Slides. dayofai.org/curriculum/basic-ai-literacy/

1. **Perceive:** How does AI notice things around it?
    a. Machines such as robots can "see" or "hear" their surroundings using special tools called **sensors**. Similar to how our eyes help us see and ears help us hear. These sensors help the robot understand what's happening nearby.
2. **Reason:** How does AI decide what to do or how to react?
    a. Machines keep a mental picture of the world around them. This helps them understand the situation and make decisions, much like how you remember where you put your belongings so you can find them later.
3. **Learn:** How does AI acquire new knowledge?
    a. Machines learn by analyzing data, similar to how we get information from books or listening to others. The more data they receive, the better they become at understanding and solving problems.
4. **Interact:** How does the AI communicate or respond to its environment?
    a. Machines use different kinds of knowledge to engage naturally with people and surroundings. This involves understanding context, recognizing cues, and responding appropriately - similar to how humans adapt their communication depending on the situation.
5. **Impact:** How does AI affect individuals and society?
    a. AI can influence society in many ways, both positive and negative. It's important to consider the ethical and social consequences of AI technologies, including how they shape behaviors, decisions, and everyday life.

Self-Driving Vehicles

Self-driving vehicles, also known as autonomous vehicles, are cars that can navigate and operate without human intervention. They use a combination of sensors, algorithms, and computer systems to understand their surroundings, make decisions, and control their movements. These vehicles can analyze the road, traffic, pedestrians, and obstacles in real-time, allowing them to safely drive, steer, accelerate, and brake on their own.

At present, there are no fully autonomous vehicles; however, there are vehicles with varying degrees of self-automation. While in its early stages, self-driving technology is gaining interest to improve road safety, reduce accidents caused by human error, and potentially make transportation more efficient and convenient.

ETHICS AND AI

Artificial intelligence offers powerful tools and new possibilities. As these systems learn from data, make decisions, and shape our world, it is important to consider their ethical impacts.

Actua has developed a resource (*Appendix C*) to support facilitators in leading discussions with youth about ethics and responsible AI use. Facilitators are encouraged to engage youth in meaningful conversations that empower them to think critically about how AI is designed, used, and experienced in the world around them. This resource emphasizes human agency and responsibility, supports values-based reflection, and creates space for curiosity, dialogue, and informed decision-making as digital citizens.

Appendix C: Additional Resources

GENERAL

Activity Slide Deck

- What is Artificial Intelligence 8-12 - Activity Slide Deck
    - ***Note:*** This link will automatically download to your device.

Supporting Resource

- AI in Context: Responsibility and Ethics in Artificial Intelligence

OPENING HOOK

Supporting Resource(s):

- Explainer: What Is an Algorithm?
- How To Debug

SECTION 1: DIGITAL DISHES

Activity Page(s)

- Recipe to Algorithm (refer below)

SECTION 2: ALL ABOUT INTELLIGENCE

Video(s):

- Artificial intelligence explained in 2 minutes: What exactly is AI?

SECTION 3: MY AI SYSTEM

Activity Page(s)

- My AI System Blueprint (refer below)

What is Artificial Intelligence?

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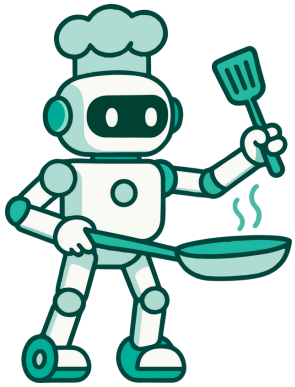
Recipe to Algorithm



An **algorithm** is a set of step-by-step instructions that takes an input and produces an output.

Today, you'll turn a recipe into an algorithm!

Step 1
Recipe Brainstorm

List a few recipes you know well:.

Select **one** to turn into an algorithm

Recipes

-
-
-

Step 2
Set Up Your Algorithm

Write down all the ingredients, tools, and action you need to make your recipe.

Ingredients (e.g. Onion)	**Tools** (e.g. Knife)	**Action** (e.g. Chop)

Step 3
Create Your Algorithm

Draw a flowchart with arrows and boxes to show the steps visually.

Be specific! Computers (and other people) need clear instructions.

What is Artificial Intelligence?

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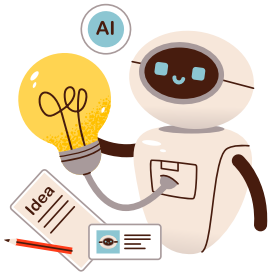
My AI System Blueprint



Think of a problem in your community and come up with an AI system to help solve it. Use five key ideas - **perceive**, **reason**, **learn**, **interact**, and **impact** - to explain how your AI would work and who it might affect.

What will your AI solve and do?

Perceive

What does your AI need to "see" or "hear" to do its job?

Reason

How does your AI make decisions?

Learn

How does your AI improve over time?

Interact

How does your AI communicate or respond to people?

Reason

Who might benefit or be affected by your AI system?