

STEM from Home

Artificial Intelligence

Have you ever wondered how you start receiving recommendations on YouTube on what to watch next based on the videos you have seen? That's AI at work!

Artificial intelligence (AI) is a branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence.

In this STEM pack, you will use Scratch to develop an AI based car model. You will also design an unplugged noughts-and-crosses or tic-tac-toe game and conceptualize an AI based solution to a real world problem.

Main Activity: Automated Car

Introduction

You will develop a car that can run driverless with the help of sensors and AI algorithms.

Let's get started! Take a look at the project [here](#).

You can [access guidelines for the activity here](#).

What You Will Need

Hardware

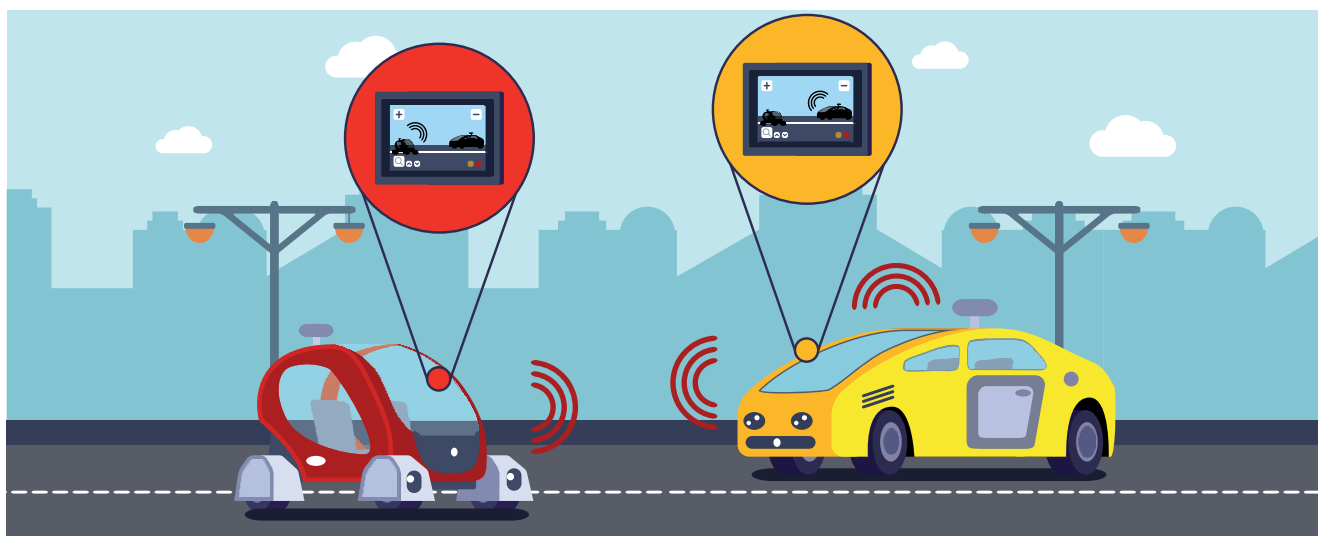
A computer capable of running Scratch or Scratch 3 software (either online or offline).

Software

Access Scratch 3 either online at <https://scratch.mit.edu/> or download from <https://scratch.mit.edu/download>.

What you will learn

1. How to add, modify or remove characters (sprites)
2. How to draw a customized backdrop
3. How to define and use variables
4. How to define and use blocks
5. How objects (sprites) can sense other objects in their proximity



Bonus Activities

Activity 1: Noughts And Crosses

Introduction

From driverless cars to robots, which can play and win a chess game against humans, the field of artificial intelligence is one of the most exciting and promising areas of computer science. The art and science of crafting programs that mimic, and even surpass human intelligence, is truly fascinating. In this unplugged activity you will be thinking through the steps and strategies of playing a winning game of noughts and crosses or tic-tac-toe.

What You Will Need

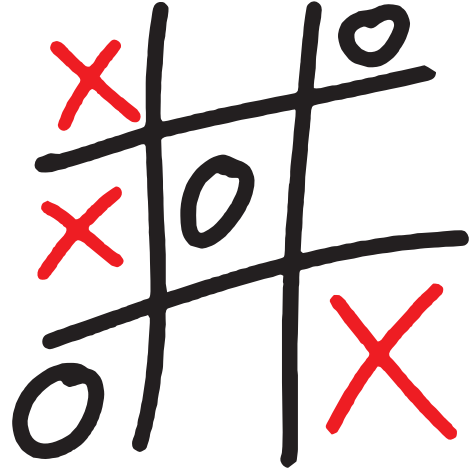
Sheets of paper

Pens/ Pencils

What You Will Learn

The detailed thinking and reasoning that goes behind designing an AI program.

[Access the activity here](#)



Challenge Activity : The Talking Cane

Your A.I. Challenge:

You are part of a team tasked with designing an effective hand held device for visually challenged people to help them navigate public places easily and safely. This will be like their very own guide.

Here are the steps to help you

Step 1: EMPATHISING: Understanding the human needs involved.

Step 2: DEFINING: Re-framing and defining the problem in human-centric ways. (What are the challenges visually impaired people face in public places? What would be helpful?)

Step 3: IDEATING: Think of how technology could help solve this problem. For example, can this talking cane scan the immediate surroundings, pre warn the user and come up with alternate routes? Come up with lots of ideas. Narrow them down to what seems workable. Write out what this device will be able to do.

Step 4: PROTOTYPING: Adopting a hands-on approach by making small models of the solutions.

- Sketch your idea of what this device might look like
- Create a non-working prototype of the device

Step 5: EVALUATING: Are there changes you can make that will make the device more effective/ easy to use for a visually impaired person?

Upload your final designs and description of your prototype.

Your final submission can be presented digitally using [Docs](#) or [Presentation](#) software.

Alternately using [PictoBlox](#), create an animated demonstration of what your talking cane can do. (Note: PictoBlox is a programming software based on Scratch, where you can make interactive games, animations or program robots and projects. Download it from the link given above, explore and have fun learning and creating!)

