

## Lesson 1.1

3.7.2020

# What is AI?

### DAILY OBJECTIVE

Students will be introduced to the Microsoft TEALS End of Semester Project.

### DEFINITIONS

Here are a few terms that you might find useful today.

1. **AI (Artificial Intelligence):** A computer system able to perform tasks by taking in data from an outside source, and making a decision based on that data. Often, AI systems will solve tasks normally solvable by humans.
2. **ML (Machine Learning):** In short, ML is AI. Machine Learning refers to an AI computer system that can perform a specific task without relying on specific instructions. ML Algorithms use patterns and learn how to solve these tasks through repeated attempts to solve those tasks instead through the use of a large amount of input data. In this course, we'll use the term AI in place of ML!

**More To Think About:** Can you think of where you might have used ML in your life?

3. **Azure Cognitive Services:** A service run by Microsoft that enables users to use complex artificial intelligence systems in their own work. We will be using Azure Cognitive Services in today's demos, and when making our own projects.
4. **MVP:** Minimum Viable Product. Usually a very minimal prototype of a product you wish to develop that demonstrates the core capabilities of that project.

**More To Think About:** Think about how this might apply to your life as a student today, have you ever made an MVP?

## MICROSOFT TEALS AI UNIT

Welcome! In this unit, we'll be creating interactive projects that use Artificial Intelligence systems. We'll be:

1. Designing and developing our own interactive projects.
2. Going over the basics of AI.
3. Discussing how we interact with AI in our daily lives.
4. Learning how to use the Wick Editor, a free animation and game design tool, to create our projects.

## What does AI Mean?

### AI VS SENSORS

AI stands for "Artificial Intelligence". This refers to a computer system that is able to perform tasks by taking in data from an outside source and making decisions based on that data. Often, AI systems will usually solve tasks normally solvable by humans, just done on a bigger scale.

Example: An AI Thermostat.

A basic thermometer might simply gather temperature data and display it to a human. This is simply a sensor.

A simple kind of AI thermostat might conditionally determine if it's too hot or cold, with some basic code like this:

```
temperature = sensorData

if (temperature > 72) {
  // Turn on the AC
} else {
  // Turn on the heat
}
```

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A more complex AI thermostat might consider the temperature of the room, while also analyzing more complex information such as:

1. Historical data of outside temperatures
2. The temperature of neighbor's houses
3. Weather data

And then preemptively suggest that a human set the thermostat before they leave for work, or even automatically adjust the temperature itself before their owner comes home later in the day!

The key difference is both the amount of data and the ability to make a decision or recommendation based on that data.

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## ACTIVITY WORKSHEET

# AI Throughout your Day

Consider the last 24 hours. Record each time you've interacted with AI. Be sure to mark down every interaction you believe is AI, and interactions that you're unsure of!

<b>1AM</b>	<b>1PM</b>
<b>2AM</b>	<b>2PM</b>
<b>3AM</b>	<b>3PM</b>
<b>4AM</b>	<b>4PM</b>
<b>5AM</b>	<b>5PM</b>
<b>6AM</b>	<b>6PM</b>
<b>7AM</b>	<b>7PM</b>
<b>8AM</b>	<b>8PM</b>
<b>9AM</b>	<b>9PM</b>
<b>10AM</b>	<b>10PM</b>
<b>11AM</b>	<b>11PM</b>
<b>12AM</b>	<b>12PM</b>

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## Exploring Examples

Explore the Microsoft Azure Cognitive Services demos below, and answer the questions for each demo to the best of your ability!

Demo	Link
Text Analytics	<a href="https://aka.ms/AzureTextAnalyticsDemoTEALS">aka.ms/AzureTextAnalyticsDemoTEALS</a>
Computer Vision	<a href="https://aka.ms/AzureComputerVisionDemoTEALS">aka.ms/AzureComputerVisionDemoTEALS</a>
Face API	<a href="https://aka.ms/AzureFaceAPIDemoTEALS">aka.ms/AzureFaceAPIDemoTEALS</a>

Feel free to explore more demos for other cognitive services products here:  
[aka.ms/AllCognitiveServicesDemosTEALS](https://aka.ms/AllCognitiveServicesDemosTEALS)

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## QUESTIONS

1. How do you think the system works?
  - a. What is the system doing to produce these results?
2. What information do you think the system is analyzing?
  - a. For instance, the text analysis demo is most likely considering positive and negative words, punctuation, etc.
3. What types of input were the most difficult for the system to classify?
  - a. Were there any inputs you thought the system had trouble with that surprised you with correct results?
4. What was the easiest input for the system to classify?
  - a. Were you surprised by any results that came back?
5. Were there any results that surprised you?
  - a. Note specific inputs you've tried!

## ACTIVITY WORKSHEET

# The Text Analysis Demo

Answer the following questions below about the text analysis demo!

**1. How do you think the system works?**

What is the system doing to produce these results?

**2. What information do you think the system is analyzing?**

For instance, the text analysis demo is most likely considering positive and negative words, punctuation, etc.

**3. What types of input were the most difficult for the system to classify?**

For instance, the image analysis demo might have trouble differentiating between a scuba diver and a skydiver!

**4. What was the easiest input for the system to classify?**

Were there any inputs you thought the system had trouble with that surprised you with correct results?

**5. Were there any results that surprised you?**

Note specific inputs you've tried!

## ACTIVITY WORKSHEET

# The Image Analysis Demo

Answer the following questions below about the image analysis demo!

**1. How do you think the system works?**

What is the system doing to produce these results?

**2. What information do you think the system is analyzing?**

For instance, the text analysis demo is most likely considering positive and negative words, punctuation, etc.

**3. What types of input were the most difficult for the system to classify?**

For instance, the image analysis demo might have trouble differentiating between a scuba diver and a skydiver!

**4. What was the easiest input for the system to classify?**

Were there any inputs you thought the system had trouble with that surprised you with correct results?

**5. Were there any results that surprised you?**

Note specific inputs you've tried!

## ACTIVITY WORKSHEET

# The Video Analysis Demo

Answer the following questions below about the image analysis demo!

**1. How do you think the system works?**

What is the system doing to produce these results?

**2. What information do you think the system is analyzing?**

For instance, the text analysis demo is most likely considering positive and negative words, punctuation, etc.

**3. What types of input were the most difficult for the system to classify?**

For instance, the image analysis demo might have trouble differentiating between a scuba diver and a skydiver!

**4. What was the easiest input for the system to classify?**

Were there any inputs you thought the system had trouble with that surprised you with correct results?

**5. Were there any results that surprised you?**

Note specific inputs you've tried!