



ASSIGNMENT

Buyer Persona Builder Assignment

The goal of this lesson is to familiarize students with the basic principles of Artificial Intelligence, and its connection to Marketing Analytics. The PowerPoint presentation presents the key concepts from the chapter on Artificial Intelligence (AI). The exercises aim to bring the topic to life as students get hands-on experience with AI. Note that some of the exercises use groups. However, these can also be applied to individuals.

RECOMMENDED TIME BREAKDOWN FOR THE LESSON (WITHOUT EXERCISES)

50 minutes – PowerPoint presentation on Artificial Intelligence

RECOMMENDED TIME BREAKDOWN FOR THE EXERCISES

10–15 minutes – Exercise 1: Conway's Game of Life

10–15 minutes – (ONLINE) Exercise 2: Teachable Machine

10–15 minutes – (ONLINE) Exercise 3: Machine Learning Quick Draw Activity

10–15 minutes – Exercise 4: Deep Learning Akinator Activity

10–15 minutes – Exercise 5: The Intelligent Piece of Paper

EXERCISE 1: CONWAY'S GAME OF LIFE

As presented at <https://bitstorm.org/gameoflife/>, "The Game of Life is not your typical computer game. It is a 'cellular automaton,' and was invented by Cambridge mathematician John Conway. This game became widely known when it was mentioned in an article published by Scientific American in 1970. It consists of a collection of cells which, based on a few mathematical rules, can live, die or multiply. Depending on the initial conditions, the cells form various patterns throughout the course of the game."

These are the rules for Conway's game:

- 1 Any live cell with fewer than two live neighbors dies, as if caused by under population.
- 2 Any live cell with two or three live neighbors lives on to the next generation.
- 3 Any live cell with more than three live neighbors dies, as if by overpopulation.
- 4 Any dead cell with exactly three live neighbors becomes a live cell, as if by reproduction.

Using the simulator at the game's website, students will make their best designs for the sustainment of life. To conduct this exercise, follow these instructions:

- 1 Students open <https://bitstorm.org/gameoflife/>

Note: To show how the game works, the website has a list of predefined, common designs. There are controls at the bottom of the interface that allow the student to change between these designs, the rate of growth and the number of boxes in view.

- 2 Run through each common design to expose the students to Glider, Small Exploder, Exploder, 10 Cell Row, Lightweight Spaceship, Tumblr and Gossip GLider Gun.
- 3 Students create their own initial state life.

This is an approachable introduction to artificial intelligence for students who may know of the subject and who desire to gain a hands-on understanding of how artificial intelligence works.

(ONLINE) EXERCISE 2: TEACHABLE MACHINE

Teachable Machine is an experiment for users to start exploring how machine learning works.

It lets individuals teach a machine using a camera – live in the browser, no coding required. It's built with a library called deeplearn.js, which makes it easier for a web developer to get into machine learning by training and running neural nets right in the browser.

- 1 Go to <https://teachablemachine.withgoogle.com/> and hit “let’s go”
- 2 Enable the browser to use the camera on a laptop (if applicable)
- 3 Following the instructions, teach the machine to respond by acting out different body movements

The whole activity takes about five minutes. The detailed instructions and code can be accessed at <https://github.com/googlecreativelab/teachable-machine>

(ONLINE) EXERCISE 3: MACHINE LEARNING QUICK DRAW ACTIVITY

In order to demonstrate machine learning, we will ask the class to play with Google Creative Lab's "Quick, Draw," a game in which a neural net attempts to guess what a user is drawing.

The game provides six drawing assignments and allows itself 20 seconds to try and guess what you are drawing.

Instructions for students:

STEP 1: Ask students to log onto their computers and visit <https://quickdraw.withgoogle.com>

STEP 2: Instruct students to select the button that says "Let's draw!"

STEP 3: Instruct students to press the "Got It!" button once they understand their drawing assignments.

STEP 4: Once the students have completed their drawing assignments, poll the classroom to see how the system performed.

STEP 5: Ask each group to tally the number of times the computer guessed their artwork correctly.

STEP 6: Instruct students to click on one of the pictures the computer got wrong and look to see what the computer's closest matches were.

STEP 7: Instruct students to scroll down to see other examples of drawings people have contributed.

STEP 8: Reward the group that performed the best in the activity.

EXERCISE 4:

DEEP LEARNING AKINATOR ACTIVITY

In order to demonstrate deep learning, we will ask the class to become familiar with Redstone Special's "Akinator," a game based on twenty questions geared at determining which character the player is thinking of. The Akinator is an artificial intelligence program that can find and learn the best questions to ask the player.

Pull the site up on the projector and guide the students through the following process.

STEP 1: Ask students to log onto <http://en.akinator.com/>

STEP 2: Tell students to think of any character, real or fictional.

STEP 3: Instruct students to press the "Play" button to the right of the language settings.

STEP 4: Instruct students to enter their ages into the player information pop-up.

STEP 5: Instruct students to answer each of the akinator's questions to the best of their abilities given the available responses.

STEP 6: Once everyone has finished, poll the classroom to see if anyone was able to beat the Akinator.

EXERCISE 5: THE INTELLIGENT PIECE OF PAPER

This activity aims to introduce the topic of what a computer program is and that everything computers do simply involves following instructions written by computer programmers. It also aims to reinforce the discussion on computer intelligence and how artificial intelligence is built on conditional instructions.

The activity stages one of the group members against the “Intelligent Piece of Paper” in a game of tic-tac-toe.

The materials needed for this activity include:

- Whiteboard space
- Whiteboard markers
- A copy of the “Intelligent Piece of Paper” per group

STEP 1: Separate the class into teams, designate whiteboard space around the classroom for each team, and provide each group with a copy of the “Intelligent Piece of Paper.”

STEP 2: Announce to the class that the piece of paper each group has is more intelligent than anyone in the room.

STEP 3: One player per group plays the game on his or her own, and another member of the group plays for the “Intelligent Piece of Paper” by following the instructions provided on the paper.

Note: If the instructions are followed correctly, the game should finish in a draw or the paper should win.

THE EXPLANATION

The paper is essentially acting as a computer program. The instructions written on the “Intelligent Piece of Paper” characterize code and the paper symbolizes a computer system acting out those commands. This exercise aims to show the class how an inanimate object can gain intelligence through following conditional instructions.

The following page is the “Intelligent Piece of Paper.” Print the following page out for each group playing against the “machine.”

INTELLIGENT PIECE OF PAPER

I am a highly intelligent piece of paper.
Let's play tic-tac-toe.
I am X, and I go first.

MOVE 1:

Go in a corner

MOVE 2:

IF the other player did not go there
THEN go in the opposite corner to move 1
ELSE go in a free corner

MOVE 3:

IF there are two X's and a space in a line
THEN go in that space
ELSE if there are two O's and a space in a line
THEN go in that space
ELSE go in a free corner

MOVE 4:

IF there are two X's and a space in a line
THEN go in that space
ELSE if there are two O's and a space in a line
THEN go in that space
ELSE go in a free corner

MOVE 5:

Go in the free space