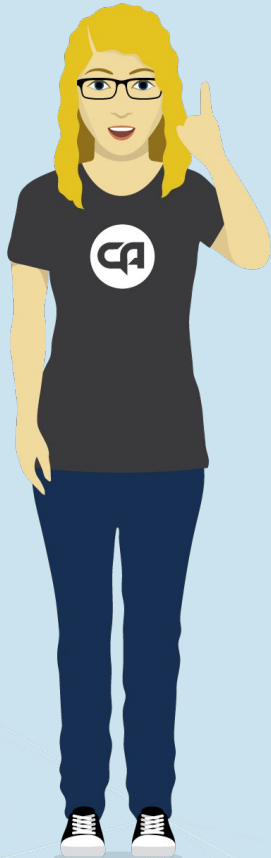


# DEMYSTIFYING AI

Presented by Sarah Cooper



**[sarah@codeavengers.com](mailto:sarah@codeavengers.com)**

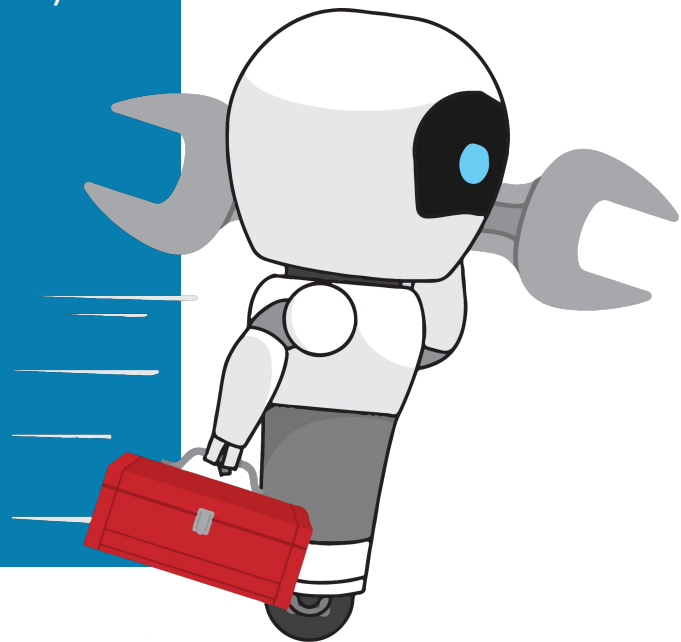
- Work part-time at CA, developing courses is one of my many roles (and passions).
- I've also been running digi-tech based PBL at my local college. (Fiordland)
- I enjoy mountain biking, tramping and snowboarding.
- I enjoy writing engaging content that helps people stay knowledgeable and able to participate in the digital economy.

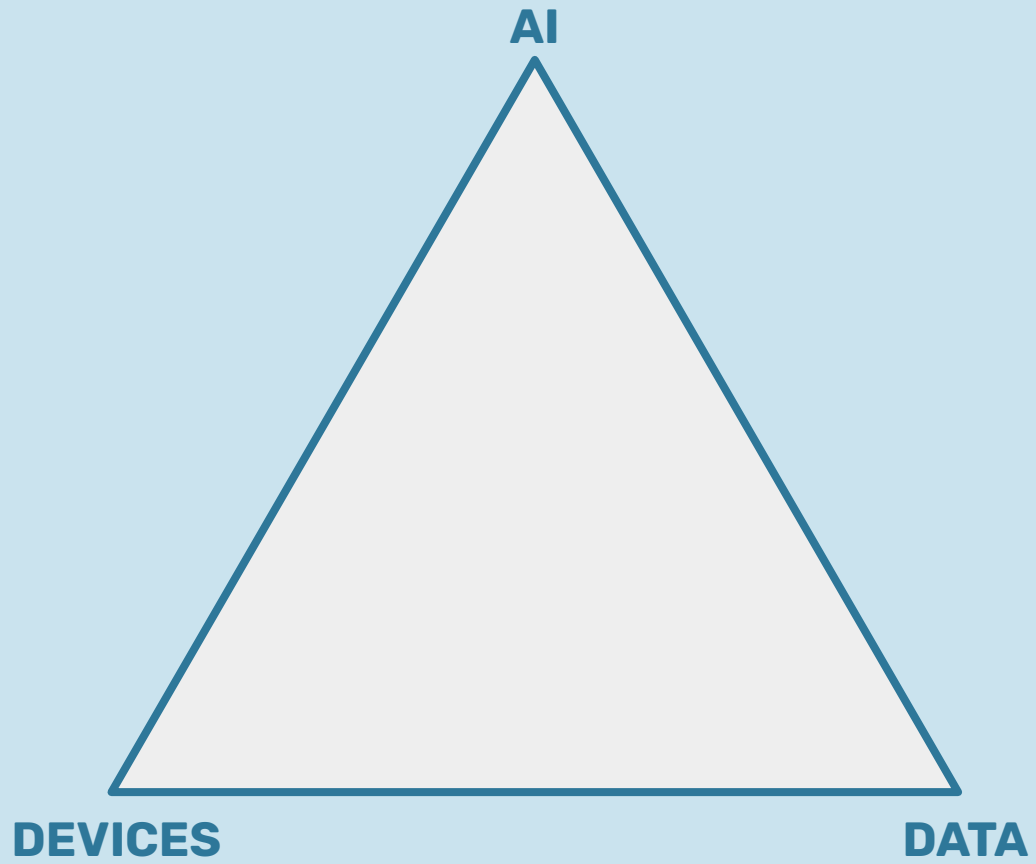
**Email me to :**

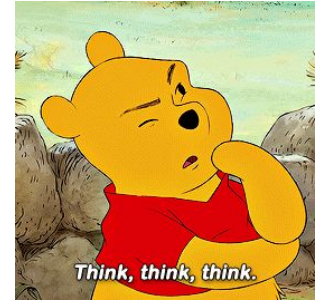
- Arrange a full platform demo.
- Set up a trial to access the AI courses.
- To show interest in a L2 teaching guide.
- Get help with a PLD application.

# Workshop Outline

- **Slideshow**
  - Tech Development in the 21st Century
  - Curriculum Links
  - What is Machine Learning?
  - Input - Process - Output
- **Explore Code Avengers**
- **Machine Learning for Kids Demo**
- **Choice**
  - Play with ML4K
  - Explore HOC free resources
  - Carry on with CA courses
  - Look at our lesson plans







# Think-**P**air-**S**hare

What **devices** do you have in your home 2024 v 2000  
and how have they impacted our lives?

# Devices

- Roomba
- Kindle ✓
- Smartphones ✓
- Smartwatches ✓
- Tablets ✓
- Amazon Echo/ Google Nest
- Chromecasts ✓
- Raspberry pi/Microbit ✓
- Nintendo Switch
- Wireless headphones ✓
- Drones ✓
- VR headsets
- TESLA



# Technologies that makes these devices function:

## Artificial Intelligence

**Automatic Speech Recognition (ASR):** This technology allows the device to accurately convert spoken words into text.

**Natural Language Processing (NLP):** NLP enables the device to understand the context and meaning of words in sentences, allowing it to respond appropriately to user queries.

**Machine Learning:** ML algorithms help improve the accuracy and relevance of responses over time.

**Cloud Computing:** Many smart speakers rely on powerful servers located in data centers to process voice commands and fetch information.

**Wi-Fi /Bluetooth Connectivity:** These allow the speaker to connect to the internet and other devices.

**Internet of Things (IoT) Integration:** This allows smart speakers to connect and control other smart devices in the home.




## Infrastructure

# Courses CA offers to teach about the tech:

1 HR GRADE 6

**IMPACTS OF COMPUTING 300**  
**Security Siege**


Join Sakura and Niko as they learn about security and hacking.



1 HR GRADE 8

**IMPACTS OF COMPUTING 400**  
**Old MacDonald Hacked A Farm, AI, AI, Drones!**


Join Sakura and Niko as they learn about how artificial intelligence, drones, and other digital...



1 HR GRADE 6

**IMPACTS OF COMPUTING 600**  
**AVATAR: Big Data & Digital Footprints**


AVATAR is the latest interactive attraction at ThrillVille theme park. Sakura and Niko can't wait to visit...



1 HR GRADE 10

**ARTIFICIAL INTELLIGENCE 90**  
**Trained Spotting**


Learn about emerging Artificial Intelligence and Machine Learning technologies.



1 HR GRADE 10

**IMPACTS OF COMPUTING 900**  
**Silicon Synapses: Evolution of AI**


Learn the fundamentals about what Artificial Intelligence technology is and how we got...



1 HR GRADE 6

**NETWORKS AND SECURITY 600**  
**Operation Cloud**


Join Max and his friends at the skate park. Felix posts a seemingly innocent photo of Juno on social...



3 HRS GRADE 8

**DIGITAL INFRASTRUCTURE 4**  
**Wires, Waves & Wi-Fi**

Join Juno and Max as they follow the data trail of a mysterious message appearing on their high...



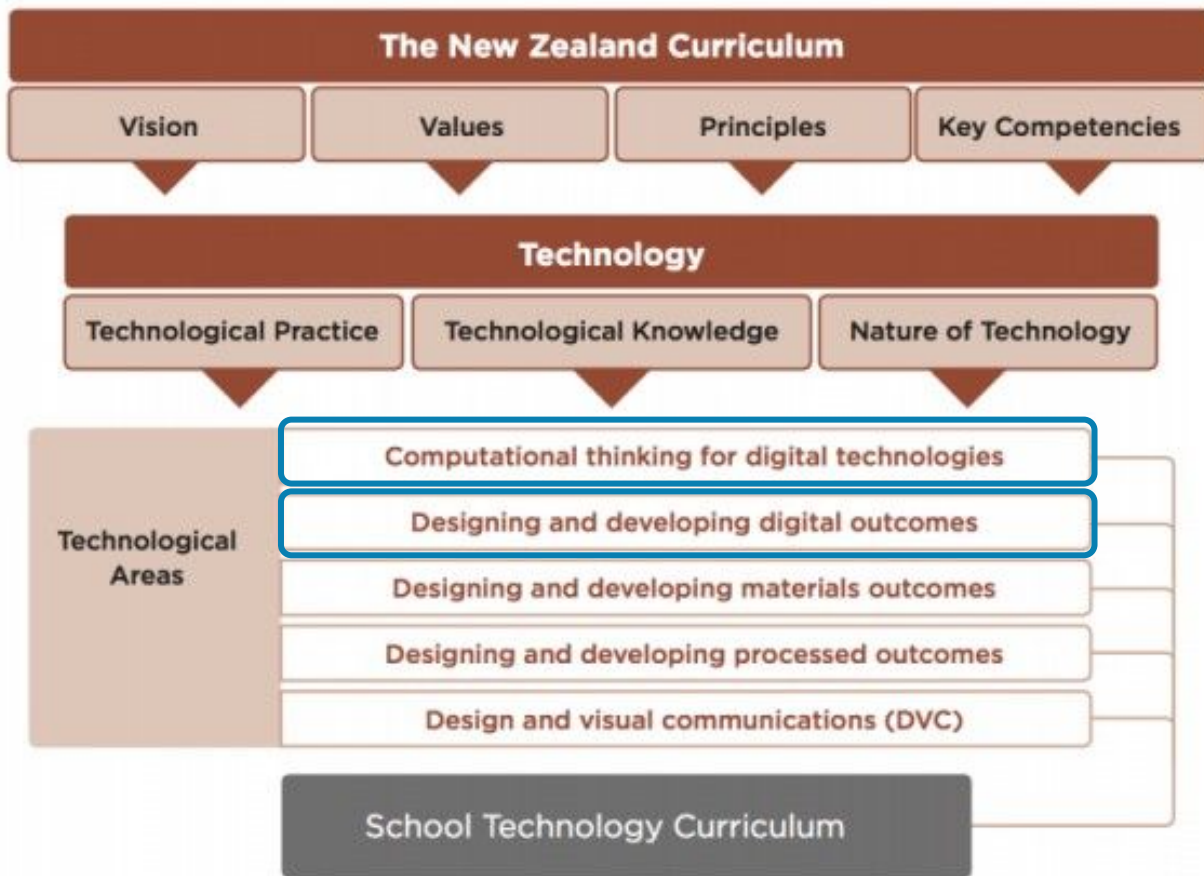
**ARTIFICIAL INTELLIGENCE 91**  
**AI's Next Top Model**



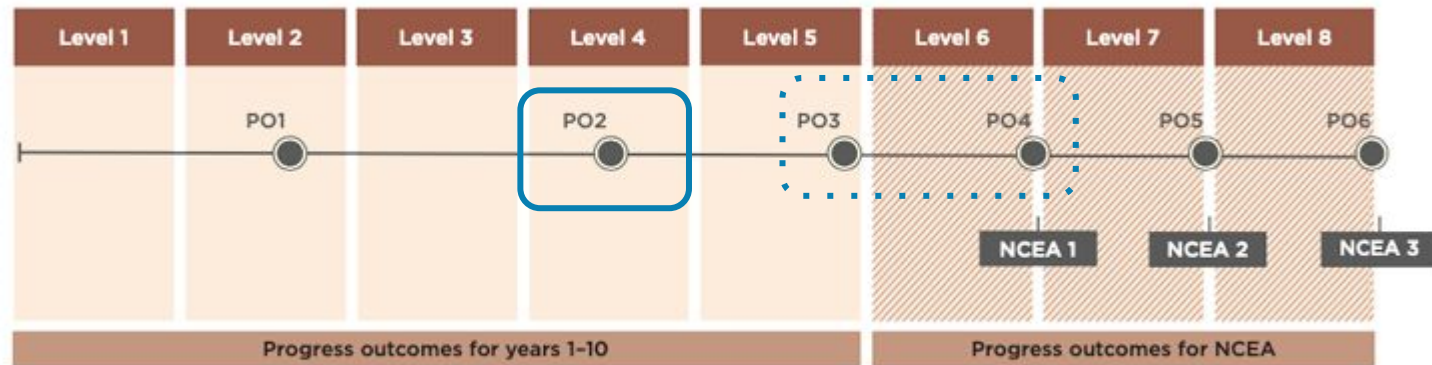


# **Curriculum Links**

Y9 - 12

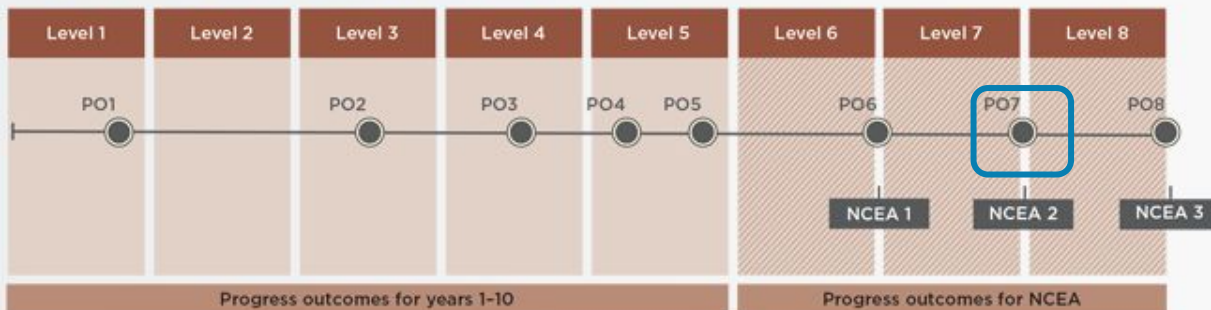


## Designing and developing digital outcomes



*The alignment to levels 1-5 of the New Zealand Curriculum (NZC) is tentative and theoretically derived until teachers have had the opportunity to implement the digital progressions.*

## Computational thinking for digital technologies



## Progress Outcome 2

In **authentic** contexts and taking account of end-users, students make decisions about **creating, manipulating, storing, retrieving, sharing, and testing digital content** for a specific purpose, given particular parameters, tools, and techniques.

They understand that **digital devices impact** on humans and society and that both the devices and their impact **change over time.**

Students identify the specific role of components in a simple **input-process-output** system and how they work together, and they recognise the "control role" that humans have in the system. They can select from an increasing range of applications and file types to develop outcomes for particular purposes.

**AS 91898**

**Demonstrate  
understanding  
of a computer  
science concept**

**3 credits**

Candidates will be required to respond in short and/or extended answers (800–1500 words in total) to questions relating to their choice of ONE of the following computer science concepts : **artificial intelligence**

For 2024, the questions on impacts will focus on **ethical issues and future-proofing.**

For artificial intelligence, questions may cover: machine learning, common issues, training, evaluation, Turing test relevance, adoption, policies, the use of artificial intelligence for shopping (e.g. self-checkouts), AI hallucinations, and recent developments in large language models such as ChatGPT and Google Bard/Gemini, weak AI/strong AI.

# **Machine Learning**

Input - Process - Output



# 1989



Yann LeCun introduced LeNet-5, a convolutional neural network used for image recognition.

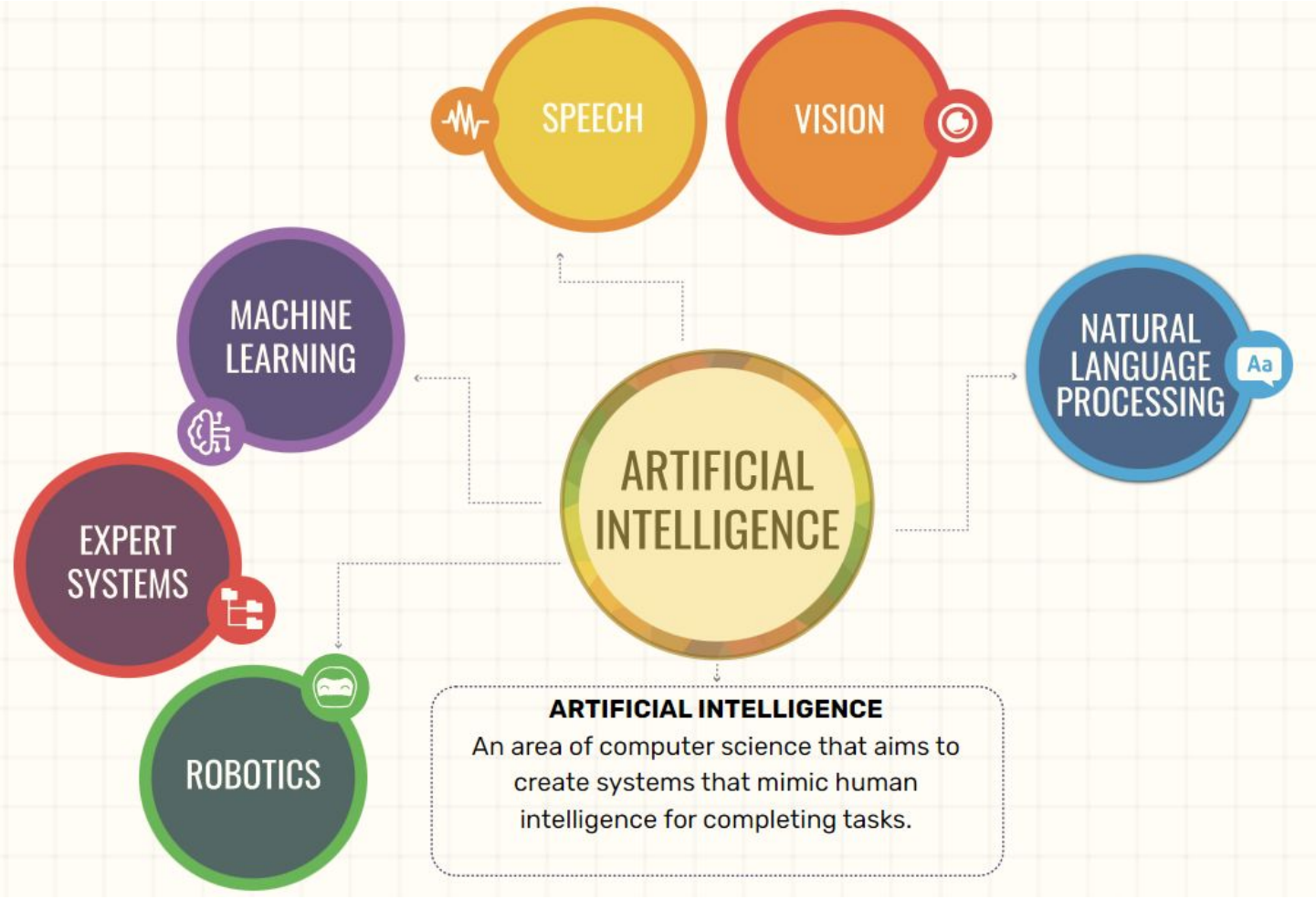
Explore the AI timeline to find out about changes during 1950 - 1990.

< BACK



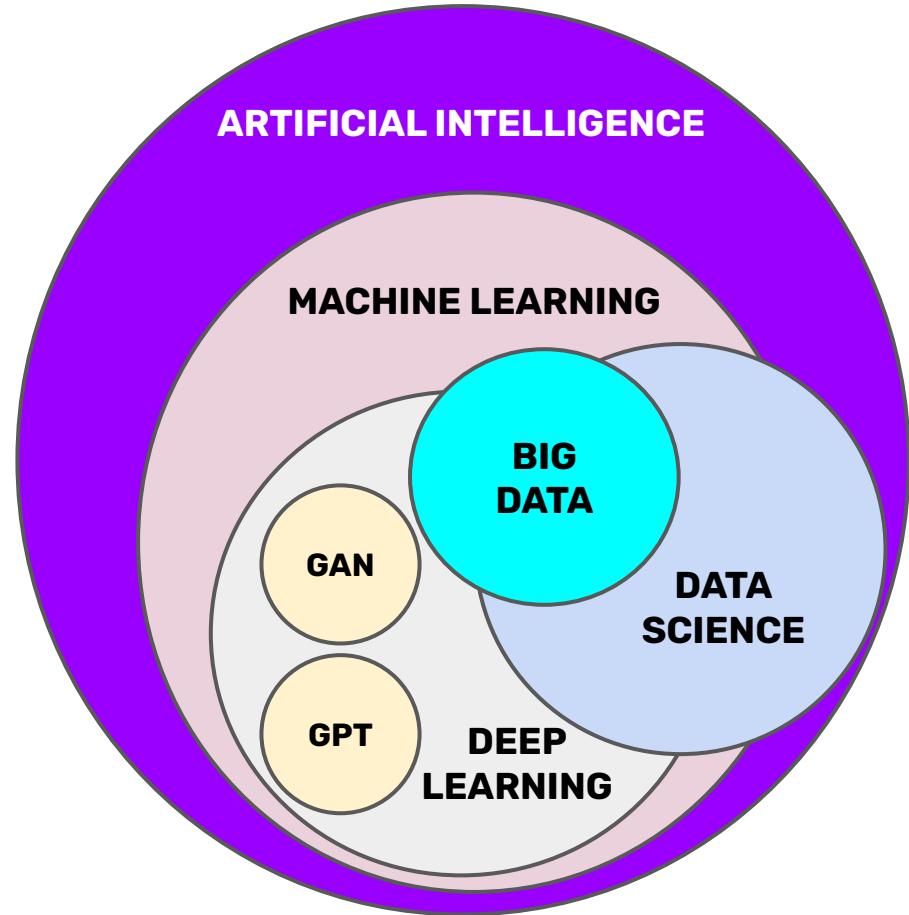
NEXT >





# Machine Learning

1. At its core, machine learning is about teaching computers to learn from experience. Instead of programming them with specific instructions for every task.
2. Collecting and showing examples of the task to perform is known as **training**.
3. Feed computers data and let them make predictions or decisions based on patterns they identify.



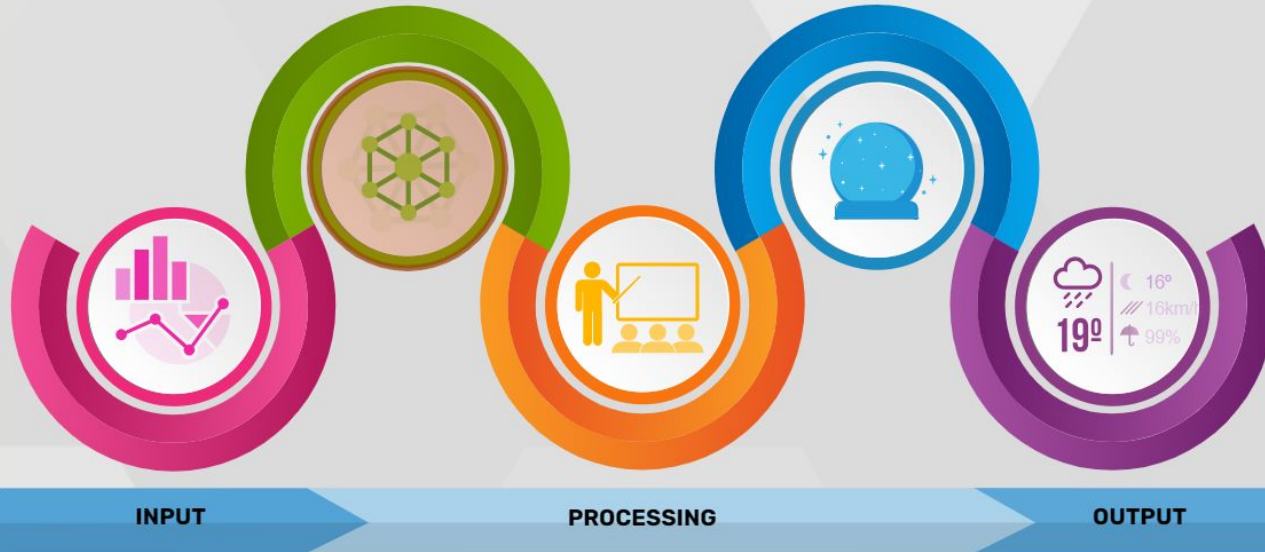
# Input Devices (Computer Senses)

- AI needs **data** as its primary input.
- The more data it has, the better it can learn, understand, and perform tasks.
- The growth of AI is closely tied to the availability and utilization of these vast amounts of data.
- So, inputs in AI are not just essential but a driving force behind its advancements.



## ALGORITHM

A Machine Learning algorithm is a set of rules that machines use to learn patterns in data. There are many different types of Machine Learning algorithms such as **linear regression**, **decision trees** and **neural networks**. These algorithms are useful for data analysis and **prediction** because each has a unique way of interpreting data.



Select each of the 5 colored circles in the Machine Learning process to learn about each step.

< BACK



NEXT >

# Output

AI is all around us, delivering a variety of outputs in our everyday activities:

- Recommending a product
- Remove hateful messages
- Managing traffic flows
- Adjust difficulty levels
- Offer insights into health



## Course Suggestion

- <https://learn.codeavengers.com/ic900> (skip to scene 6)
- <https://learn.codeavengers.com/ai90>
- <https://learn.codeavengers.com/ai91>

If you see any typos they've probably been fixed for next release but

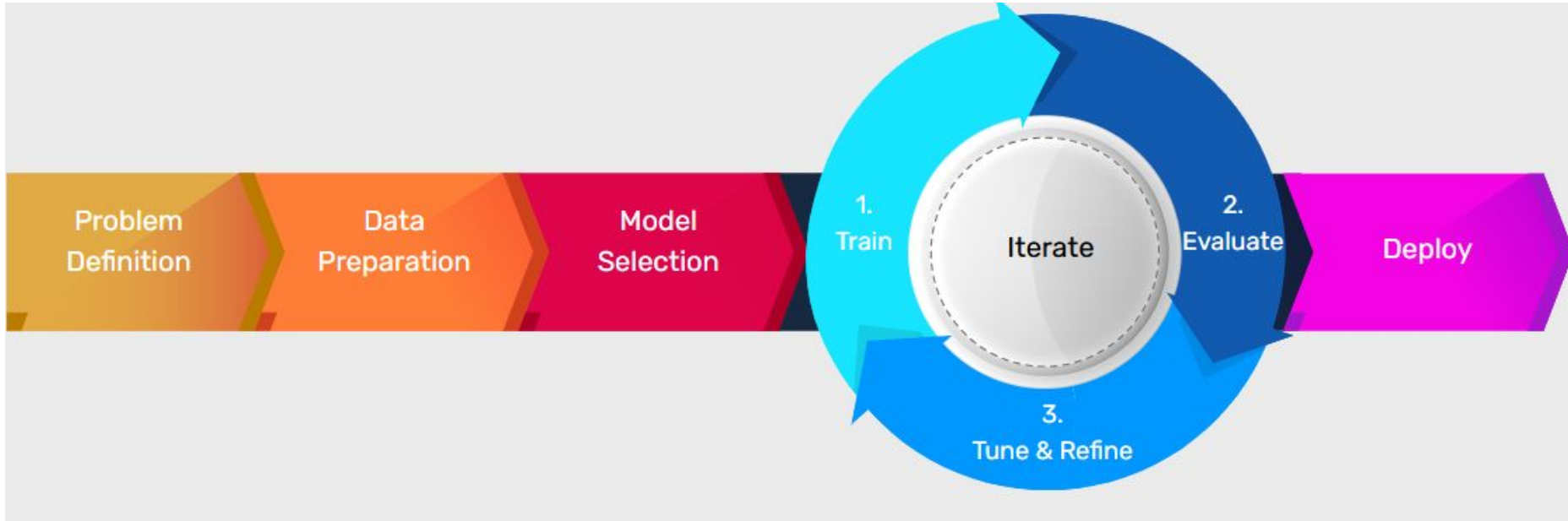
if something is **broken tell me.**

# Machine Learning For Kids

Tools to develop an AI Digital Outcome



# Testing



DDO P02: creating, manipulating, storing, retrieving, sharing and **testing** digital content

DDO P03: follow a defined process to design, develop, store, **test and evaluate** digital content

DDO P04: they use an **iterative** process to design, develop, store and **test** digital outcomes



# Machine Learning For Kids

## 1. Train

- a. Add a new project (or use a template like cats & dogs)
- b. Add training data into labelled buckets.

## 2. Learn & Test

- a. Train new machine learning model
- b. Test the model (and possibly retrain)

## 3. Make

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



# Teach a computer to play a game

Get started

Learn more

- 1 Collect examples of things you want to be able to recognise
- 2 Use the examples to train a computer to be able to recognise them
- 3 Make a game in Scratch that uses the computer's ability to recognise them



# **Teacher Resources**

HOC & 40 Hour Year Plans

# UNIT PLANS

## NEW ACTIVITIES COMING SOON

### YEAR 1

[Data Detectives](#)  
**Data & Analysis**

### YEAR 2

[Supernova Sequences](#)  
**Programming & Algorithms**

### YEAR 3

[Fishful Thinking](#)  
**Programming & Algorithms**

### YEAR 4

[Loopy Logic Labs](#)  
**Programming & Algorithms**

### YEAR 5

[The Cycle Control Protocol](#)  
**Programming & Algorithms**

[Code Your Own Adventure](#)  
**Programming & Algorithms**  
PROJECT

### YEAR 6

[Castle Coding Capers](#)  
**Programming & Algorithms**

### YEAR 7

[The Information Transformation](#)  
**Data & Analysis**

[The Appetite Algorithm](#)  
**Programming & Algorithms**

[The Authentication Investigation](#)  
**Networks & Security**

### YEAR 8

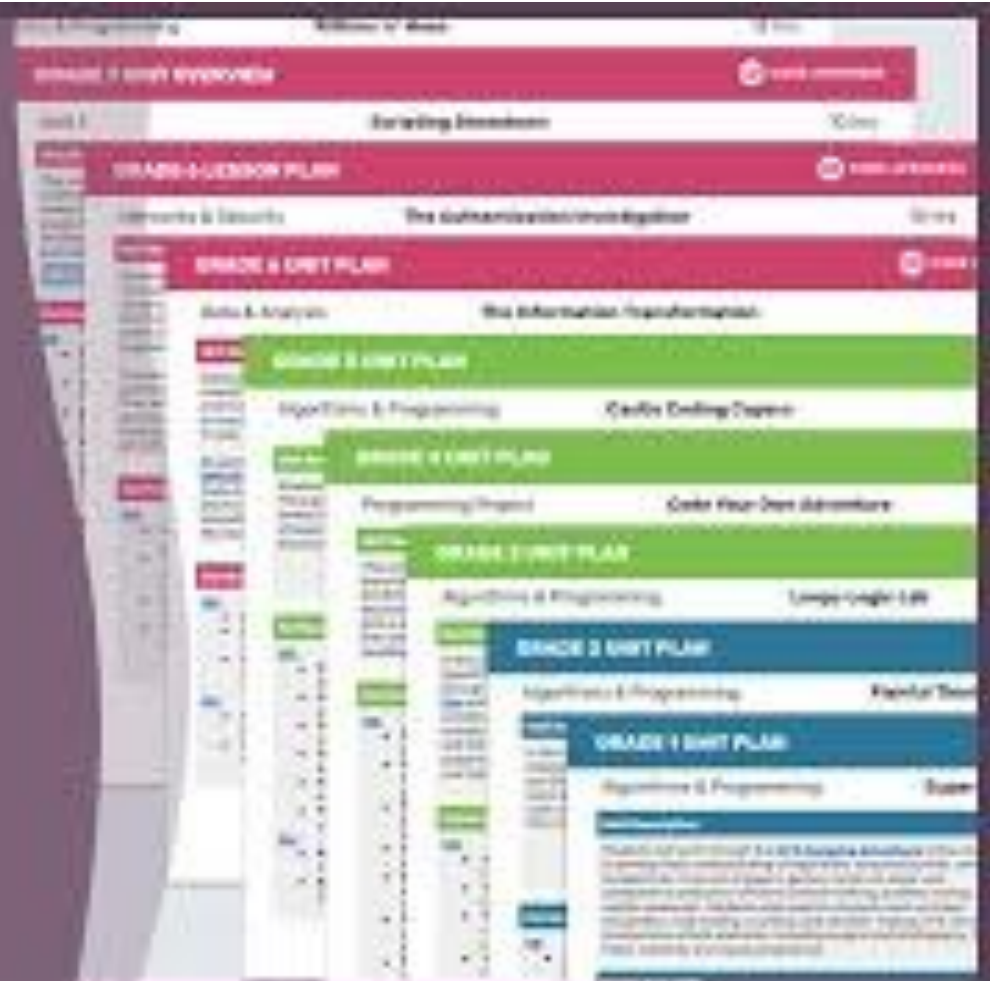
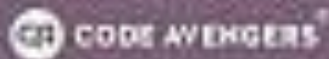
[Scripting Showdown](#)  
**Programming & Algorithms**

### YEAR 9

[Rithms'n'Hues](#)  
**Programming & Algorithms**

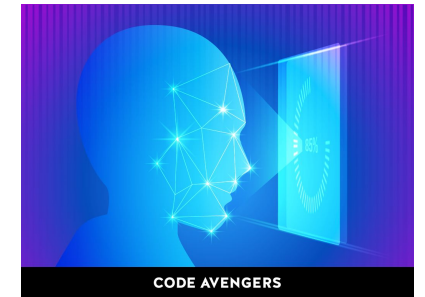
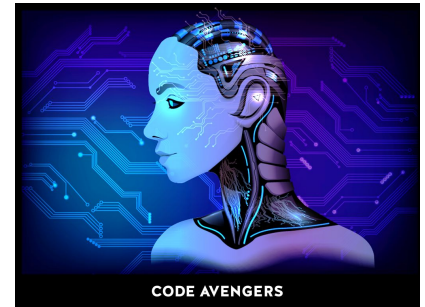
[Party Parameters](#)  
**Programming & Algorithms**

# Lesson Plans



# Hour of Code 2023 (All Free!)

- 1 hr online courses:
  - [Silicon Synapses : Evolution of AI](#)
  - [Old MacDonald Hacked a Farm, AI AI Drone](#)
  - [Keyboard Quest](#)
- Short Unplugged Activities
  - Smart Spotters
  - Produce Puzzler
- Lesson Plans
  - Gesture Genius (2 hrs)
  - Face the Future (1 hr)





# Professional Development Team

- Ministry accredited PLD provider
- NZ trained teachers with varied skill sets
- Differentiated areas of focus for schools:
  - School-wide planning and curriculum implementation including Level 1 refresh.
  - Upskilling and building confidence with classroom teachers
  - Working with small groups on specific needs
- Facilitators work with you for relevant and useful delivery
- Digital Fluency/ Local Curriculum/ Cultural Capability
- Contact our education consultants at [damon@codeavengers.com](mailto:damon@codeavengers.com) or [jordan@codeavengers.com](mailto:jordan@codeavengers.com) who





# Q&A



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<https://www.codeavengers.com>



<https://www.facebook.com/CodeAvengers>