



UNIVERSITY

# Exploring Artificial Intelligence

2023 sySTEMnow Conference

# Our Team



**Liz Taylor**  
Director of STEM



**Sarah Stelsel**  
STEM Programs  
Coordinator



**Mike Meilicke, '18**  
STEM Programs  
Coordinator



**Andy Baisch**  
FIRST Programs  
Coordinator



[stem@msoe.edu](mailto:stem@msoe.edu)

# What We'll Do...

- Cover the 5 Big Ideas in AI
- Try some fun activity demos to see if we've got it down
- All of the Big 5 Idea icons and imagery are from AI4K12





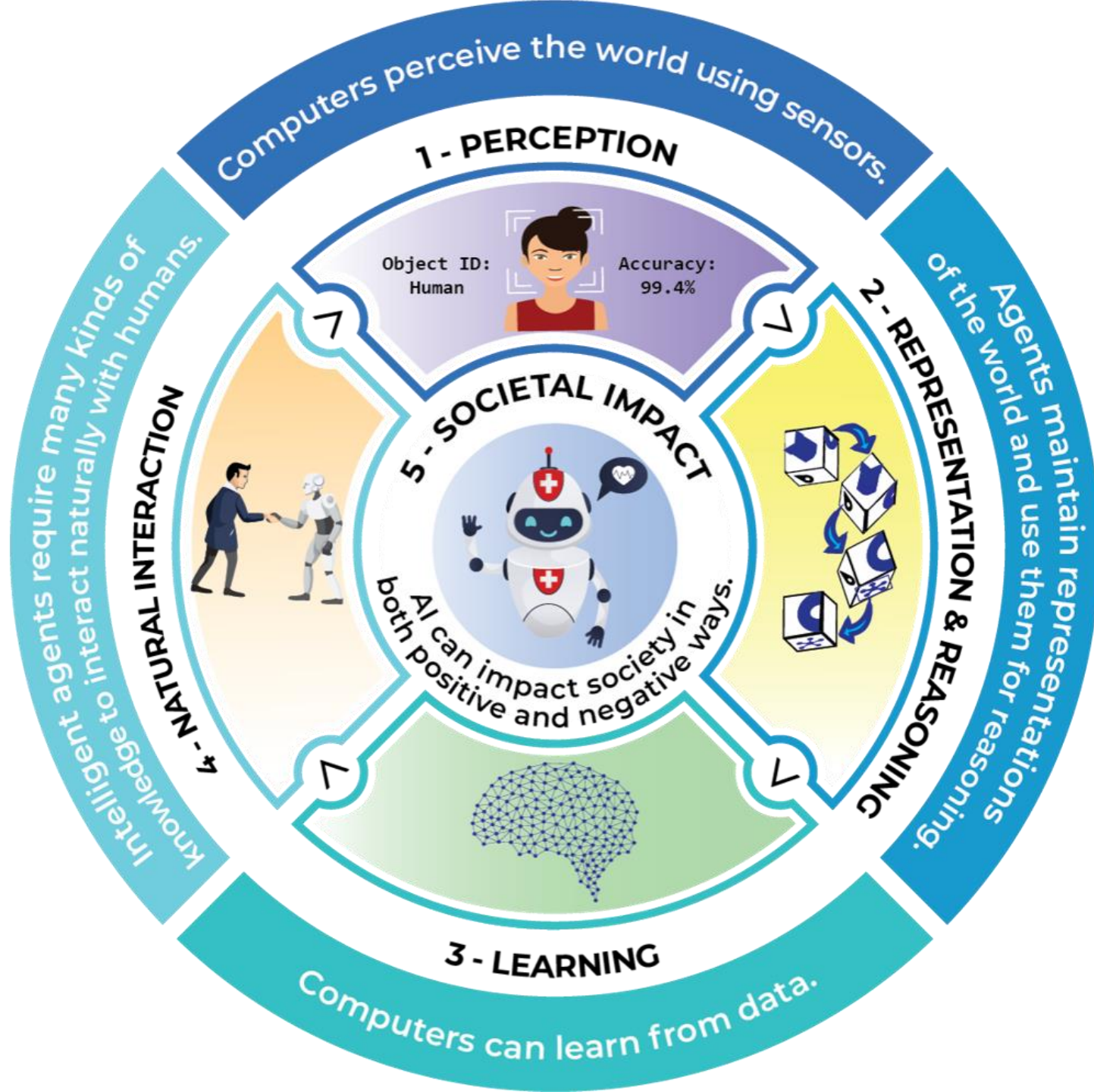






Image Source: Ultimate Classic Rock



Image Source: Medium



Image Source: Screen Rant



Image Source: Daily Express



Image Source: CinemaBlend



Image Source: Disney

# Robots versus AI: How many robots are in this picture?

# Robots versus AI

- Robots and artificial intelligence are not the same BUT the two can overlap to produce artificially intelligent robots

## Robotics

- Wall-E's Body – Mechanical components, possibly with rules based programs

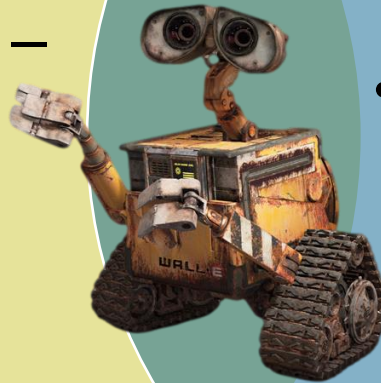


Image Source: Pixar Wiki

## Artificial Intelligence

- Wall-E's Brain – Enables machines to make complex decisions autonomously



# Big Idea 1 - Perception

- Computers are using sensors to perceive the world – this means both gathering signals and then extracting meaning from them.
- Think of it as the “5 Senses” – a robot uses sensors to guide decisions in it’s code. AI might use those same sensors to guide decision making, solve problems, and learn without human input.



Image Source: PC Mag

# Big Idea 2 – Representation & Reasoning

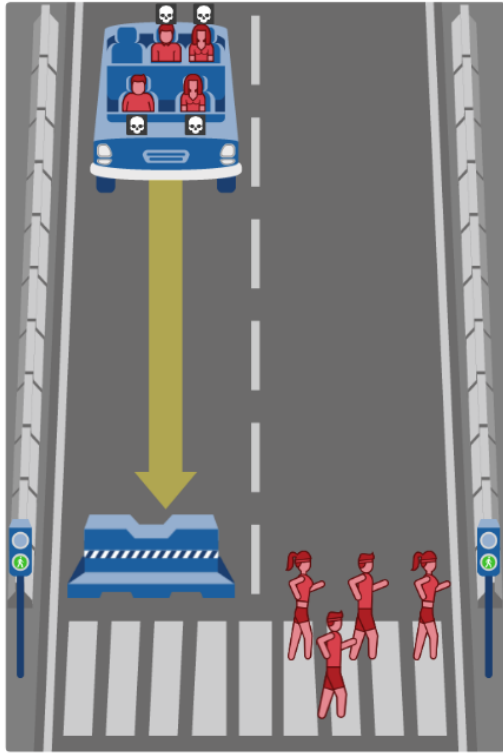
- Anything in the “real world” has to be represented in a way AI can use to solve problems with and it then uses that information to inform it’s decisions. This includes things like:
  - *Relationships* among things – If I am a self-driving car, when I see a red light, I know there is relationship between myself and the red light that dictates what I should do.
  - *How to do something* – When I see a red light, I should stop and wait until the light changes.
- **Where might there be an issue here with human agents involved? Let’s talk about yellow lights!**



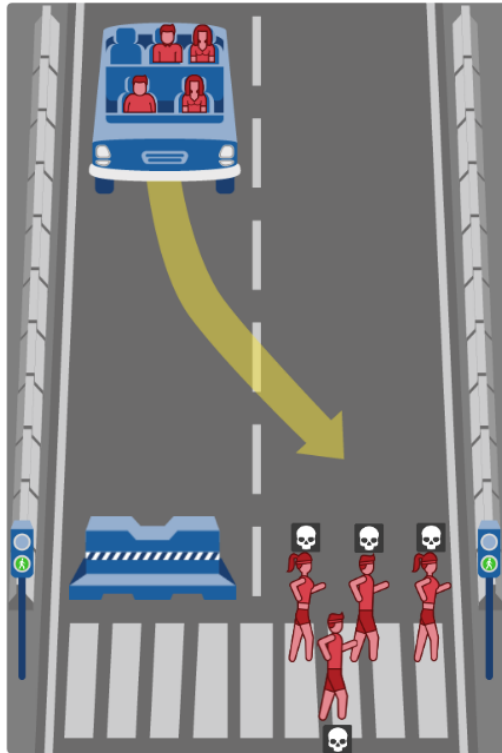


# What happens when the relationships and reasoning are more complex?

What should the self-driving car do?

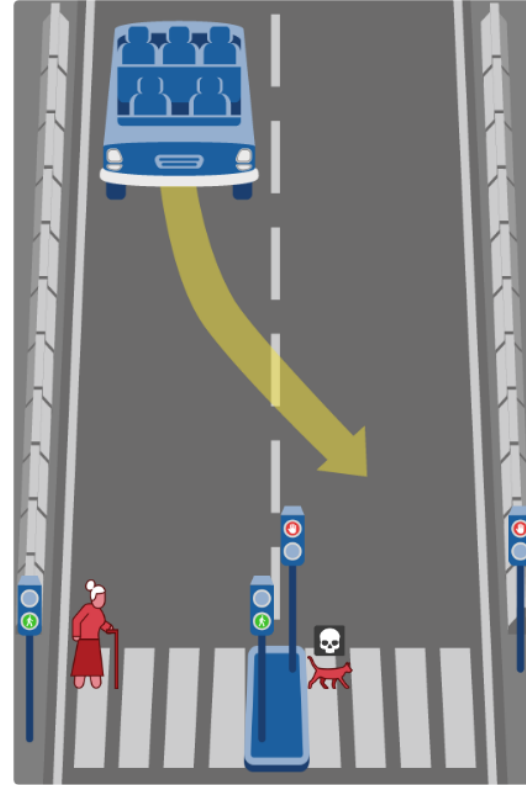


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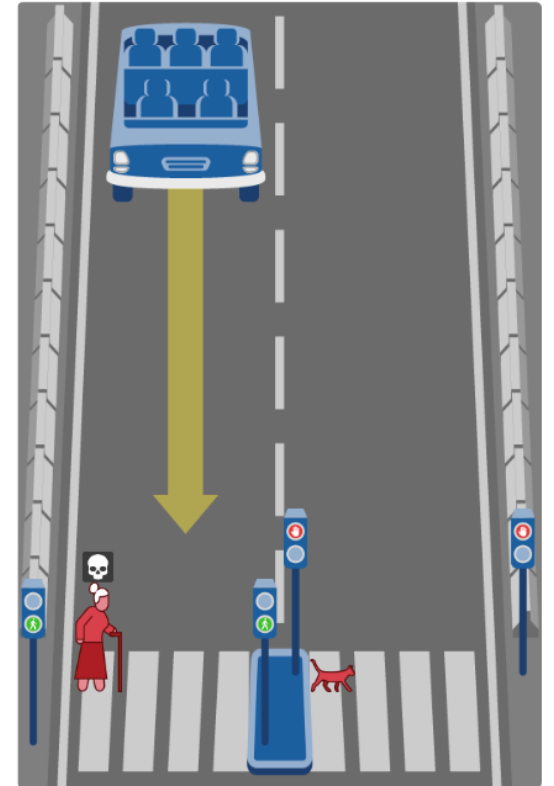


Show Description

What should the self-driving car do?



Show Description

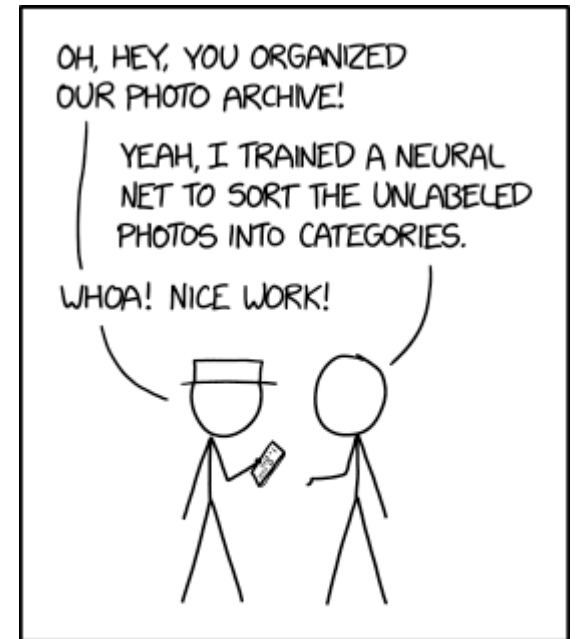


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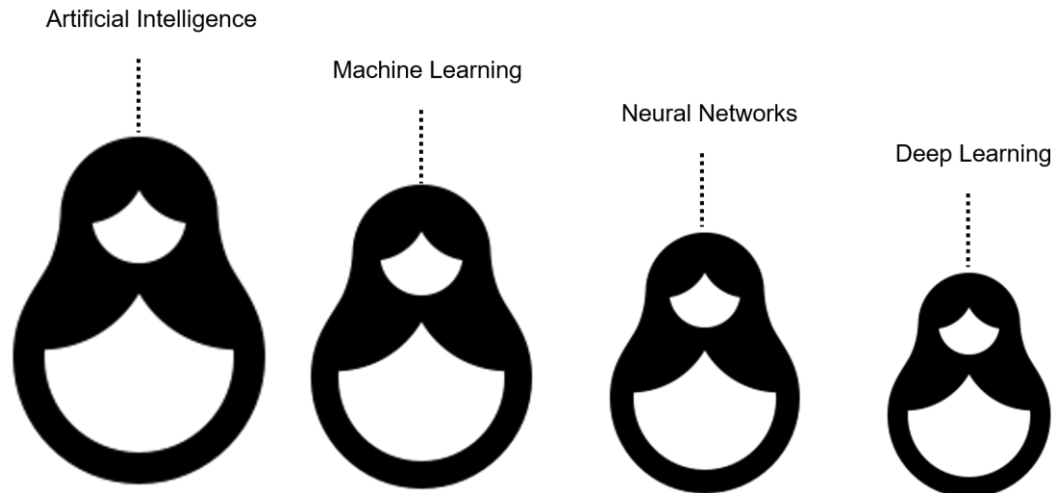
Image Source: MIT Moral Machine

# Big Idea 3 – Learning

- Computers can learn from data – you may often hear the term “machine learning” in association with this
- You can think of learning similar to how humans learn – a computer will use data and algorithms to learn and then consequently improve that learning

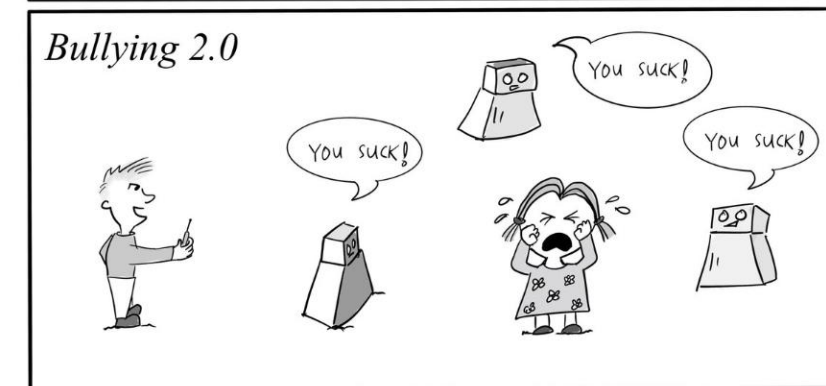


ENGINEERING TIP:  
WHEN YOU DO A TASK BY HAND,  
YOU CAN TECHNICALLY SAY YOU  
TRAINED A NEURAL NET TO DO IT.



# Big Idea 4 – Natural Interaction

- It takes many types of knowledge to be able to interact naturally with humans
- This knowledge includes:
  - Different languages
  - Recognizing facial expressions and emotions
  - Understanding cultural norms and social conventions to understand intent



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# Big Idea 5 – Societal Impact

- Artificial intelligence can impact society in both positive and negative ways
- Biases in data can lead to individuals being served better or worse than others
- **Chances are – you’ve seen AI represented in both positive and negative life through the news or in the media...**

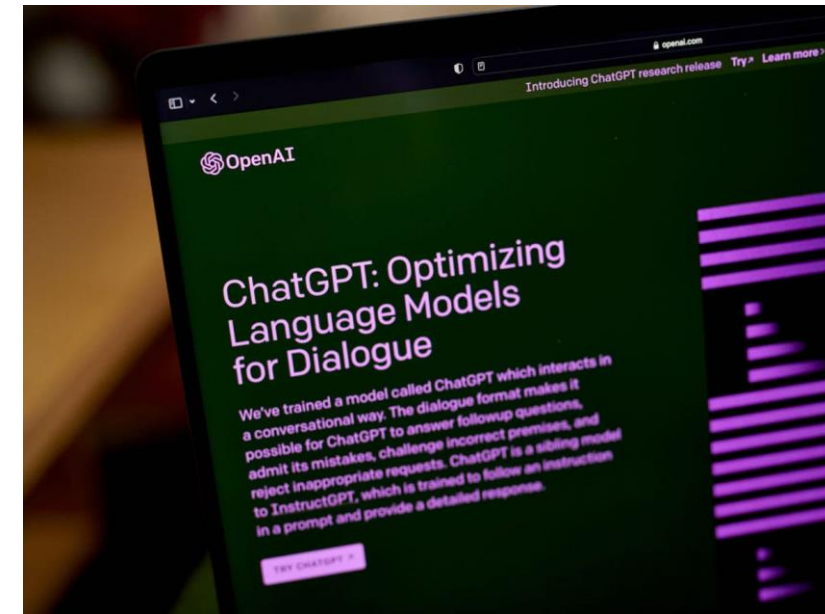


Image Source: ZDNET



Image Source: Ultimate Classic Rock



Image Source: Medium



Image Source: Screen Rant



Image Source: Daily Express



Image Source: CinemaBlend



Image Source: Disney

**Same photo, new question! Is the societal impact positive or negative of these artificially intelligent robots?**



# Let's Explore AI!

We'll split our remaining time into 10 minute increments to rotate through three AI focused stations.

- **Station 1:** Artificial Intelligence with Cutebots
- **Station 2:** Machine Learning with Neuromaker
- **Station 3:** Web-Based AI Activities \*bring your device!\*



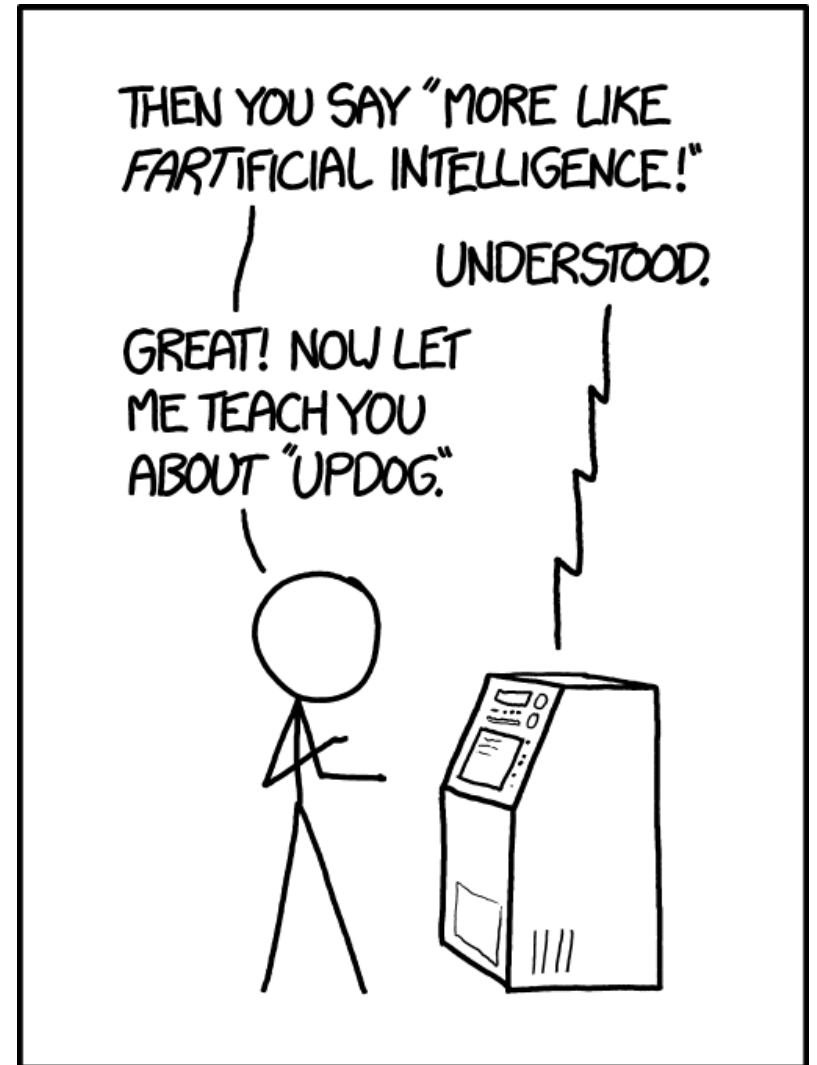
# Now...use your newfound knowledge for good!

Activity & Curriculum Repository

<https://bit.ly/3YIRAPf>



Contact us at [stem@msoe.edu](mailto:stem@msoe.edu)



AI TIP: TO DEVELOP A COMPUTER WITH THE INTELLIGENCE OF A SIX-YEAR-OLD CHILD, START WITH ONE AS SMART AS AN ADULT AND LET ME TEACH IT STUFF.

Image Source: XKCD

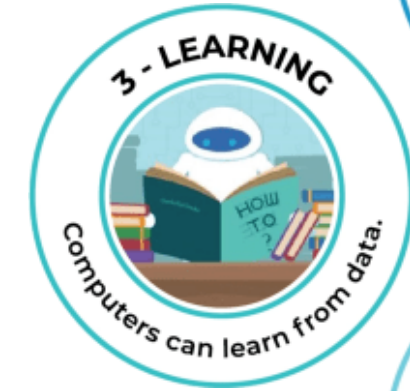


# **Station 3: Web Based AI Tools**

Bartolottas-guest  
PW: BrgGuest!

# How Should AI Make Moral Decisions?

- Go to <https://www.moralmachine.net/>
- Click “Start Judging”
- Clicking “Show Description” will give you more information on any scenario
- Optional to Press “*Would you like to help us better understand your judgement at the end*”

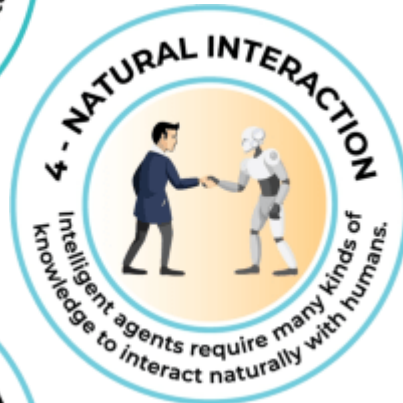
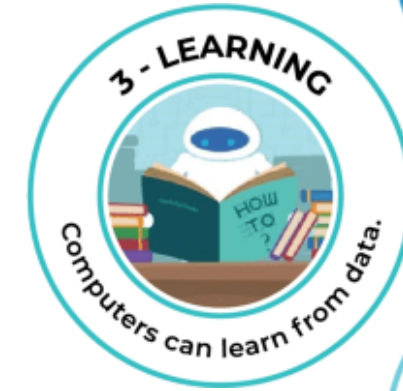




# Which 5 Big Idea(s) Is it?

This activity is recommended to explore the role of bias in AI systems, but takes 10-15 minutes to complete.

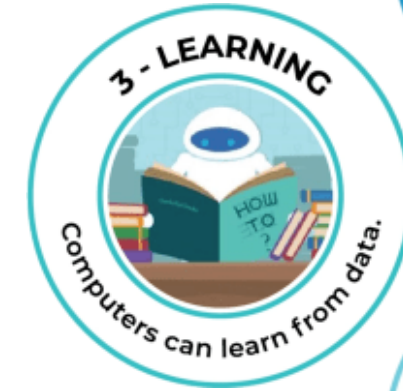
<https://www.survivalofthebestfit.com/>

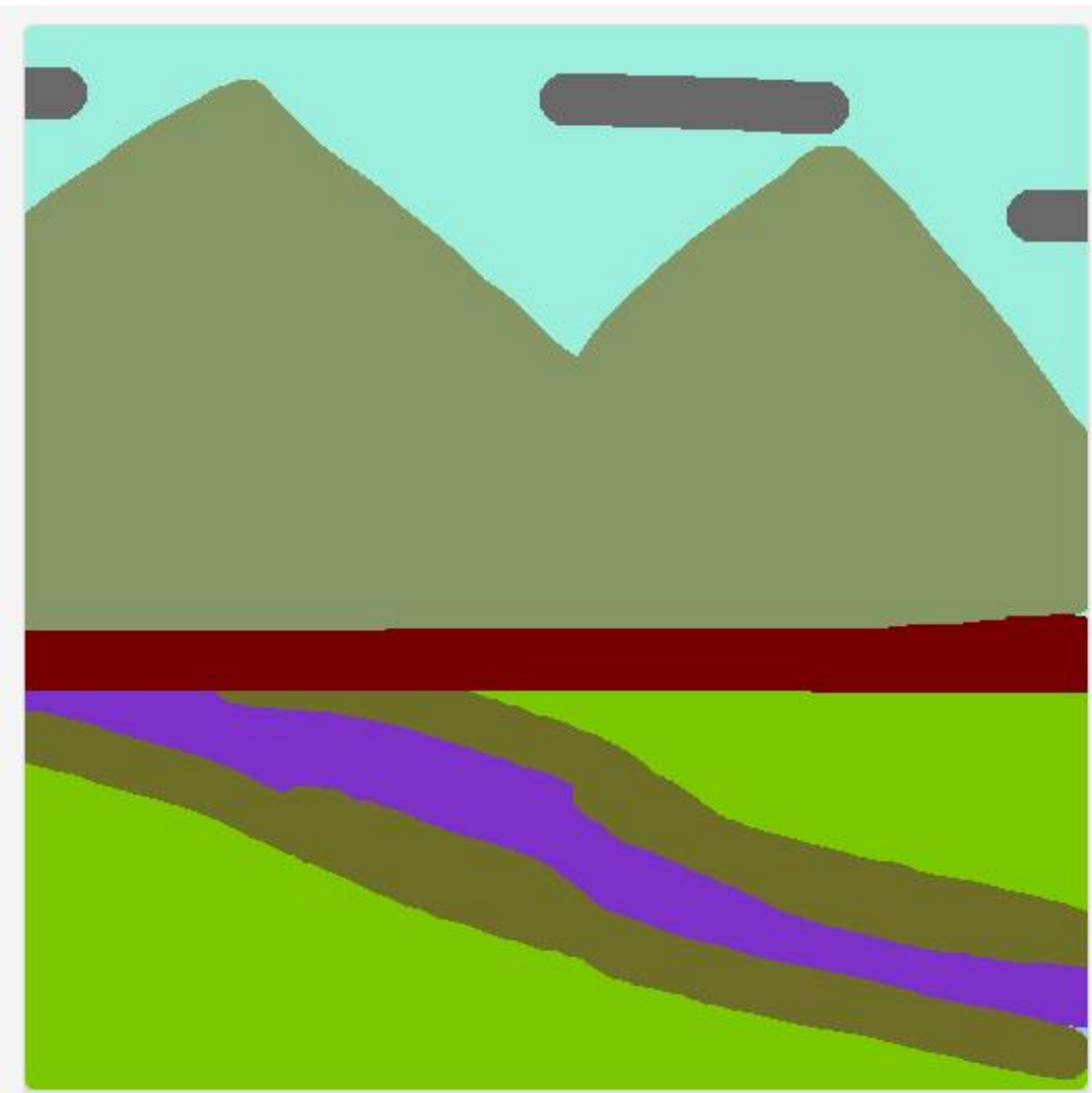


# Which 5 Big Idea(s) Is it?

Generating Art – There is a lot of discussion around the impacts of AI generated art, music, etc. – including who gets credit for the work

nVidia GauGAN – example of an early tool for creating art...





**GauGAN (2020)**





**GauGAN (2022)**

# Which 5 Big Idea(s) Is it?

Try creating your own art – how much “work” do you feel like you did? Should you receive credit? Should the AI engine? Should the artist(s) who trained the model (willingly or unwillingly).

Go to **Adobe Firefly**: [firefly.adobe.com](https://firefly.adobe.com)

Click “Text to Image” – you may need to sign in or create an account.

