

## Lesson 1.3

3.7.2020

# AI in Wick Editor Projects

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### DAILY OBJECTIVE

Students will experiment with example projects that integrate AI systems with a Wick Editor project. Students will discuss and evaluate the projects while considering assumptions of how these projects work.

### MATERIALS

#### Educator

- (Optional) Projector to display examples

#### Students

- Computers with Internet Access
- Example Worksheets

### PREP

Educators should explore the example projects and become comfortable with interacting with the examples, making them function properly, and explore their “quirks”. Educators should also generate supplemental questions for discussion.

### DEFINITIONS

No new definitions today!

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## LESSON PLAN

# Section 1: Daily Introduction and Forming Teams

<b>Objective</b>	Students will explore several examples within Microsoft Azure's Cognitive Services platform. Students will take notes on the different interactions, and provide guesses as to how they believe the systems work.
<b>Duration</b>	5 Minutes
<b>Class Style</b>	We recommend students be broken up into groups of 2-3. Students will rotate rolls throughout the session. All student groups should have 1 copy of each Activity Worksheet.
<b>Materials</b>	AI Example Worksheets

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### 1.1 Lesson Introduction

Give students a quick introduction to today's topic, exploring example projects in Wick Editor that use Microsoft Azure's Cognitive Services Platform. The demos today are distilled versions of the examples they saw in lesson 1.2!

## 1.2 Break Into Teams

Student groups should be made of 2-3 students. These groups should self assign 3 roles, Driver, Navigator and Technical Writer. These roles should rotate among group members for every example, so that each student has a chance to act in each position.

Role: Driver	Role: Navigator	Role: Technical Writer
Responsible for interacting with the AI examples, and making changes at the navigator's request.	Responsible for providing suggestions and ideas to the Technical Writer and Driver. This person should be primarily responsible for considering how we can alter the examples to produce new results.	Record notes and questions for the group about the example. This person should record notes on how the examples reacted to certain inputs, subtle changes in the output of the examples, and any questions the group has.

### NOTE

#### Pair Programming

This style of “Driver” and “Navigator” programming is common practice among professional software engineers and is referred to as “Pair Programming”. Pair programming can be a great way to help students that are struggling, talk through their issues in real time while creating their own projects, or engaging with example projects.

## LESSON PLAN

# Section 2: Exploring Interactive Examples

<b>Objective</b>	Students will explore several examples within Microsoft Azure's Cognitive Services platform. Students will take notes on the different interactions, and provide guesses as to how they believe the systems work.
<b>Duration</b>	30 Minutes (10 Minutes per example)
<b>Class Style</b>	<p>All student groups should have a copy of each Activity Worksheet in the student guide to take notes on, or a digital equivalent.</p> <p>Optionally, educators can run the examples as full class exercises, allowing all students to answer questions together after exploring examples.</p> <p>Teachers should keep time for the class, and ensure students switch examples every 10 minutes or so.</p>
<b>Materials</b>	Computers, Activity Worksheets

## 2.1 Analyzing the sentiment of text

Students will interact with a Wick Editor project that allows them to analyze the sentiment of text.

### W A R N

The following projects must have a "student code" added to them to work! Follow the "Adding Student Codes" guide at the end of this lesson plan for instructions on how to do this.

To receive a student code, educators should contact [sarah.guthals@microsoft.com](mailto:sarah.guthals@microsoft.com)!

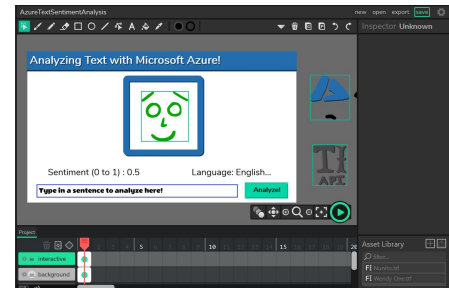
This example creates a simple interaction between Wick Editor and the Microsoft Azure Cognitive Services' Text Analytics API. Complete the Activity Worksheet for this example.

<b>Direct Link</b>	<a href="https://aka.ms/WE_TextAnalysisDemo_direct">aka.ms/WE_TextAnalysisDemo_direct</a>
<b>Download Link</b>	<a href="https://aka.ms/WE_TextAnalysisDemo">aka.ms/WE_TextAnalysisDemo</a>

<b>Video Tutorial</b>	<a href="https://aka.ms/WE_TextAnalysis_video">aka.ms/WE_TextAnalysis_video</a>
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## How it Works

1. Set up your student code and press the play button!



2. While the project is playing, insert a sentence into the text input.

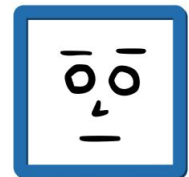
**Insert Text Here!**

**Analyze!**

3. Next, hit the “analyze” button.

**Analyze!**

4. After a few seconds, you should receive three responses.
  - a. A sentiment value from 0 to 1.
  - b. The language the AI believes the Text is in.
  - c. A visual response linked to the outcome of the sentiment analysis.



## 2.2 Image Analysis Example

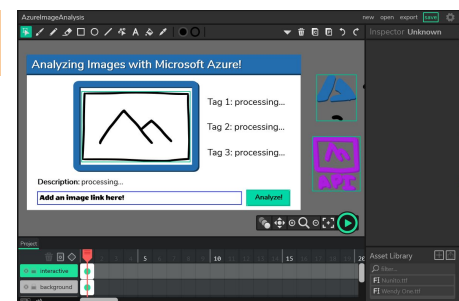
This example shows how Wick Editor projects can interact with the Azure Cognitive Services Computer Vision API to analyze Images. Complete the Activity Worksheet for this example.

<b>Direct Link</b>	<a href="aka.ms/WE_ImageAnalysisDemo_direct">aka.ms/WE_ImageAnalysisDemo_direct</a>
<b>Download Link</b>	<a href="aka.ms/WE_ImageAnalysisDemo">aka.ms/WE_ImageAnalysisDemo</a>

<b>Video Tutorial</b>	<a href="aka.ms/WE_ImageAnalysis_video">aka.ms/WE_ImageAnalysis_video</a>
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### How it Works

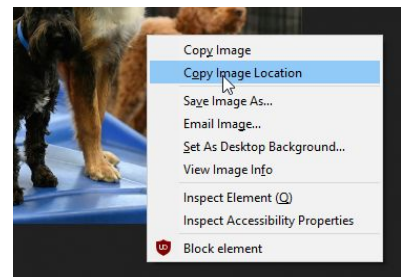
1. Set up your student code and press the play button!
2. When playing, you can input an image URL into the text input and have the image that corresponds to that URL analyzed.



**example.com/imageLink.png**

**Analyze!**

These image URLs can be found by searching for an image and using the right-click “Copy Image Location” or “Copy Image Address” Options in any major image search tool.



3. Once the link is entered, students can hit the “analyze” button.
4. In a few seconds, when the Azure API can send its response, you’ll see a series of tags related to the image, and a computer generated description!



## 2.3 Video Emotion Analysis Example

This example shows how Wick Editor projects can interact with the Azure Cognitive Services' Computer Vision FACE API to analyze Images. Complete the Activity Worksheet for this example.

<b>Direct Link</b>	<a href="https://aka.ms/WE_VideoAnalysisDemo_direct">aka.ms/WE_VideoAnalysisDemo_direct</a>
<b>Download Link</b>	<a href="https://aka.ms/WE_VideoAnalysisDemo">aka.ms/WE_VideoAnalysisDemo</a>

<b>Video Tutorial</b>	<a href="https://aka.ms/WE_VideoAnalysis_video">aka.ms/WE_VideoAnalysis_video</a>
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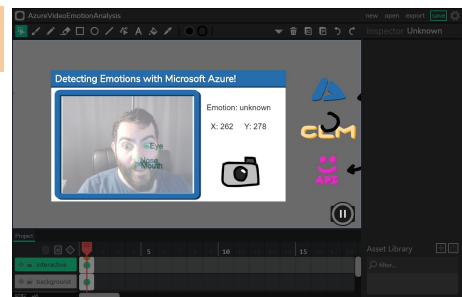
### How it Works

1. Set up your student code and press the play button!
2. While playing the project, students should see their face on the left hand side of the project.
3. In real-time, students will see the position of the center of the face recorded as X/Y coordinates on the right of the canvas. An overlay should also be present on their face.

Emotion: unknown

X: 262 Y: 278

4. While making an expression, students should hit the “take photo” button.
5. After a few seconds, students will see the AI’s result, guessing their emotion!



## ACTIVITY WORKSHEET (Answered)

# Text Analysis Demo Questions

Answer the following questions about the Text Analysis Demo!

### 1. What are we viewing? What is this project doing?

- In this example, students receive a rating for how positive or negative a phrase passed in is, as well as an assumed language of the text.

### 2. How do you think the system works?

What information do you believe the example is considering before sending back a result?

- Responses such as “how positive or negative a word is”, “grammar”, and “punctuation” are all valid, as are other responses that allude to the contents of a sentence, or meaning behind a word.

### 3. What types of outputs does it produce?

- This example produces a sentiment value from 0 to 1, 0 being negative and 1 being positive.
- It also produces what language it believes the text is in.

### 4. What inputs produced the best results?

Why do you think these worked so well? Were there any similar inputs that produced different results?

- Opinions are okay here!

### 5. What products in the world are using this technology?

What products could potentially use this technology in the future?

- Content filters (ensuring children don't see inappropriate content).
- Automatic translation.
- Community moderation. Making sure community members online are acting positively.



## ACTIVITY WORKSHEET (Answered)

# Image Analysis Demo Questions

Answer the following questions about the Image Analysis Demo!

### 1. What are we viewing? What is this project doing?

- In this example, students receive “tags” or keywords the AI believes are associated with the image they’ve provided.

### 2. How do you think the system works?

What information do you believe the example is considering before sending back a result?

- Responses such as “pixel data”, “color groups”, and “images that are similar to a database” are all valid, as are other responses that allude to the image being broken down! (The actual methods are fairly complex, but we want to get students into the mindset of breaking down their data to find interesting similarities.)

### 3. What types of outputs does it produce?

- Image Tags
- A computer generated description.

### 4. What inputs produced the best results?

Why do you think these worked so well? Were there any similar inputs that produced different results?

- Opinions are okay here!

### 5. What products in the world are using this technology?

What products could potentially use this technology in the future?

- Content filters (ensuring children don’t see inappropriate content).
- Object recognition in self driving vehicles.
- Environment monitoring (determine how much water is in a given area, forest fire monitoring).

## ACTIVITY WORKSHEET (Answered)

# Video Emotion Analysis Demo Questions

Answer the following questions about the Video Emotion Analysis Demo!

### 1. What are we viewing? What is this project doing?

- In this example, students view a live camera feed with data that responds to their face in real time.

### 2. How do you think the system works?

What information do you believe the example is considering before sending back a result?

- Some great responses include: Changes in color, changes in light, and specific facial features.

### 3. What environments produce the best results?

Low Light vs a lot of light? Partially Covered Camera vs uncovered camera? Partially covered subjects vs completely clear subjects?

- Students should record results!

### 4. What inputs produced the best results?

Why do you think these worked so well? Were there any similar inputs that produced different results?

### 5. What products in the world are using this technology?

What products could potentially use this technology in the future?

- Security locks on phones and computers (Such as Windows Hello)
- Identity Checks at Airports

## Common Misconceptions

Below are some common misconceptions that may appear in discussion around today's content.

### 1. The AI Systems produce perfect results

- a. While many modern AI systems produce great results, there are still situations where results might not be perfect as evident from our explorations. These results should certainly be considered more as strong recommendations versus absolute truth.

## COMMON PITFALLS

### 1. "My project isn't working!"

- a. **Students forget to add student codes**
  - i. Follow the guide at the end of this lesson for instructions on how to insert a student code into the project!
- b. **Students forget to play their projects**
  - i. Ensure that students hit the green "Play" button before inputting any information. This issue is much more common than you'd think!

### 2. Groups don't rotate roles

- a. Ensure that groups rotate their roles between examples. It's not uncommon for one student to take over as driver, while not allowing other students to have a full experience for each example!

## SUCCESS CRITERIA

These success criteria are a simple way to ensure students are on track. They are designed to help educators guide conversations and example development between each day's content.

Discussion	Exploration	Application
Students can describe how they successfully utilized an example. Students can describe the types of inputs they attempted and results they received.	Students have acted as a Driver, Navigator and Technical writer for each example listed above (Text, Image and Video)	Students can apply knowledge of existing examples to produce ideas for new projects or products that might include the technologies shown.