

AI FOR GOOD Summer Camp



INDIANA UNIVERSITY
BLOOMINGTON

Day 2 Machine Learning

Hands-on Activity 4

AI emotion detector

Census @School



Webpage link

<https://bit.ly/iuaigood>





ML4KIDS ID & PW

- [ml4kids_idpw.xlsx](#)
- Teacher: keundol88@naver.com
- ID: aigood_1 / PW: but.farms





<https://scratch.mit.edu/>

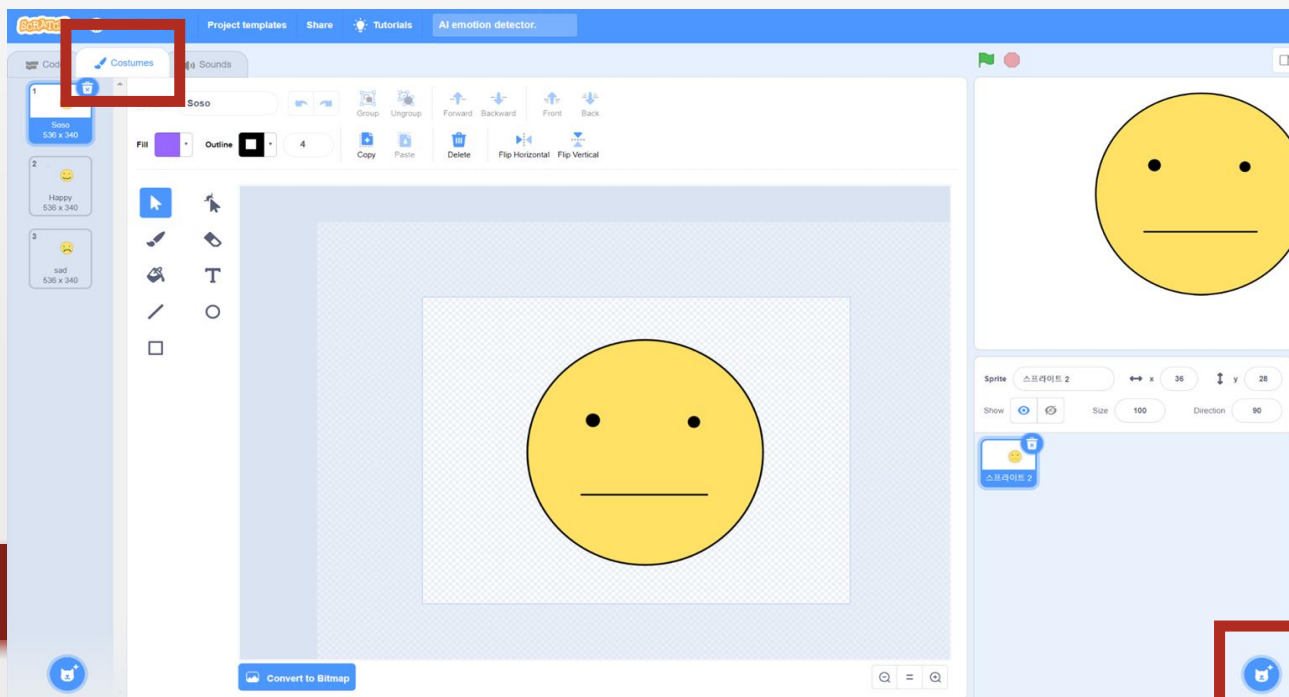
The screenshot shows the Scratch website homepage with a blue background. At the top, there is a navigation bar with the Scratch logo, links for 'Create', 'Explore', 'Ideas', and 'About', a search bar, and links for 'Join Scratch' and 'Sign in'. The main content area features the text 'Create stories, games, and animations' and 'Share with others around the world'. Below this are two buttons: 'Start Creating' with a star icon and 'Join' with a lightning bolt icon. A central video player with a play button is surrounded by various colorful icons representing different Scratch features like a paintbrush, a hand, a keyboard, and a drum. A 'Watch Video' button is positioned below the video player. At the bottom, there are three buttons: 'About Scratch', 'For Parents', and 'For Educators'. A hand cursor icon is visible over the bottom right corner of the page.





AI emotion detector (Making)

- Select “Costume Tab” and draw 3 emojis (happy, sad, and so so).
Make sure to rename the sprite happy, sad, and so so.





AI emotion detector (Modeling)

- Select “Train” tab

"AI Emotion Detector"

Train

Collect examples of what you want the computer to recognise

Train

Learn & Test

Use the examples to train the computer to recognise text

Learn & Test

Make

Use the machine learning model you've trained to make a game or app, in Scratch, Python, or App Inventor

Make





AI emotion detector (Modeling)

- Enter the keywords for each label

label

Happy

+ Add example

Sad

+ Add example

So_so

+ Add example





AI emotion detector (Modeling)

- Select “Learn & Test” tab and train your AI model.

Machine learning models

[Back to project](#)

What have you done?

Your class has collected examples of images for a computer to use to recognise when images are Granted or Denied.

They've collected:

- 10 examples of Granted,
- 10 examples of Denied

What's next?

Ready to start the computer's training?

Click the button below to start training a machine learning model using the examples your class have collected so far

(Or ask your class to go back to the [Train](#) page if you want them to collect more examples first.)

Info from training computer:

[Train new machine learning model](#)





AI emotion detector (Programming)

- Select the “Code” tab and create the codes. Make sure to use AI code blocks

```
when clicked
  switch costume to thinking
  ask How are you feeling today? and wait
  if recognise text answer (label) = Happy then
    switch costume to happy
  if recognise text answer (label) = Sad then
    switch costume to sad
  if recognise text answer (label) = So_so then
    switch costume to soso
```

The image shows a Scratch script for an AI emotion detector. It starts with a 'when clicked' event block. The first block is 'switch costume to thinking'. This is followed by an 'ask' block with the text 'How are you feeling today?' and a 'wait' block. Then, there are three conditional 'if' blocks, each using the 'recognise text' AI block. The first 'if' block checks for 'Happy' and switches the costume to 'happy'. The second 'if' block checks for 'Sad' and switches the costume to 'sad'. The third 'if' block checks for 'So_so' and switches the costume to 'soso'.





AI emotion detector (Programming)

- Select the “Code” tab and click the green flag. Enter your feelings with keywords and figure out whether AI model works.

The screenshot shows the Scratch IDE interface for a project titled "AI emotion detector". The "Code" tab is selected, and the script area contains the following code blocks:

```

when green flag clicked
  switch costume to Soso
  ask How are you feeling today? and wait
  if recognize text answer (label) = Happy then
    switch costume to Happy
  if recognize text answer (label) = Sad then
    switch costume to sad
  if recognize text answer (label) = So_so then
    switch costume to Soso
  
```

The stage area displays a yellow sad face character with a speech bubble that says "How are you feeling today?". A red box highlights the green flag icon in the top right corner of the script area. The left sidebar shows the "Sensing" category selected, and the "AI Emotion detector" blocks are visible at the bottom of the sidebar.





AI emotion detector (Programming)

- Issues
 - What did you do if the AI emotion detector not work well?
 - What should be considered when you make AI emotion detector?
(Think about ethical consideration)(e.g., Bias, Transparency, Inclusiveness etc.)





Census @School: ML4Kids

- **Machine learning for making predictions:**
 - AI models make predictions on the behaviors or events, by analyzing the overall trends present in the input data they receive. (e.g., the AI model is being trained to recognize and predict poses based on the provided images)
 - Example: **google map predicting the Bus Arrival Time:**
 - Collecting data on the **arrival times** of buses at a particular bus stop over a certain period.
 - Analyzing **factors** such as traffic conditions, time of day, and historical bus schedules, within this period.
 - Using the collected data and analysis to predict the estimated arrival time of a bus at the bus stop **in the upcoming period**.

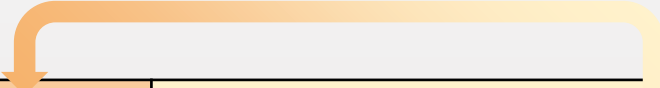




Census @School: ML4Kids

1. Data Collection

- Do a survey with your classmates. (*Recall the experience from the first day: the more data you provide to AI, the better they learn! So, try to ask in from as more classmates as you can!)
- Write some questions you could ask your classmates that could affect what future occupation they have in mind.



A diagram consisting of a thick orange arrow that starts at the 'Outcome' column header and points to the 'Predictor' column header, indicating a relationship between the two.

	Outcome	Predictor			
Name	A. Job	B. Donate	C. Superpower	D. Subject	E. Emotion





Census @School: ML4Kids

Predictors

- B. If you had \$1000 to donate to a charity of your choice, what type of organization would you choose? Select one.
1. Arts, culture, sports (e.g., community centers, museums, sports teams, music programs)
 2. Health (e.g., cancer, AIDS, diabetes research)
 3. Religious (e.g., church or activities related to worship)
 4. Environment (e.g., saving forests, clean air, clean water)
 5. Education/Youth development (e.g., reading, literacy and skills training, after-school programs)
- C. Which of the following superpowers would you most like to have? Select one.
1. Invisibility
 2. Telepathy (read minds)
 3. Freeze time
 4. Fly
 5. Super strength
- D. What is your favorite subject in school? Select one.
1. Humanities (e.g., History, English Arts, Languages)
 2. STEM (e.g., Computers and technology, Mathematics and statistics, Science)
 3. Social studies, Geography
 4. Physical education
- E. Which would you prefer to be? Select one.
1. Rich
 2. Happy
 3. Famous
 4. Healthy

Outcome

- A. Future occupation
1. Scientist
 2. Artist (e.g., painter, actor, musician, etc.)
 3. Athlete





ML4KIDS ID & PW

- [ml4kids_idpw.xlsx](#)
- Teacher: keundol88@gmail.com / PW: aibloomfield
- ID: aigood / PW: avon-leaks





Census @School: ML4Kids

2. Train your Model

- Click the project “census@school”
- Enter the data you collected from your classmates

Recognising **numbers** as **Scientist, Artist or Athlete**

[Back to project](#)

Scientist

Donate 2	Donate 1
Superpower 1	Superpower 3
Subject 2	Subject 1
Emotion 2	Emotion 2
Donate 4	Donate 2
Superpower 2	Superpower 1
Subject 1	Subject 2
Emotion 4	Emotion 2

+ Add example

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Artist

Donate 1	Donate 5
Superpower 4	Superpower 2
Subject 3	Subject 3
Emotion 2	Emotion 2
Donate 5	Donate 1
Superpower 3	Superpower 3
Subject 1	Subject 1
Emotion 2	Emotion 2

+ Add example

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Athlete

Donate 5	Donate 4
Superpower 4	Superpower 4
Subject 4	Subject 4
Emotion 4	Emotion 1
Donate 3	Donate 1
Superpower 3	Superpower 2
Subject 4	Subject 4
Emotion 1	Emotion 3

+ Add example

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Census @School: ML4Kids

3. Test Model with New Input

- Test this training by getting the computer to predict some other people's answers
 - Is the prediction accurate? Why do you think it's accurate or not? What do you plan to do if you want to improve your model?
 - How do you call this type of machine learning? Supervised or unsupervised learning?





Discussion

- Based on the two activities today, let's think about the importance of data quality and data quantity:
 - What does data quantity and quality mean?
 - How will data quantity and quality influence your results?
(How can poor quality data affect the application you made?)
 - How can you improve the data quantity and quality?
 - Do you think that collecting more data always leads to better decisions? Why or why not?





Discussion

- Ethical issues to consider (e.g., bias, transparency, privacy etc)
 - Bias
 - What should be done to avoid the bias of AI?
 - [Dark skin may make a difference](#)
 - [“Coded Bias”](#)
 - Social Good
 - How can AI improve the world?
 - [Seeing AI: Making the visual world more accessible](#)
 - Privacy, Transparency
 - Who should take charge of the data collected from AI?
 - [CHINA using facial recognition in the education](#)



Mini-project 1: Improve School Environment with AI solution



MINI-Project: AI-based Solution

Topic: Use AI to Improve School Environment

A good school environment promotes learning, health, and growth for students. With the integration of AI, we can unlock innovative solutions that enhance various aspects of the school environment, from personalized learning support to efficient resource management!

Use “Project template” to document your ideas!





MINI-Project: AI-based Solution

- Example AI-based solutions for good school environment
- *Academic Support:* Developing an AI-powered virtual tutor that can provide help through real-time feedback, personalized study guides, to help students improve performance in different subjects.

Solve for w .

$$-18 = 2 + \frac{w}{4}$$

Simplify your answer as much as possible.

We first subtract 2 from each side of the equation and simplify.

$$-18 - 2 = 2 - 2 + \frac{w}{4}$$

$$-20 = \frac{w}{4}$$

Then, we multiply each side by 4 and simplify.

$$4(-20) = 4\left(\frac{w}{4}\right)$$

$$-80 = w$$

The solution is $w = -80$.

how would we work. We will read the solutions line-by-





MINI-Project: AI-based Solution

- Example AI-based solutions for good school environment
- *Student Safety*: Creating an AI safety system that uses cameras and sensors to monitor campus status and detect potential safety risks, such as unauthorized access, bullying incidents, or dangerous situations.





MINI-Project: AI-based Solution

- Possible aspects of “school environment” to improve:
 - Study support
 - Student safety
 - Emotional support
 - Classroom environment
 - Community connection
 - Anti-bullying
 -more to think.....





MINI-Project: AI-based Solution

Group discussion: what aspect do you want to improve for a better school environment?

- Think about:
 - What specific factor do you and your peers consider most very important for creating a healthy and supportive school environment?
 - Are there any problems or issues that you have noticed in our school environment that you would like to address?





MINI-Project: AI-based Solution

Time to fill in your “Project design template”!

- Step 1 - “**Define the Scope**”: Describe your general ideas about how to help improve the positive school environment.
 - Which specific aspect are you going to improve for creating a good school environment?
 - What solution are you proposing in this aspect?
 - Why does your solution need the use of AI technology?





MINI-Project: AI-based Solution

What outcomes do you expect from your AI-based solution?

- Think about...
- “Does it improve efficiency, on ??? aspect?”
- “Does it support students’ learning experiences, in ??? way?”
- “Does it enhance the safety and security, with ??? functions”
- “Does it.....”

What effects can your proposal bring to your school environment??

Use your language to describe the outcomes you like to see with the help of AI





MINI-Project: AI-based Solution

Time to fill in your “Project design template”!

- Step 2a - **“Generate Concepts”**: Decide the expected outcomes of your AI-based solution.
 - Which part(s) of your solution specifically needs the use of AI?
 - What effects will AI bring to the aspect that you want to improve?





MINI-Project: AI-based Solution

- What is the purpose of using AI, based on your expected outcomes?
 - To make prediction?
 - To recognize & classify items?
 - To optimize workflow?
 - To automate tasks?
 - To support decisions?





MINI-Project: AI-based Solution

- What types of AI you need, based on your expected outcomes?
- Image / text / audio / number / facial / gestures / emotion recognition





MINI-Project: AI-based Solution

- Example use of AI in other contexts

Expected Outcome	Purpose of AI	Type of AI
<i>Personalized book recommendations</i>	<u>Making predictions</u> on which books a user might enjoy based on their reading history and preferences.	<u>Text recognition</u> and analysis to understand the user's book choices and recommend similar books.
<i>Identifying plant species from images</i>	<u>Classifying plants</u> based on their visual characteristics.	<u>Image recognition</u> to analyze the features of plants and identify their species.





MINI-Project: AI-based Solution

Time to fill in your “Project design template”!

- Step 2b - **“Generate Concepts”**: Identify the purpose and type of AI you need for this application



MINI-Project: AI-based Solution

Example illustration

- Mind Map

