

LEGO NXT Robotics



IA – Artificial Intelligence

Lego NXT

Activity 1:

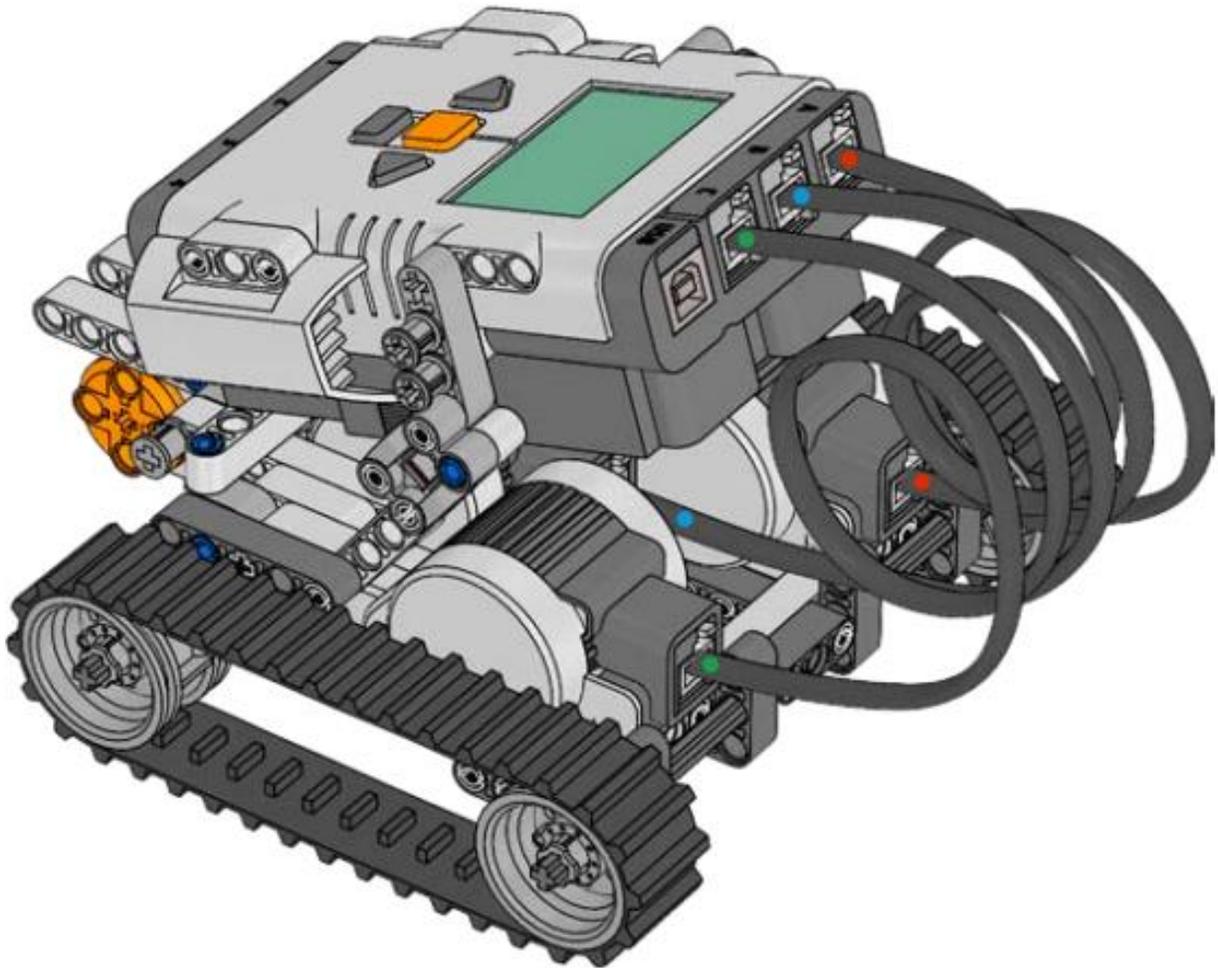
Artificial intelligence **(AI)**: the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. Lego NXT is a programmable Robotics system used to teach programming. It is one example of artificial intelligence.

Do you think we will have machines that have human-like qualities like those seen in the movies, in your lifetime? Before you answer that question, let's look at some examples of AI. Click on the links on the BBT website to answer the questions.

1. What is a Roomba and what does it do?
2. What is IBM's Deep Blue famous for?
3. Name three brands of partially autonomous cars (cars that do some aspects of the driving for you) that currently exist?
4. List 3 recent movies that feature advanced AI. Use the link if you need help

Activity 2:

Use the Lego NXT User Guide from p. 9-15 for the plans to build the robot.



Activity 3:

After building your robot, turn on your NXT brick (orange button in the center). Attach the cable linking it with the computer. The computer should recognize



Connect the PC and the NXT with the USB cable.

When the PC identifies the NXT it will automatically finalize the installation of the LEGO MINDSTORMS NXT Software.

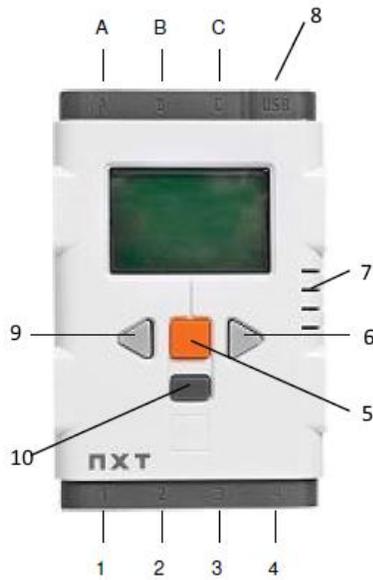
The USB connection must be made by an adult or under supervision of an adult.



the connection. See illustration below:

Activity 4:

Let's learn the components of the NXT Brick. Click on the BBT site link called Lego NXT Manual and find the information on pages 2 and 3.



NXT Brick	
Identified area on the diagram	Name/Purpose
1, 2, 3, 4	
A, B, C	
5	
6	
7	
8	
9	
10	

NXT Accessories	Name	Purpose
		
		
		
		
		

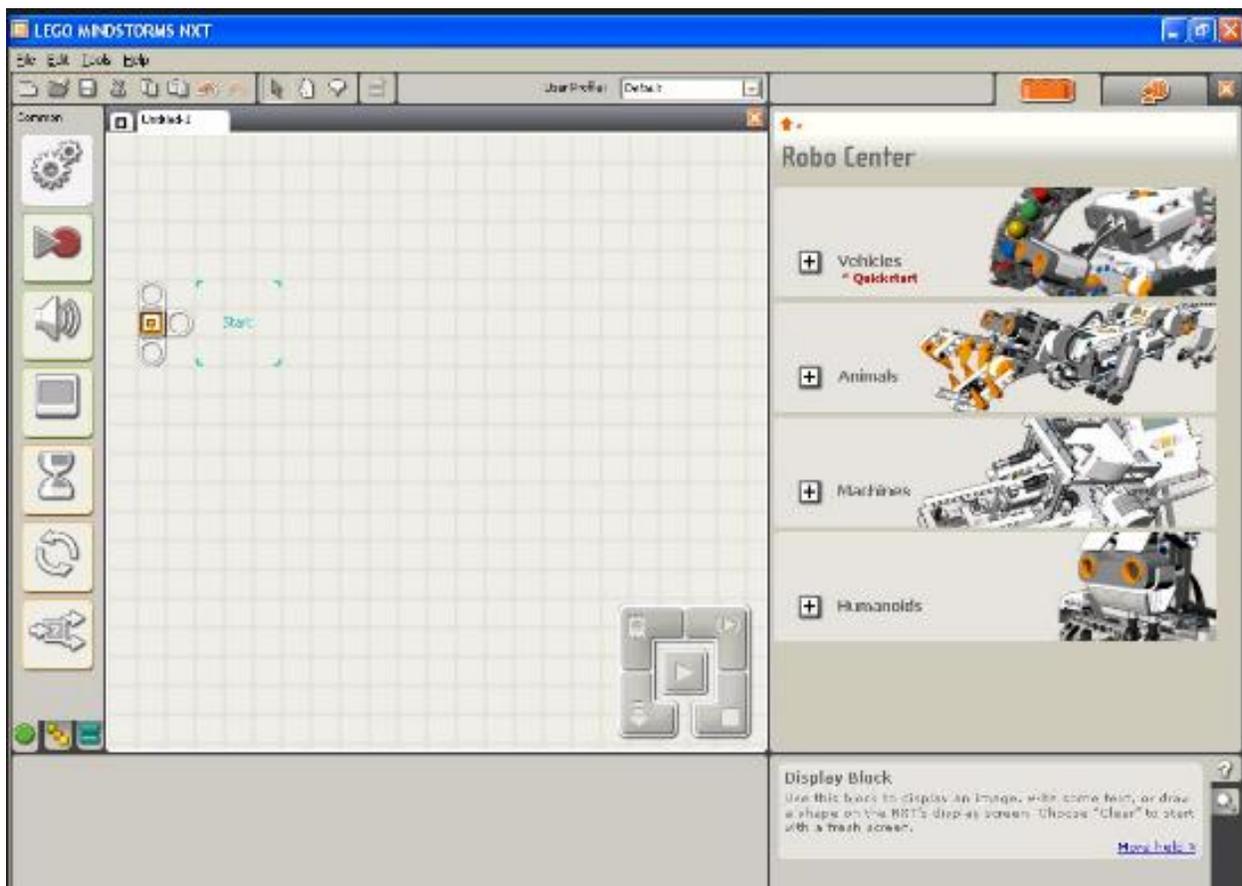
Activity 5: Your First Program

Click on the Mindstorms NXT program icon that is on your desktop.

Create a program that will move the robot. You have two choices:

1. The video link for Activity 3 will demonstrate a program that will move forward, backward, left, and then right for $\frac{1}{2}$ second each way.
2. Online Lego NXT Manual (that you already used in Activity 2) p.4 – 10 will give you precise instructions to run the robot forward.

Show your teacher!!



Activity 6: Adding a few new features to your program

Watch the programming video under Activity 6 on your BBT site.

You'll need to put the ultrasonic sensor on the front of your robot.



Show your teacher!!

Activity 7: Using the light sensor

Create a program that makes the Robot back up when it encounters a black line on a track.

Need help? The Activity 7 video will help.

You will need to put the light sensor on your robot.



Show your teacher!!

Activity 8: Using the touch sensor

Create a program that makes the Robot back up when it bumps into something.

Need help? The Activity 8 video will help.

You will need to put the touch sensor on your robot.



Show your teacher!!

Go to the Robo Center – tab on top right corner of your screen – choose another mission. Focus on the program rather than the building part.

The linked (5:33 min) video will assist you.

<https://www.youtube.com/watch?v=8qpicQeaHio>

(5:22) <https://www.youtube.com/watch?v=1DW2HuGSUBc>