



Learning Activities for Teaching AI in K-5

2020 CSTA Annual Conference

Tuesday, July 14, 2020

10:00-10:45 AM Central Time

bit.ly/csta2020ai4k12-k5



Who Are We & Who's Joining Us Today?

Deborah Seehorn

AI4K12 Steering Committee

Vicky Sedgwick

K-2 Grade Level Lead

Kelly Powers

3-5 Grade Level Lead

al4k12.org

Please introduce yourself in
the chat:

- Your Name
- Where you are joining us from
- What grade levels do you work with?
- Your Job Role



What is Your Experience Teaching AI?

0 3 4

I have never taught AI



I have taught a lesson or two



I teach AI unit(s)



I teach AI specific class(es)

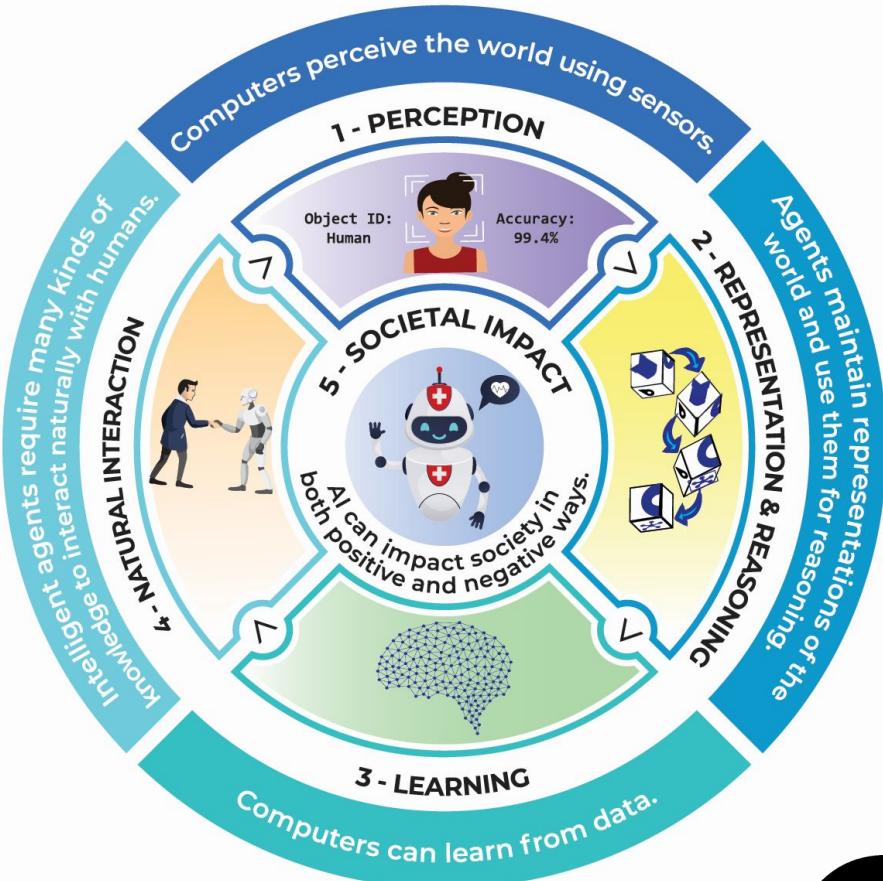




Five Big Ideas in AI

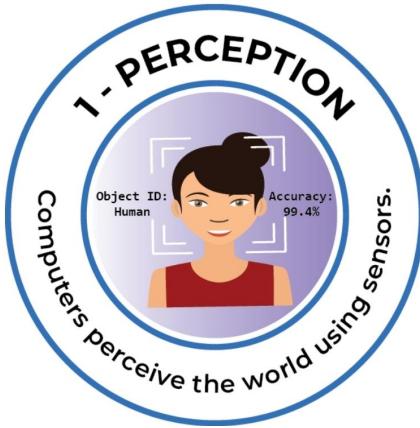
Download a free poster
explaining the Five Big
Ideas from our website:

AI4K12.org



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Big Idea #1

Learning Activities

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K-2 Big Idea #1 Learning Activity



Our 5 Senses

People use their 5 senses to understand the world around them.

Can you match the sense to the correct body part?



TASK 22 **MaKeS sENSE**

Humans learn about the world through our senses. You have ears to listen and eyes to see. You can smell and taste different things, and feel if someone touches you. The robot reacts to its surroundings with sensors.

Cut out the senses and sensors. First, match each human sense to its corresponding body part. Then, do the same for the robot.

Task 22: MAKES SENSE

Human Senses:

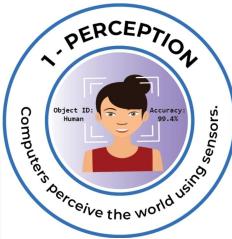
- WITH EARS
- WITH NOSE
- WITH MOUTH
- WITH MOTION SENSOR

Robot Sensors:

- WITH EYES
- WITH TOUCH
- WITH MICROPHONE
- WITH CAMERA
- WITH PRESSURE SENSOR

Discussion: What senses do you need before leaving to school? What would a robot need to vacuum?

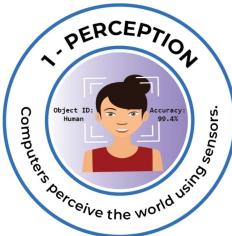
Sensors: Sensors detect events or changes in their environment, and then react to them. Sensors can measure for example temperature, light or pressure.



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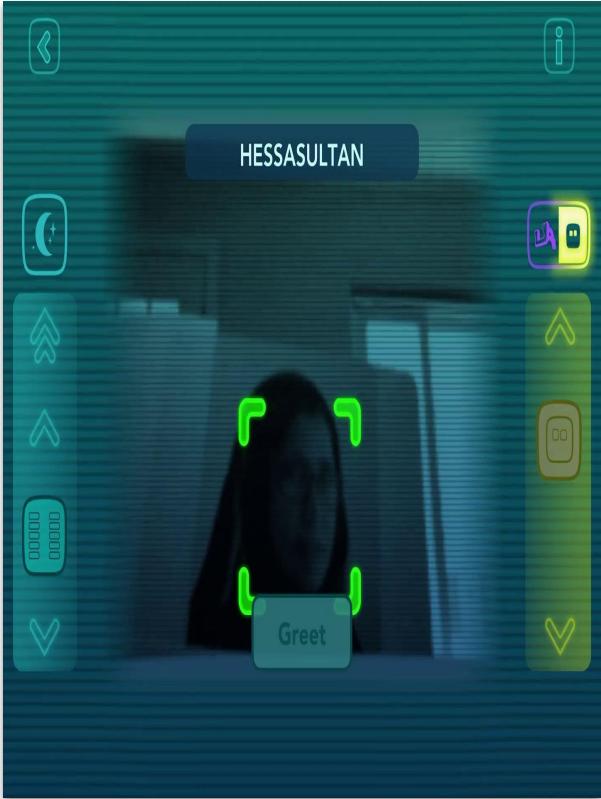
K-2 Big Idea #1 Learning Activity



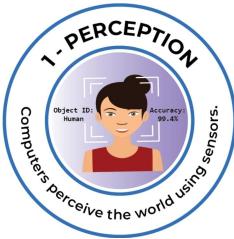
bit.ly/csta2020ai4k12-k5



Cozmo & Notable Women in Computing



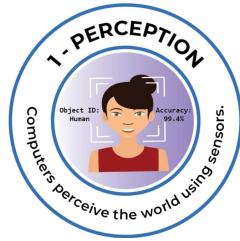
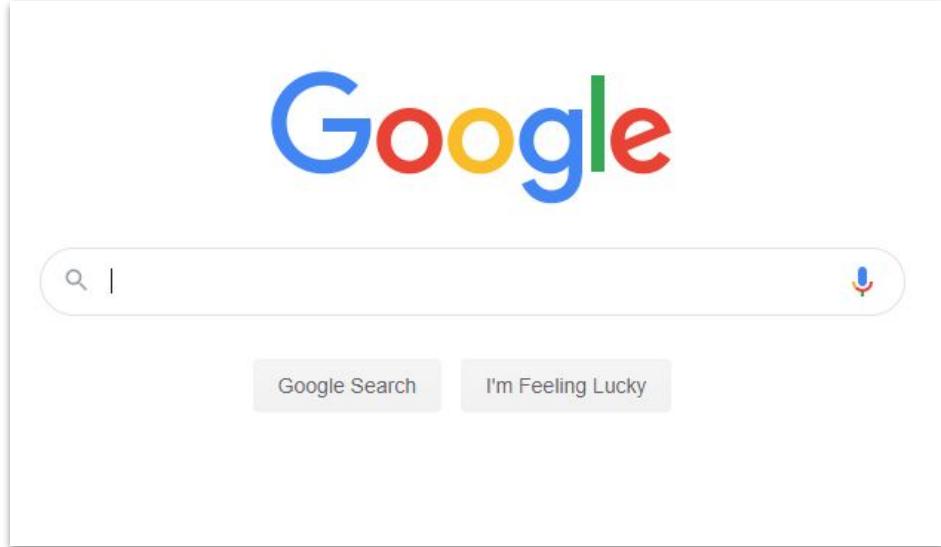
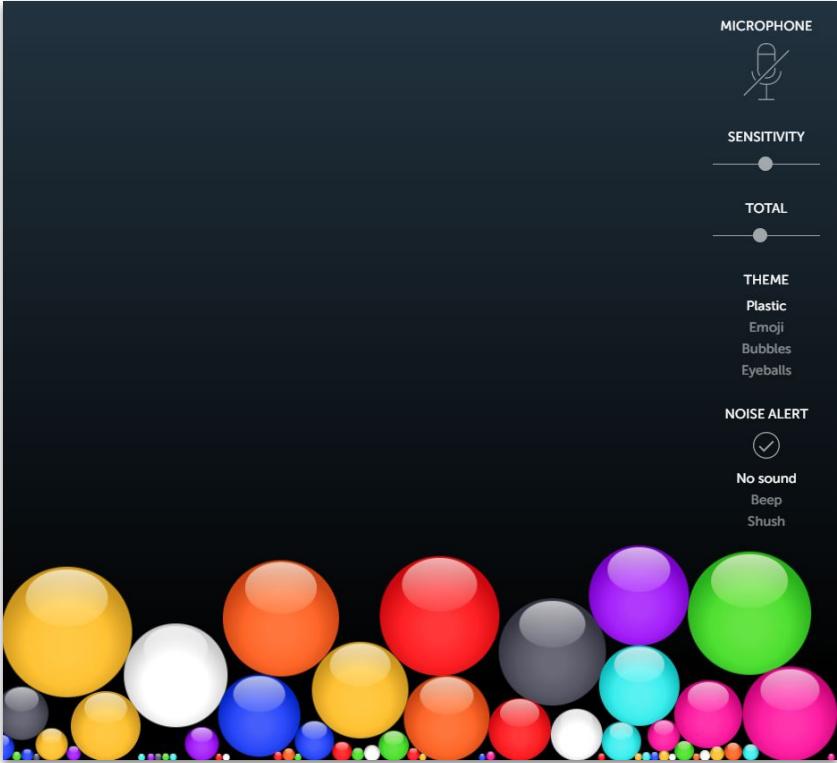
"Ada Lovelace portrait" by Alfred Edward Chalon - Science & Society Picture Library. Licensed under Public Domain via Wikimedia Commons.
<https://bit.ly/1SGBMq>



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K-2 Big Idea #1 Learning Activity



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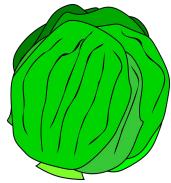
Big Idea #3

Learning Activities

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K-2 Big Idea #3 Learning Activity

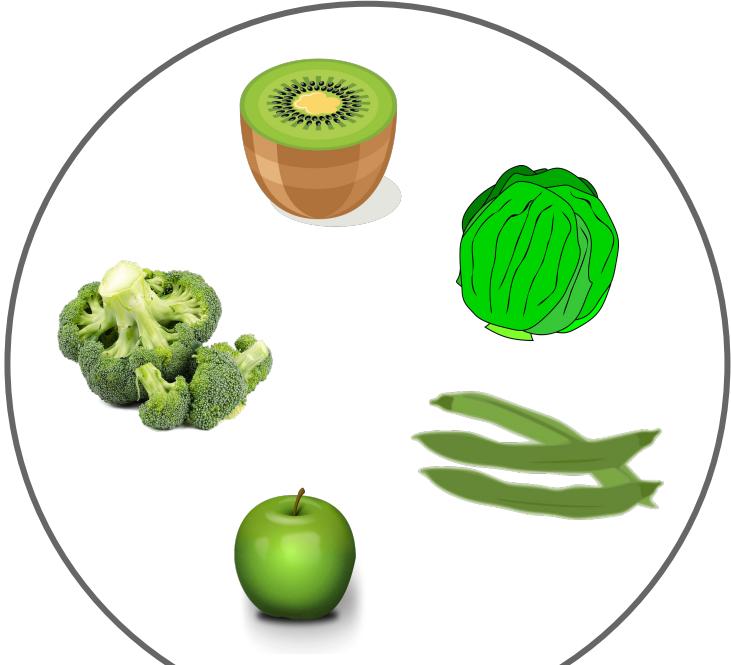
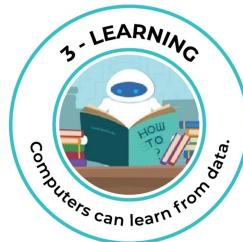


Sort the Food: bit.ly/ai4k12-3-k2food

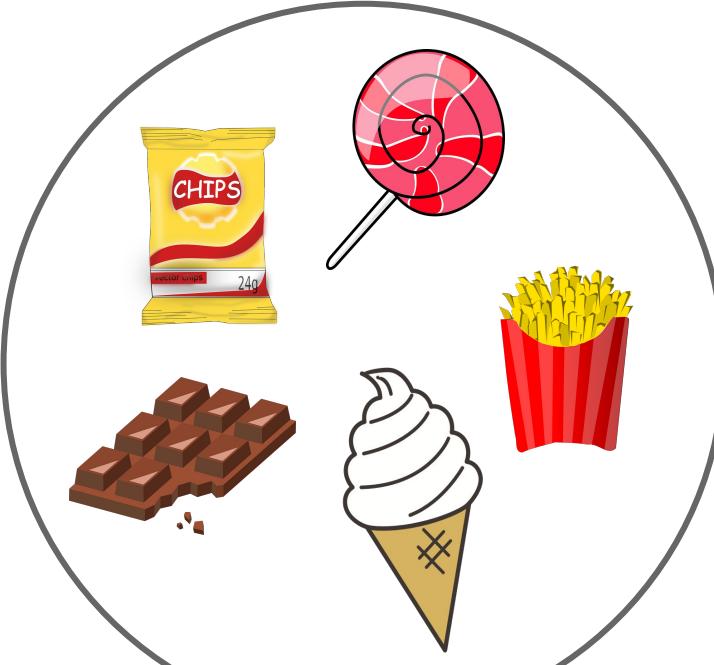
bit.ly/csta2020ai4k12-k5



K-2 Learning Activities for Teaching

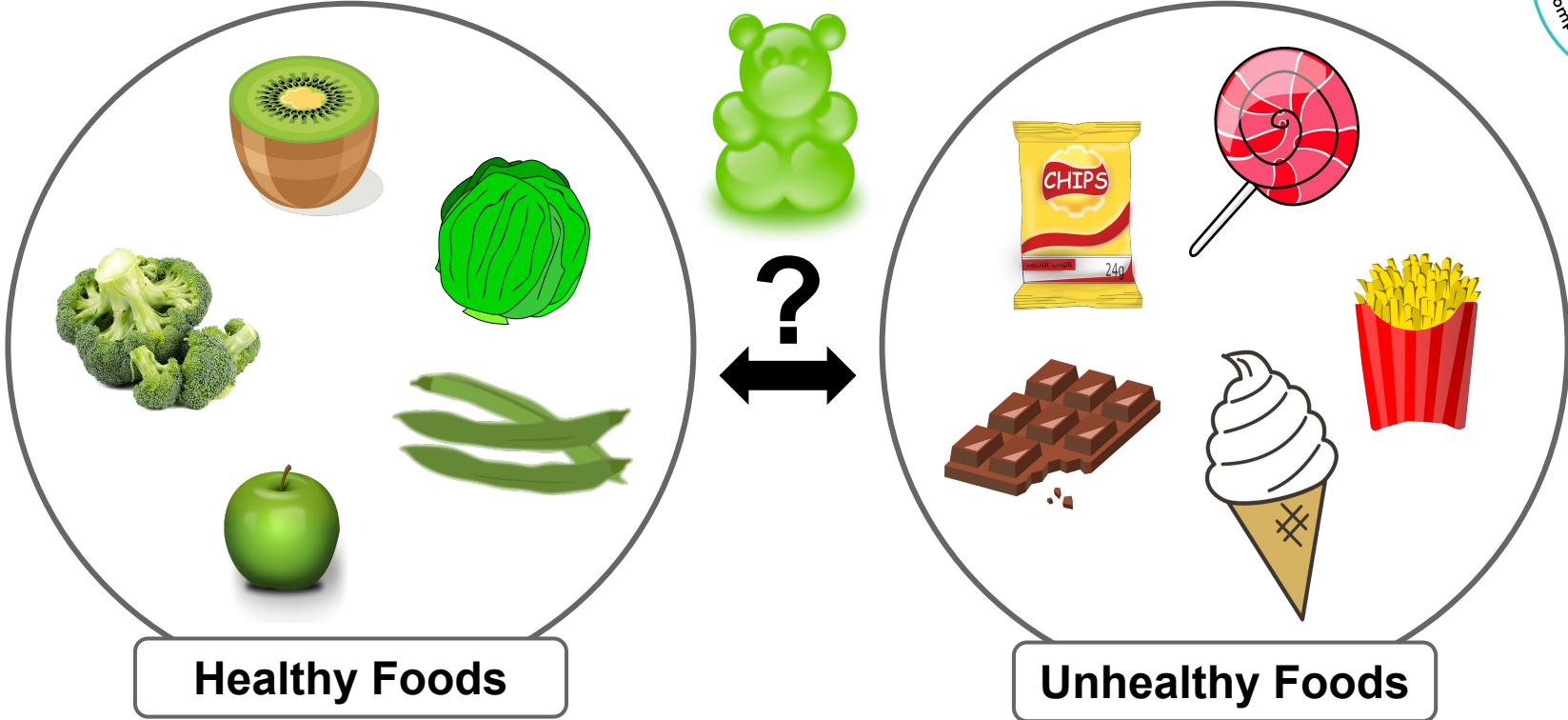
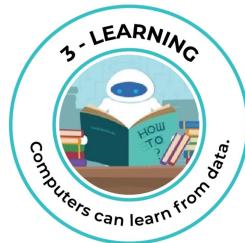


Healthy Foods



Unhealthy Foods

K-2 Learning Activities for Teaching



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K-2 Learning Activities for Teaching

≡ Teachable Machine

The screenshot shows the Teachable Machine interface for training a machine learning model to identify healthy and unhealthy foods.

Training Data:

- Healthy Foods:** 5 Image Samples shown as icons of a kiwi, a watermelon, a green apple, and two pieces of broccoli.
- Unhealthy Foods:** 5 Image Samples shown as icons of a bag of chips, a lollipop, a chocolate bar, an ice cream cone, and a box of popcorn.

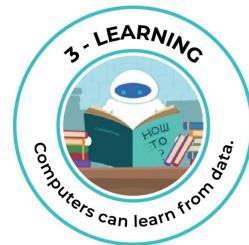
Training Status: Model Trained

Output:

Category	Probability (%)
Healthy Foods	100%
Unheal... Foods	0%

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3-5 Learning Activities for Teaching ML

Mood Meter: How do I feel?



machinelearningforkids.co.uk

Machine Learning for Kids

Collect examples of text to train a computer

Train a ML Model

Evaluate the model in labeling text

Build a Scratch Project





3-5 Learning Activities for Teaching ML

+ Add new label

Red

mean Worried Scared
Angry Aggressive Explode
Yelling leaving not

+ Add example

9

Green

open minded comfortable
included Peaceful Mellow
Chill relaxed

+ Add example

7

Blue

Bully tired depressed
down lonely bored cry
unhappy sad

+ Add example

9

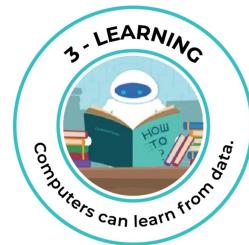
Yellow

Brave Confident excited brave pumped
Awesome Jumping happy smiling

+ Add example

6





3-5 Learning Activities for Teaching ML

You have trained a machine learning model to recognise when text is Red, Green or 3 other classes.

You created the model on Monday, June 15, 2020 6:10 PM.

You have collected:

- 9 examples of Red,
- 7 examples of Green,
- 9 examples of Blue,
- 9 examples of Yellow,
- 4 examples of Neutral

Try putting in some text to see how it is recognised based on your training.

I am angry

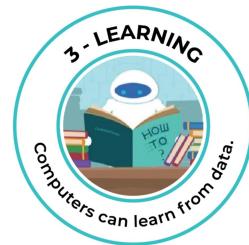
Recognised as **Red**
with 94% confidence

Test the ML model.

Evaluate it! Retrain?

Satisfied? Create an interactive Scratch project to predict your mood!





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3-5 Learning Activities for Teaching ML

The image shows a Scratch script with the following logic:

- When green flag clicked:
 - Switch costume to Starting Ballerina
 - Ask "How are you feeling today?" and wait
 - If [ML recognise text answer (label) = Green] then
 - Switch costume to Calm
 - Say "In the Green" for 2 seconds
 - If [ML recognise text answer (label) = Red] then
 - Switch costume to ballerinamad
 - Say "In the Red" for 2 seconds

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Big Idea #4

Learning Activities

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3-5 Learning Activities for Teaching

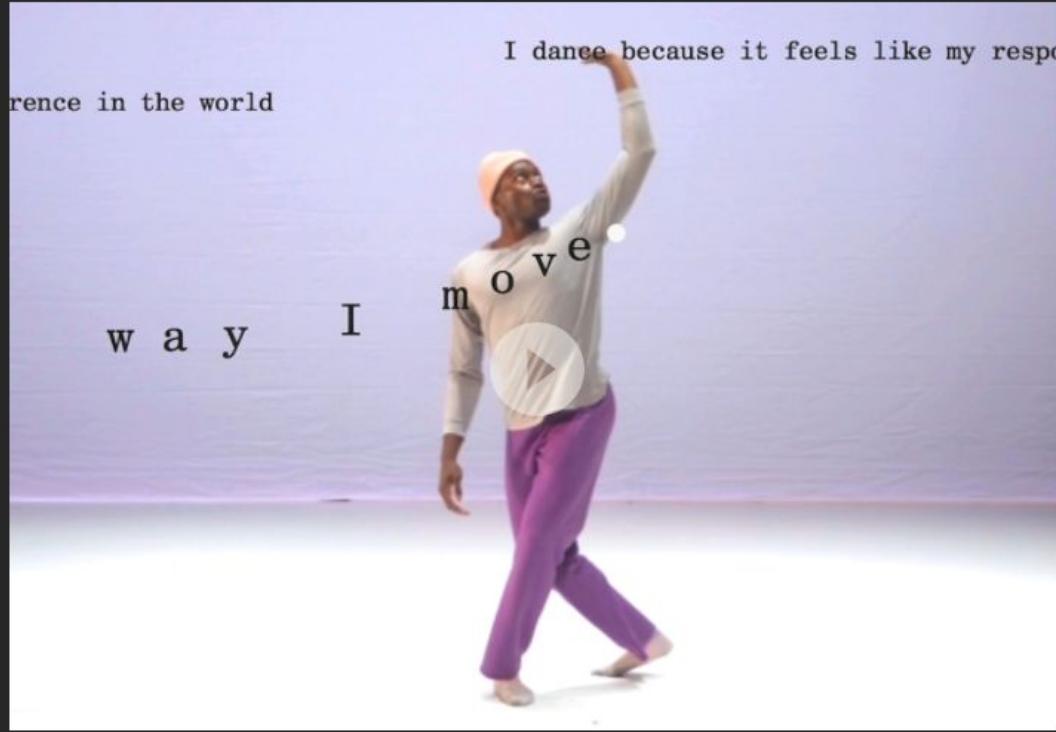


Body, Movement,
Language
interacting with AI to
create
Art
Compositions
Tell Stories
Experiences

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Manifesto



AN INTIMATE MESSAGE COMPOSED IN DIGITAL SPACE

Bill is famous for improvising with speech and movement, often deftly weaving together personal stories, histories of others, and commentaries on culture. This experiment, *Manifesto* allows the user to create a trail of words that respond to their movements in real time, and suspend them on screen to compose a statement. Bill workshoppped this prototype by asking his dancers to use it tell stories about their lives or write a letter to someone. Now, *Manifesto* invites you to tell your story in a new way.

BEGIN

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3-5 Learning Activities for Teaching

Experiments with Google

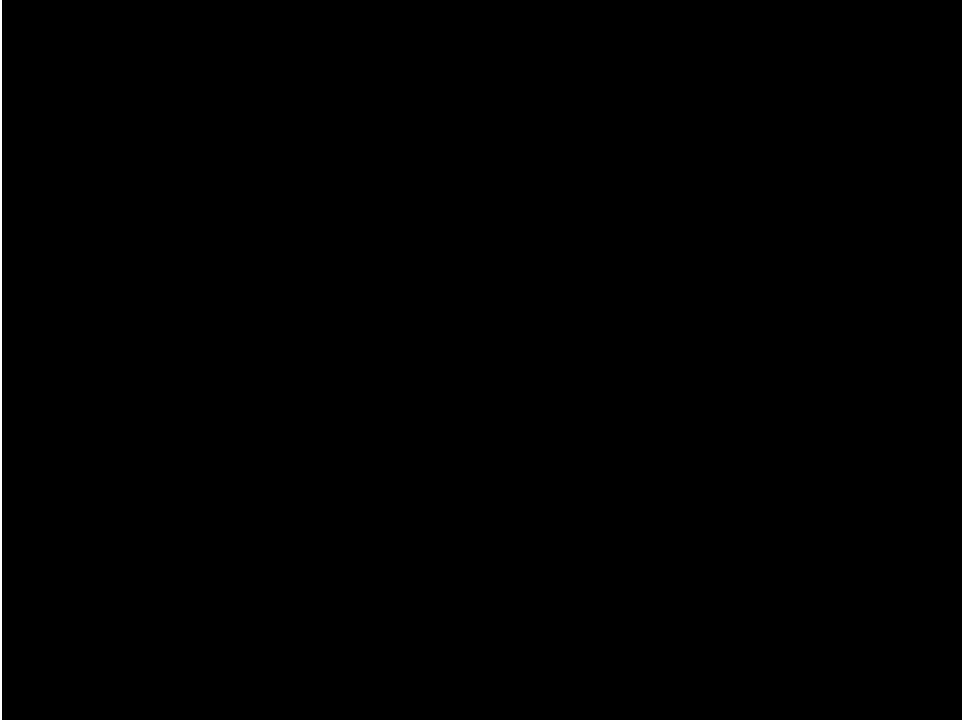


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3-5 Learning Activities for Teaching

Dylan Shareable Link



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3-5 Learning Activities for Teaching

Analise shareable link



bit.ly/csta2020ai4k12-k5





Anonymous

The machine learning Scratch projects are they sharable on the scratch.mit.edu site?

3

Anonymous

Can you share a link to your Seesaw activity?

2

Anonymous

what is the link to Manifesto

1

Anonymous

How much time do you devote to teaching AI?

0

↓ Answers in speaker notes ↓

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Additional K-5 AI Instructional Resources

Find more Learning Activities
for Teaching AI in K-5
on the AI4K12 website: www.ai4k12.org

Thank you for your time!

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