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# New Jersey CSPDWeek

*This material is based upon work supported by the National Science Foundation under Award No. 2607763.*

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# Micro:bit and Arduino

By Michelle Velho and Rucha Gokhale

## New Jersey CSPDWeek

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## Micro:bit Create AI

| Task                             | Link                                                                                                                                                            |                                                     |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| micro:bit CreateAI user guide    | <a href="#">micro:bit CreateAI user guide</a>                                                                                                                   |                                                     |
| Introduction to AI               | <a href="#">Introduction to AI   micro:bit</a>                                                                                                                  | CreateAI, MakeCode<br>7-11 yrs, 9-12 yrs, 11-14 yrs |
| Introduction to Machine Learning | <a href="#">Introduction to machine learning   micro:bit</a>                                                                                                    | 7-11 yrs, 9-12 yrs, 11-14 yrs                       |
| Micr:bit Create model testing    | <a href="https://createai.microbit.org/testing-model">https://createai.microbit.org/testing-model</a>                                                           |                                                     |
| You tube video                   | <a href="#">micro:bit Create...</a>                                                                                                                             |                                                     |
| First lesson                     | <a href="https://microbit.org/teach/lessons/first-lessons-with-microbit-createai/">https://microbit.org/teach/lessons/first-lessons-with-microbit-createai/</a> |                                                     |

|                                                                                    |                                                               |  |
|------------------------------------------------------------------------------------|---------------------------------------------------------------|--|
|  | <a href="https://a.co/d/0c3DJKNX">https://a.co/d/0c3DJKNX</a> |  |
|  | <a href="https://a.co/d/09xi8XOT">https://a.co/d/09xi8XOT</a> |  |

# Physical Computing

The study, design, and creation of interactive physical systems that can sense and respond to the physical world. This involves the use of software and hardware components like sensors, actuators, and microcontrollers.

## Physical Computing System

A combination of hardware and software that uses sensors to receive information, processes that information with a programmable controller, and uses outputs or actuators to respond to people or the physical environment.

## Enduring Priorities



Algorithms



Programming



Data & Analysis



Computing Systems

## Emerging Priorities



Ethics & Impacts



AI & Emerging Technologies



Human-Centered Design



Inclusive Collaboration



History of Computing



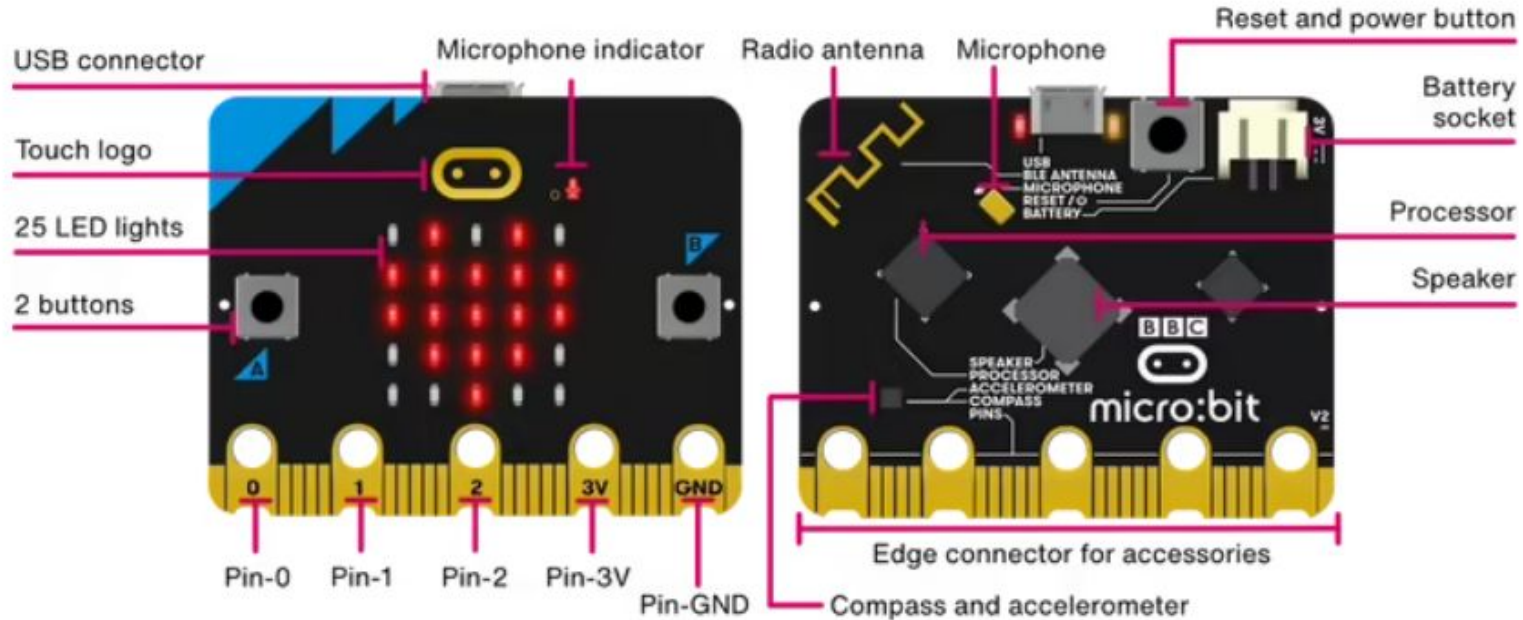
Career Exploration

# Physical Computing

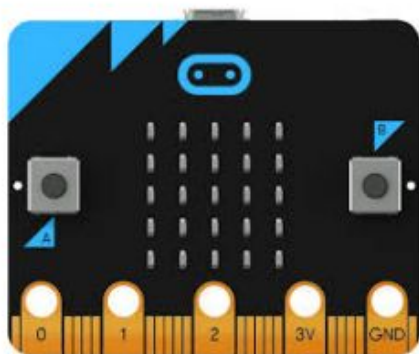
Bridges the digital and physical worlds.

- Makes abstract computer science concepts visible and tangible.
- Integrates computational thinking with engineering design.
- Supports inquiry, creativity, and problem-solving across disciplines.
- Empowers students to become creators of technology, not just consumers.

# micro:bit V2



Bottom edge is bumpy



Micro:bit



Data cord  
(usb/micro cable)



Battery  
pack

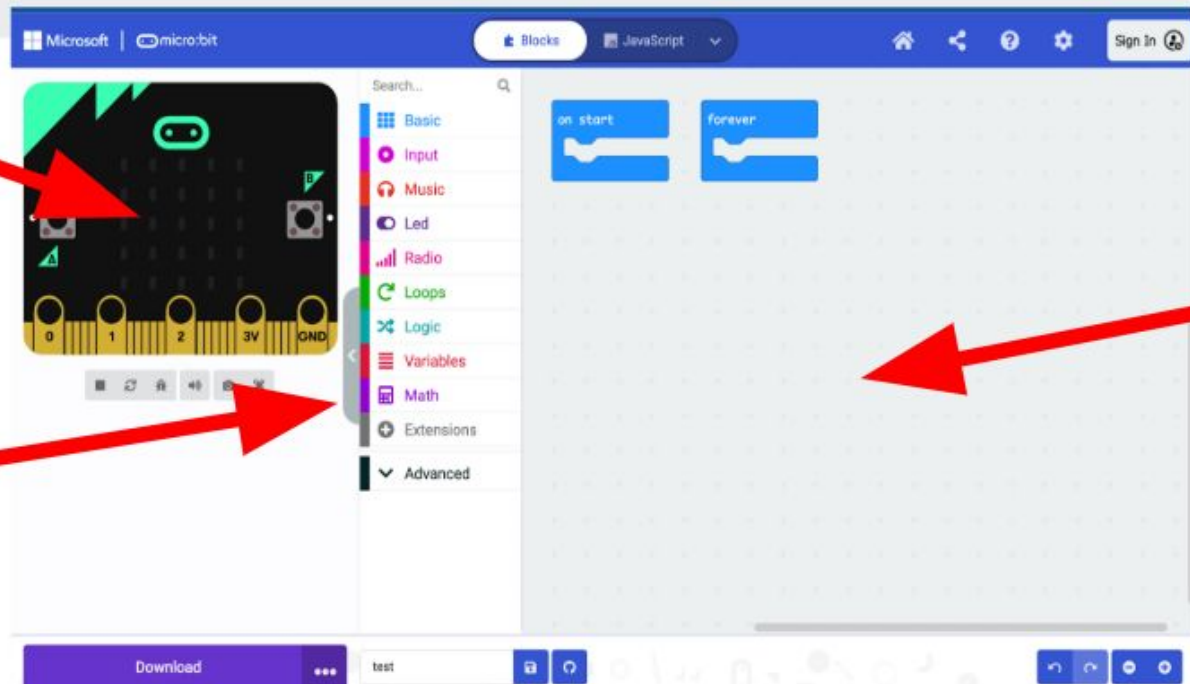


Micro:bit  
simulator

Code block  
categories

Coding  
space

Download to  
Micro:bit



# AI systems

An **AI system** is a collection of technologies – software, data, and hardware – that work together using AI to generate outputs.

AI systems are designed to respond automatically to different inputs in different ways.

Although AI systems appear to behave like humans, they are machines and therefore they are artificial.

AI systems are machines made by humans.



# Generative AI

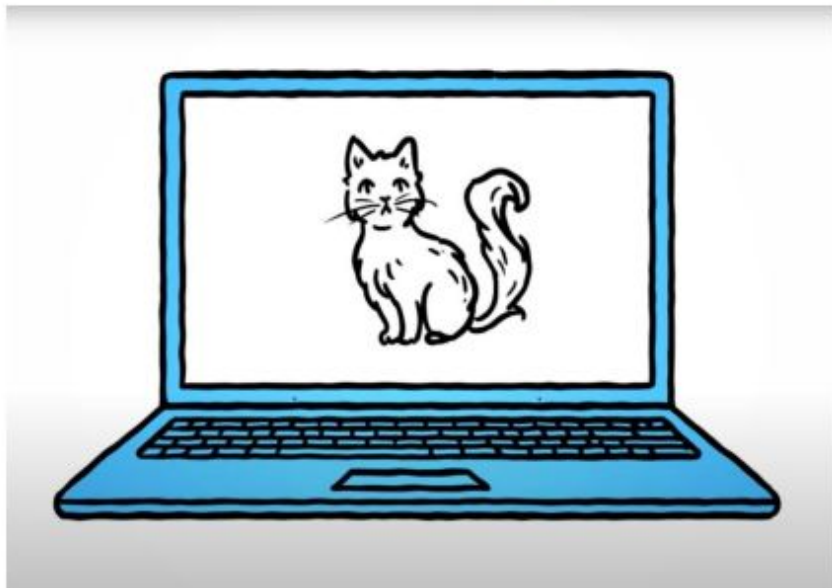
**Generative AI (GenAI)** is a type of AI that generates text, still or moving images or sounds, usually from a written question or 'prompt'. GenAI models are usually trained on huge sets of data collected from the internet.

Chatbots are examples of Generative AI.

They usually produce outputs from a written question or 'prompt' such as 'Draw me a cat.'



**Draw me a cat**



# Machine learning

**Machine learning (ML)** is a type of AI where computers can learn from and make decisions based on data.

A fitness tracker uses machine learning.

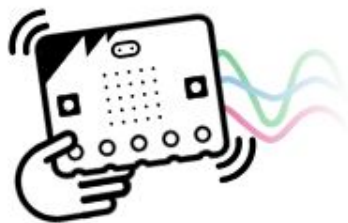
An AI system in the device tracks how long you walk, run and sleep.

The AI system brings the data together and, over time, identifies patterns in your activity.

It outputs information to help you keep track of your activity and improve your fitness and well-being.



Connect



Collect data



Train



Improve

Test model



Code



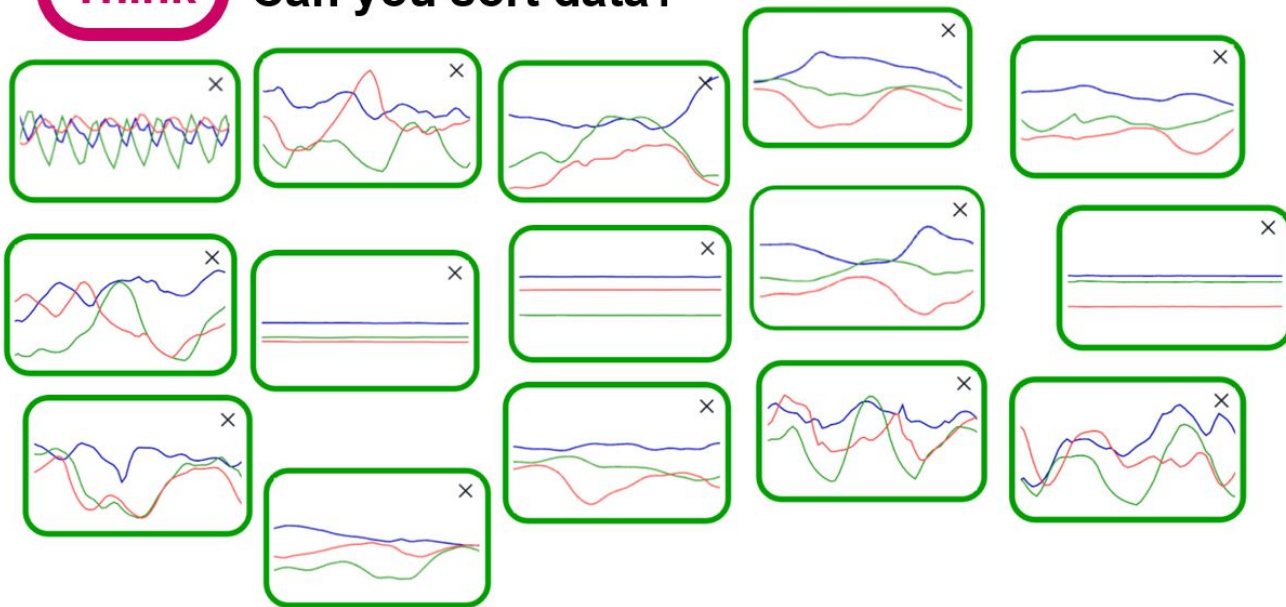
Use



## Lesson 2

**Think**

Can you sort data?



Option to sort cards on screen.

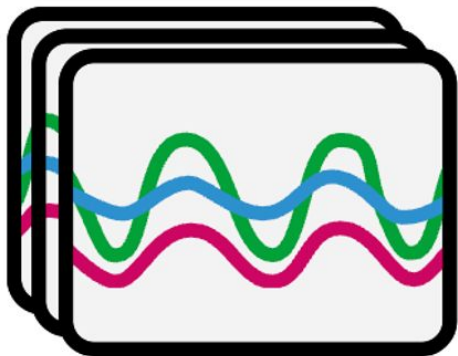
## Lesson 3



First lessons with micro:bit CreateAI

### Lesson 3

# Adding labels and collecting data



Updated April 2026. Visit <https://microbit.org/teach/> for the most up-to-date resources.

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## Lesson 4



First lessons with [micro:bit CreateAI](#)

### Lesson 4

# Training and testing an ML (machine learning) model



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## Lesson 5



First lessons with [micro:bit CreateAI](https://microbit.org/teach/)



### Lesson 5

# Enhancing code with ML (machine learning)

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## Lesson 6



First lessons with [micro:bit CreateAI](#)

Lesson 6

# Evaluating an AI system

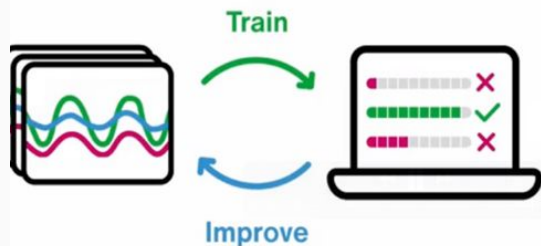
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## Lesson 7



First lessons with [micro:bit CreateAI](#)



### Lesson 7

# Strengthening models through adding diverse data

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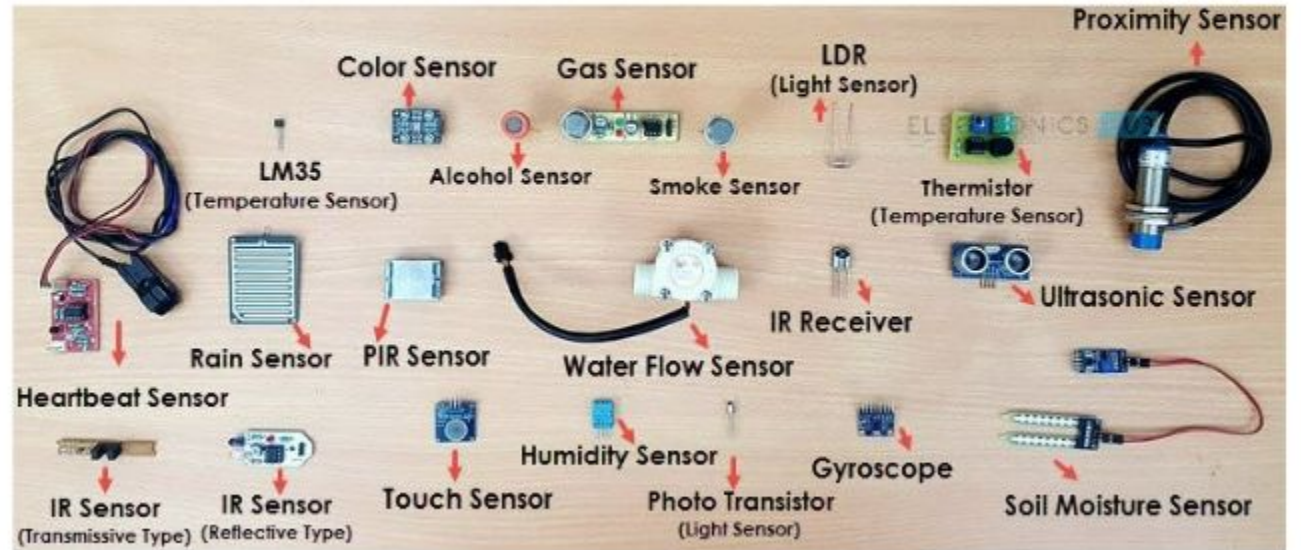
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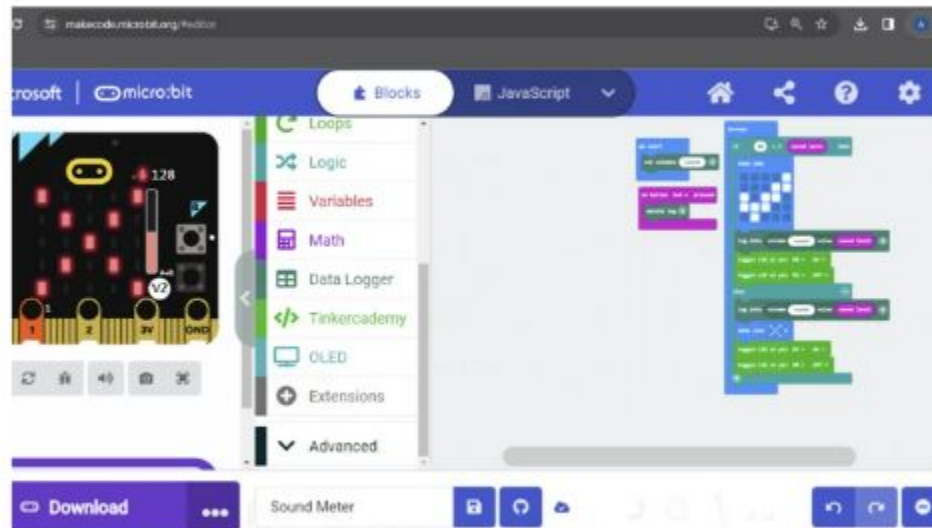
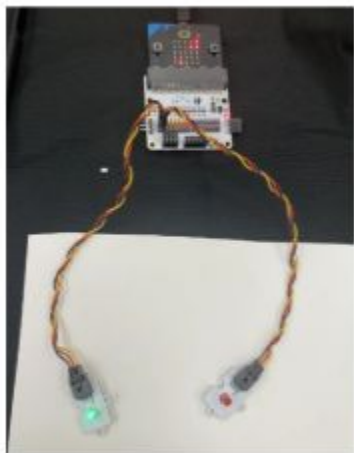


## Humans



## Machines





## 9. MOISTURE SENSOR

