Learning like a Machine

Computers and our devices play a huge role in the lives of people around the world. You use this technology every day, whether to search for a location or a place you need to visit, stay connected with family and friends or create a cool presentation.

Time Required

20-30 minutes

Machine Learning describes how computers are analysing and explaining data provided to them by humans. It is a powerful tool that allows individuals to get information faster and perform tasks faster as well. In this activity, participants will learn how computers work and how machine learning takes it to the next level.

Goals and Outcomes

- Understand how computers work and how machine learning is taking technology one step further in the journey.
- Leadership Outcomes
  - Seek the information she needs to understand the full picture
  - Innovate to create positive impact.

What You'll Need

- Multiple sheets of paper or whiteboards
- Pens, pencils or something to write with.
- Laptop or device with internet connection (multiple may be required for larger groups)
- Link to QuikDraw
- Lego Blocks or an item that can be found with different colours and different shapes
  - Blocks in different shapes and colours
  - Fasteners of different shapes (nuts, bolts etc)
  - Rocks of different shapes and sizes
  - Writing tools of different shapes and sizes (pens, crayons, markers)

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Before the Activity

- Ensure the device is ready with a link to the website and participants can use it.
- Participants can start the activity by reflecting on the following questions:
  - What are some ways the use of computers has made our lives easier?
  - How do you think computers work? Make a few predictions on how they might work. Create a picture of how you think it works.
  - What do you think a computer will be able to do 20 years from now? Will we still be using computers?

What To Do

- Each participant will receive a pen and a piece of paper.
- One participant will see a picture. They will describe the picture to the other participants and see how similar the picture can be.
- Participants will reflect on the experience by sharing their pictures and sharing what was difficult about the task and what was easy.
  - Facilitators will share that this is how computers work, when different applications are created, developers (people who make these applications) need to provide exact directions to the computer, so it knows exactly what to do every single time.
- Participants will play the QuikDraw game and try drawing the same picture in different ways.
  - How well did the app identify your pictures?
  - Which drawings did it have trouble with?
  - What was the computer doing?
- The facilitator will share the definition of Machine Learning: when computers learn from data that is provided to them to make decisions. This data can be labelled, meaning humans tell the computer what the answer is or the data can be unlabelled meaning the computer has to decide what to choose.
- Participants will split into different groups, and each group must sort the items in their choosing.
- As a group, review the different ways that people sorted their items and what rules they would give to a computer to ensure that the items were always classified correctly.
- Once all the activities are completed, participants will answer the following:
  - Where could Machine Learning be used in the real world?
  - What could machine learning do in the future?
  - Are there ways in which machine learning can be used for bad things?

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After the Activity

- Clean up all the supplies and make sure devices are properly returned.
- Encourage youth members to explore their solutions and think of what components go into using AI.
- Participants can reflect by picking a problem that they can think of in the world and then think of how they can use AI to solve that problem.
    - Using the paper and markers, they can draw their idea and think of what they may need to create this solution and who may benefit from their idea.

Tips and Tricks

- Age
    - For older participants, they may be able to share their coding experience and other tools they have used previously. They can also be encouraged to find out ways to make simple AI tools.
- Size
    - This activity can be completed in small and large groups. For large groups, more devices may be required.
- Online vs In-Person
    - If completing this activity online, ensure participants can access multiple screens at the same time or consider doing the activities as a large group with the facilitator showcasing their screen.