

Artificial Intelligence



Foundational understanding and its applications
in school education.

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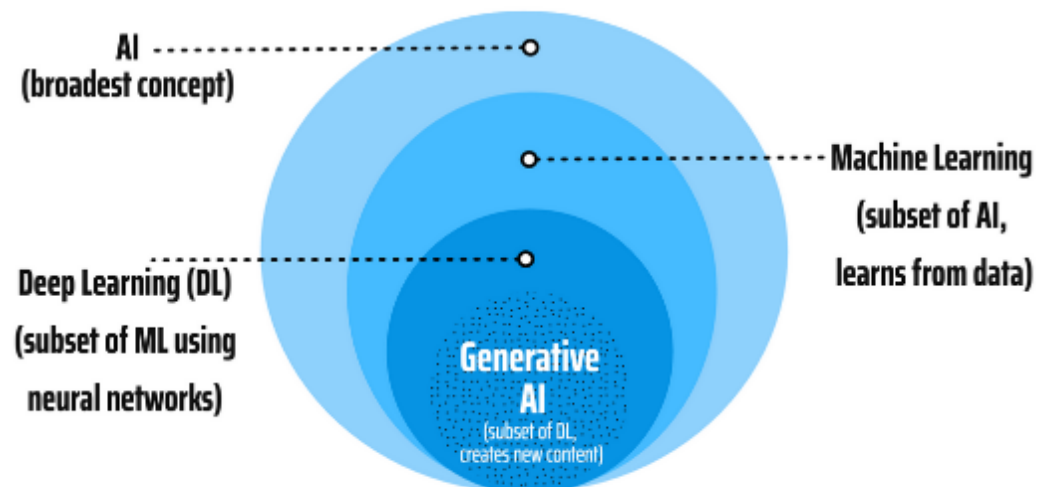
Scientist – 'E' (Training Head)
NIELIT Deemed to be University

What is Artificial Intelligence?

Definition

AI refers to computer systems that can perform tasks typically requiring human intelligence: **Recognizing patterns, solving problems, understanding language, and making decisions.**

AI INSIDE OUT



Evolution of AI

1950s

Foundations

Turing Test proposed.
Early logic-based systems
and symbolic AI.

1990s

Data Era

Internet acceleration.
Systems began learning
from larger datasets
(Machine Learning).

2010s

Deep Learning

Cloud computing and
neural networks allowed
for image and speech
recognition.

2023+

Generative AI

Models capable of creating
new content: text, code,
audio, and images.
(ChatGPT)

| AI vs. Human Intelligence



Artificial Intelligence

- Extremely fast processing
- Perfect memory (Database)
- Rational & Unbiased (ideally)
- **Narrow focus** (Good at one thing)



Human Intelligence

- Creative & Emotional
- Understand Context
- Adaptable to new situations
- **General intelligence**
(Good at many things)

Introduction to Machine Learning (ML)

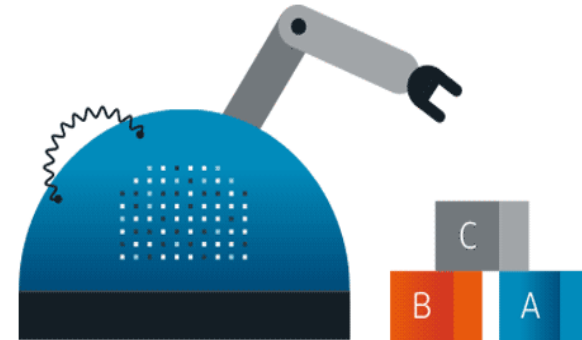
Definition:

Machine learning (ML) is a subset of artificial intelligence (AI) that enables computer systems to learn and improve autonomously from data. Instead of following hard-coded instructions, ML models use statistical algorithms to identify patterns, make predictions, and adapt to new information over time.

ML is the **engine** that makes modern AI work.

The Core Concept

Instead of explicitly programming rules ("If X do Y"), we feed the computer **data** and let it learn the rules itself.



How Machine Learning Works



1. Input

Photos, Text, Numbers



2. Train

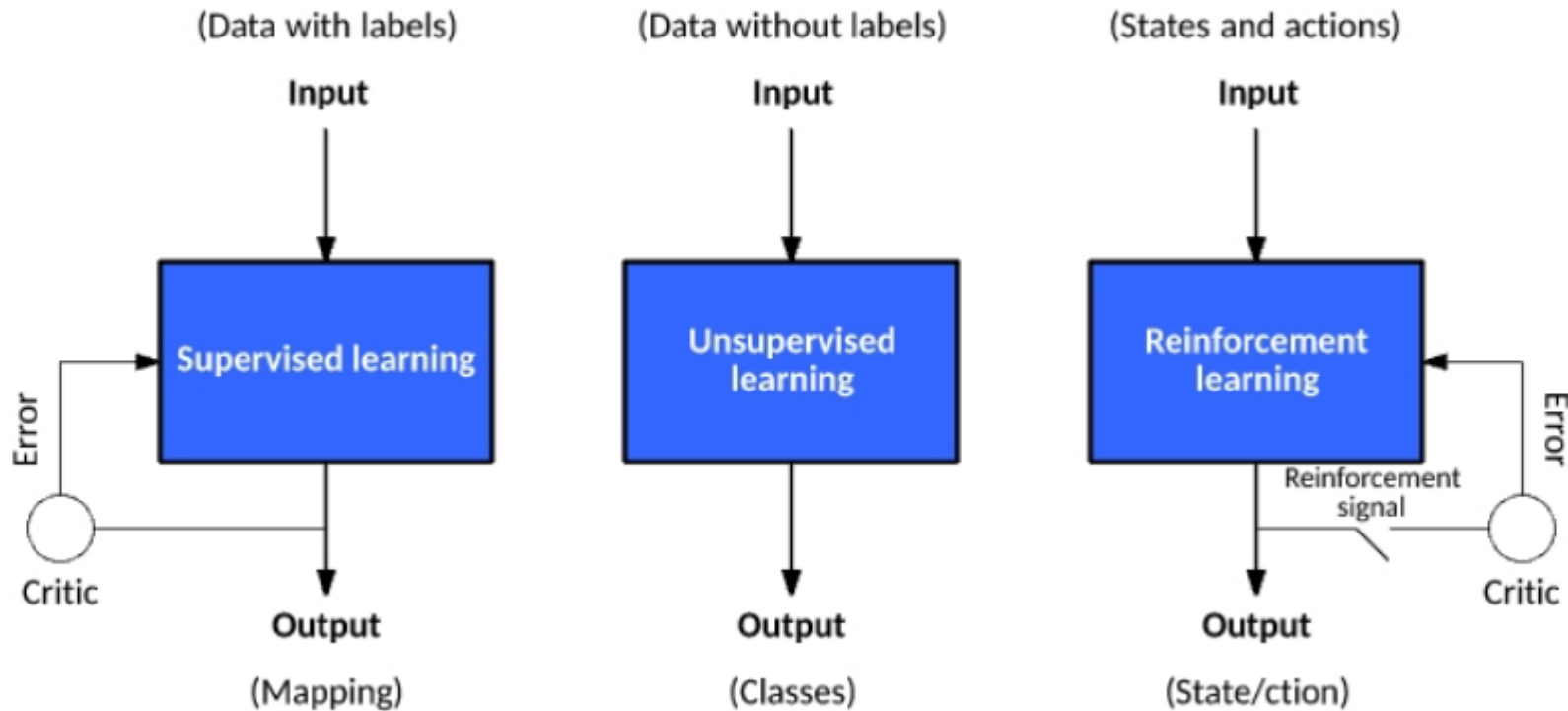
Algorithm finds patterns



3. Predict

New Data -> Decision

3 Types of Machine Learning



Supervised

Task Driven

Unsupervised

Data Driven

Reinforcement

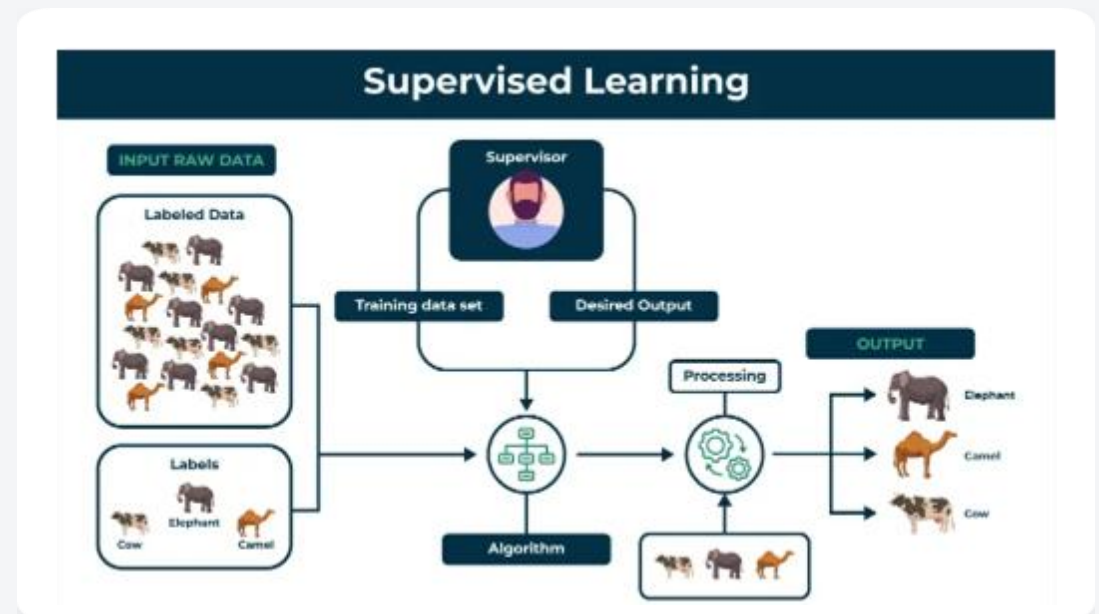
Reaction Driven

1. Supervised Learning

"Learning with a Teacher"

The model is trained on **Labeled Data**. We show the computer the input AND the correct answer.

Analogy: A teacher showing a child flashcards. "This is an Apple", "This is a Banana". Later, the child identifies them alone.



2. Unsupervised Learning

"Self-Learning"

The model gets **Unlabeled Data**. It must find structure, patterns, or groups on its own.

Analogy: Giving a child a bucket of mixed buttons. Without instruction, they might sort them by color, size, or shape.

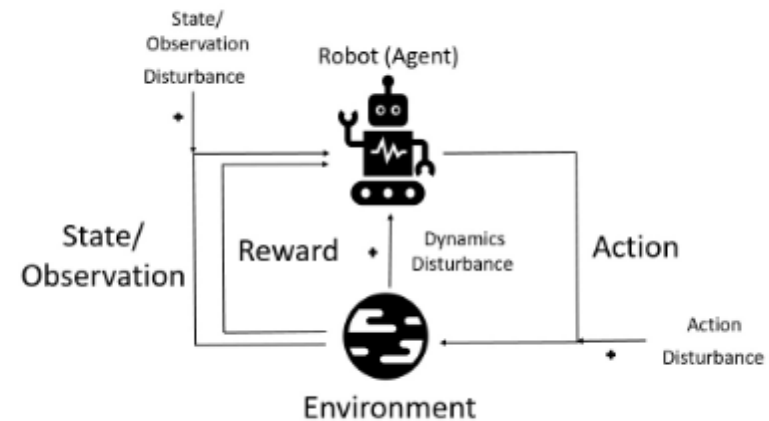


3. Reinforcement Learning

"Trial and Error"

An agent learns to make decisions by performing actions and receiving a **Reward** or **Penalty**.

Analogy: Training a dog. Sit → Treat (Reward). Jump → No Treat (Penalty).
The dog learns to maximize treats.

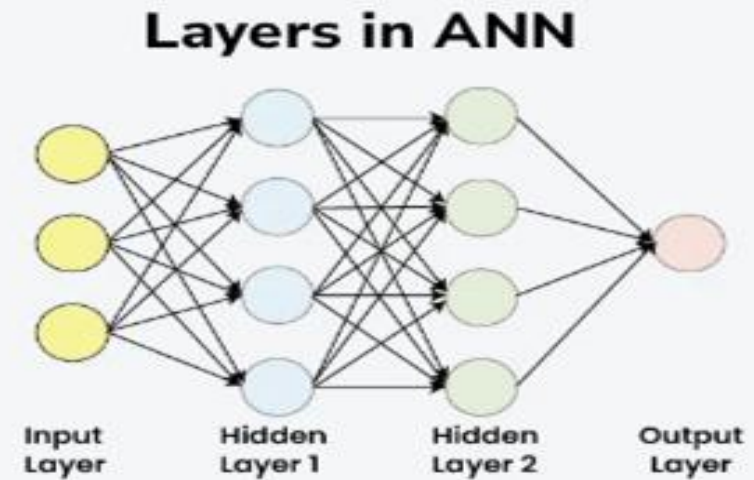


Deep Learning (DL)

Neural Networks

Inspired by the human brain. Uses layers of artificial neurons to process complex, unstructured data like **Images, Audio, and Text**.

- Face Recognition
- Voice Assistants (Alexa/Siri)
- Self-Driving Cars

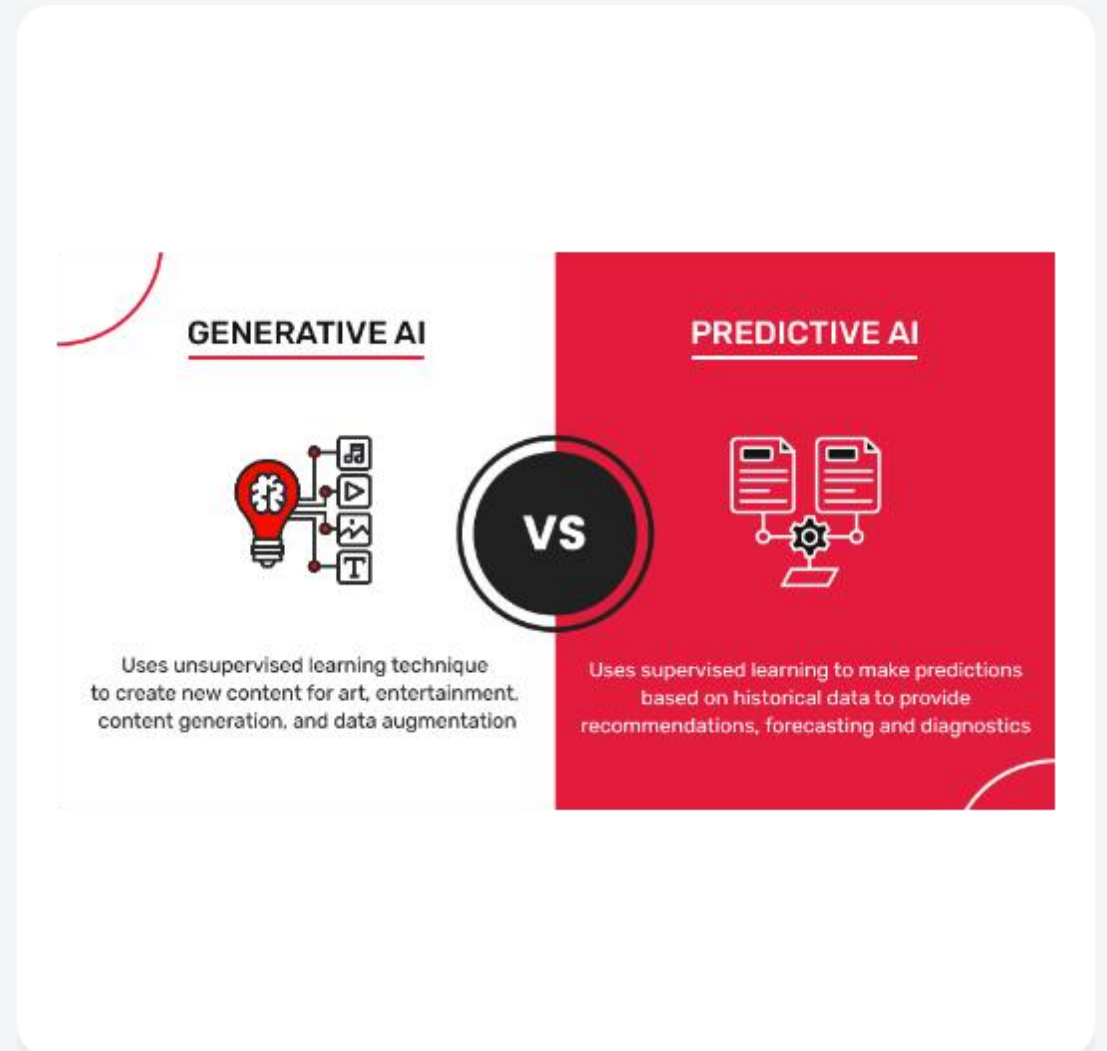


Generative AI (GenAI)

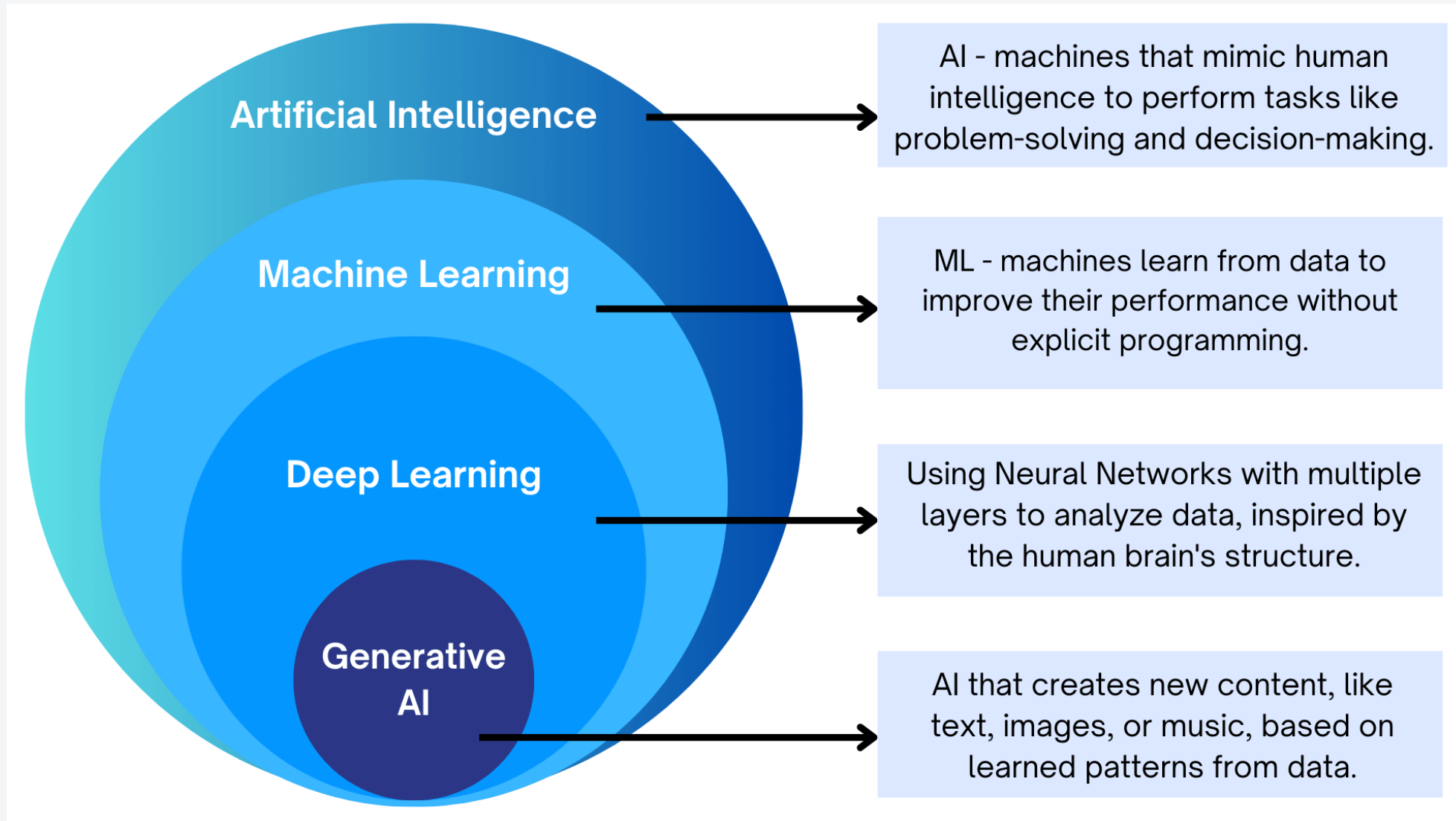
Creation vs. Analysis

While traditional AI analyzes existing data (e.g., "Is this a cat?"), Generative AI creates **NEW** data (e.g., "Draw a cat in space").

Tools: ChatGPT/Claude (Text),
Midjourney (Images), Suno (Music).



The AI Hierarchy



Live Project: Diabetes Prediction

Type: Supervised Machine Learning (Classification)

Live demo: <https://nielitropar-diabetes.hf.space> (Classification)



Input Data

Glucose, BMI, Age, Insulin Level



Algorithm

Decision Tree / Logistic
Regression



Output

Risk: **Positive / Negative**

Live Project: Sentiment Analysis

Type: Deep Learning (NLP / Computer Vision)

Live demo: <https://nielit-ropar.streamlit.app> (Computer Vision)



Input

Student Facial Expression or
Text Feedback



Neural Net

Analyzes features (eyebrows,
mouth shape)



Output

Emotion: **Happy, Confused,**
Bored

| AI Applications in School

Administration

- Automated Attendance (Face Rec)
- Grading Objective Tests
- Timetable Scheduling

Pedagogy

- Adaptive Learning (Personalized)
- Intelligent Tutoring Systems
- Real-time Language Translation

AI Solutions for Key Educational Challenges.

| Tool | Function |
|---|--|
| MagicSchool.ai | Lesson Planning, IEP Generation, Rubrics |
| Canva Magic Write | Creating Visual Presentations & Worksheets |
| ChatGPT / Gemini / claude.ai | Drafting emails, summarizing text, brainstorming |
| Curipod | Interactive AI-powered slide lessons |

Note: Ensure these tools are used ethically and responsibly.

50 AI tools for teachers

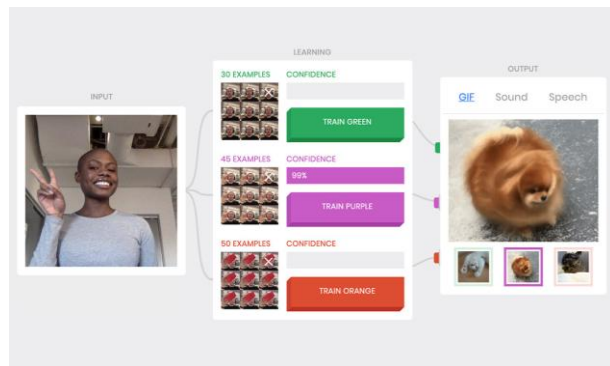
For the full list of tools and descriptions visit [DitchThatTextbook.com/ai-tools](https://ditchthattextbook.com/ai-tools)

Source: <https://ditchthattextbook.com/ai-tools/>

Tools for Students

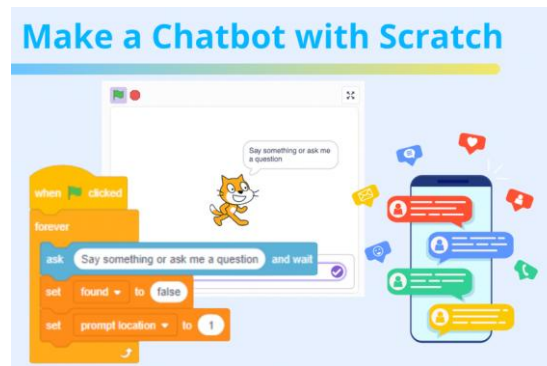
Teachable Machine

Train your own ML model with a webcam.
No code required.



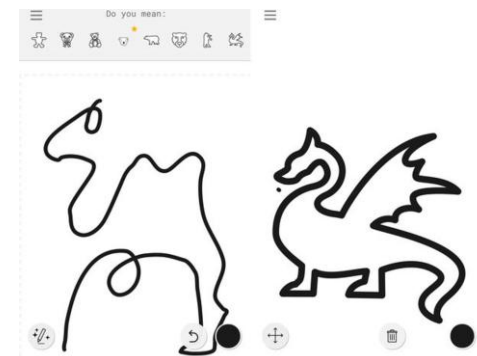
Scratch AI

Block coding with AI extensions (Face sensing, Speech-to-text).



AutoDraw

Turns rough sketches into polished icons using AI.



Limitations & Ethics



Algorithmic Bias

AI reflects the biases in its training data (e.g., gender or racial bias).



Hallucinations

GenAI can make up facts confidently. Always verify the source.



Data Privacy

Never share sensitive student information (Names, IDs) with public AI tools.



Thank You!

"AI is not a replacement for the teacher, but a powerful assistant for the classroom."

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