MACHINE
LEARNING AND
ARTIFICIAL
INTELLIGENCE
COULD
TRANSFORM
HEALTH CARE
AND EDUCATION.



Daniella Ojekere Data Scientist

Explore the opportunities available in health care and education to application of machine learning.

Session Goals:

Mind set repositioning for the next mega hit in Al

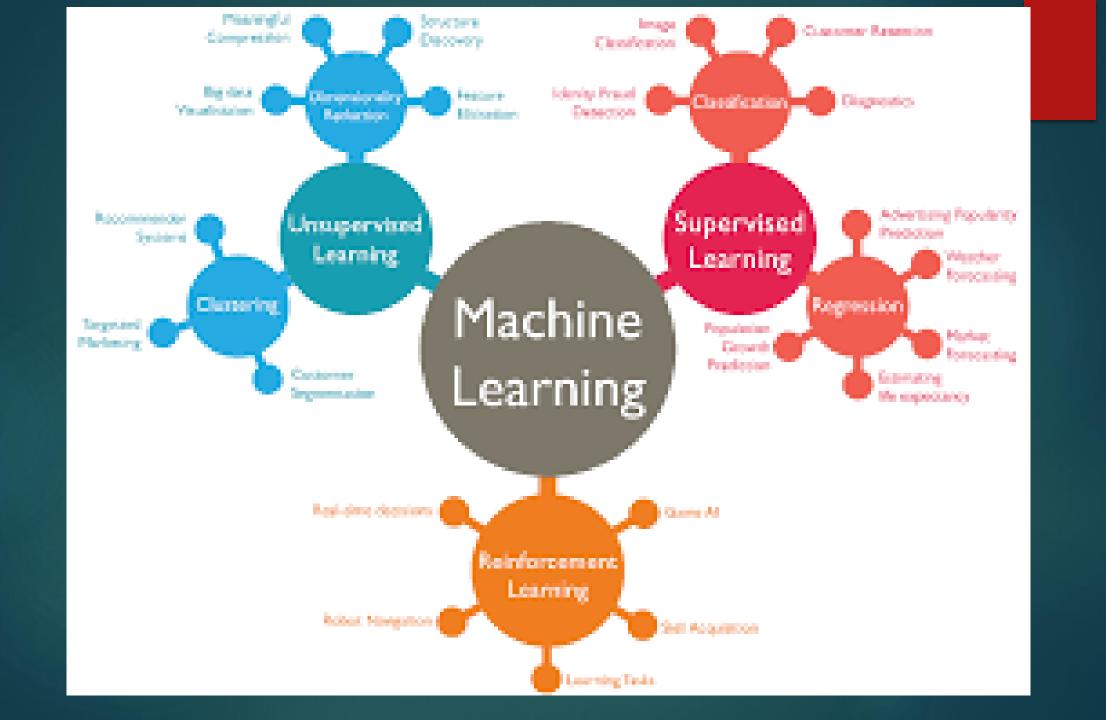
Interact with experienced and interesting people

DEFINITION OF TERMS

- •MACHINE LEARNING: Machine learning (ML) is a statistical technique for fitting models to data and to 'learn' by training models with data.
- ARTIFICIAL INTELLIGENCE: Artificial intelligence (AI) is the simulation of human intelligence processes by machines.



Machine learning is an application of Artificial Intelligence wherein the system looks at observations or data, such as: direct experience, or instruction, figures out patterns in data and predicts events in the future based on the examples that we provide



Al and ML and Health



COMMON FORMS OF ML IN HEALTHCARE

Machine learning and precision medicine applications require a training dataset for which the outcome variable (eg onset of disease) is known; this is called supervised learning.

A common application of deep learning in healthcare is recognition of potentially cancerous lesions in radiology images

Artificial Intelligence & Radiology



A more complex form of machine learning is the *neural network*. It has been likened to the way that neurons process signals, but the analogy to the brain's function is relatively weak.

The most complex forms of machine learning involve deep learning, or neural network models with many levels of features or variables that predict outcomes.



"Just as machines made human muscles a thousand times stronger, machines will make the human brain a thousand times more powerful."

WAYS ML IS REDEFINING HEALTHCARE

1. Identifying and diagnosis of diseases:

A) Feebris uses AI algorithms for precise detection of complex respiratory conditions.

B) MIT's Computer Science and Artificial Intelligence Lab has developed a new deep learning-based prediction model that can forecast the development of breast cancer up to five years in advance. Their model was trained on mammograms and patient follow-up data to identify patterns that would not be obvious to or even observable by human clinicians.

2. Medical imaging diagnosis

A) Enlitic, Zebra Medical Vision and Sophia Genetics.

B) Convolutional neural network or CNN—developed by a team from Germany, France and the US—can diagnose skin cancer more accurately than dermatologists.

C) FDA-approved imaging tool called IDx-DR for diagnosing diabetic eye disease.



3. Robotic surgery:



4. Drug development

A) Al company Atomwise's platform **AtomNet** uses deep learning software to sift through millions of possible molecules in a day or two, which would normally take months via traditional methods.

B) Deepmind, the AI arm of Google's parent Alphabet Inc It has been able to identify possible medicines for the deadly Ebola virus

Al and Covid-19

Planning and tracking: Migration map

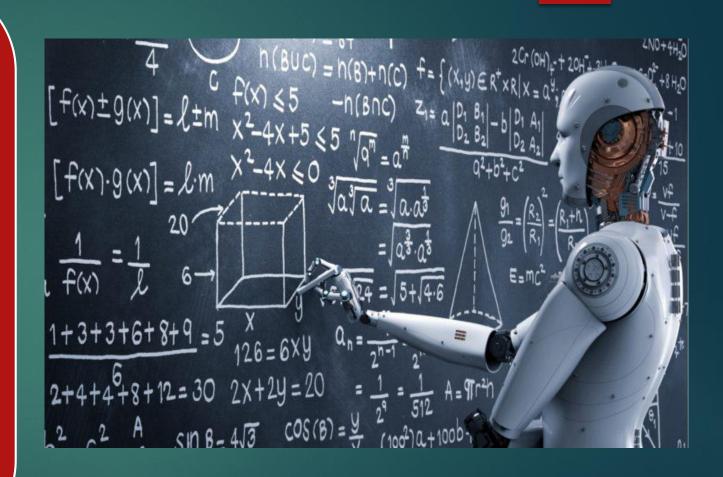
Disease Diagnose Virtual health assistants.

Al for fever detection and facial recognition.

Robots and ai systems are being used for disinfection.

ML and Al in Education

It is expected that Al in U.S. Education will grow by 47.5% from 2017-2021 according to the Artificial Intelligence Market in the US Education Sector report.



APPLICATIONS OF AI TO EDUCATION

1. Personalized Learning: It is expected that by 2024 upwards of 47% of learning management tools will be enabled by AI capabilities. AI-enabled e-Learning tools will reach over \$6 Billion in market size by 2024.

Kidaptive: This is a cloud-computing platform that provides adaptive learning programs, and predicts academic performance, by applying underlying patterns and relationships.

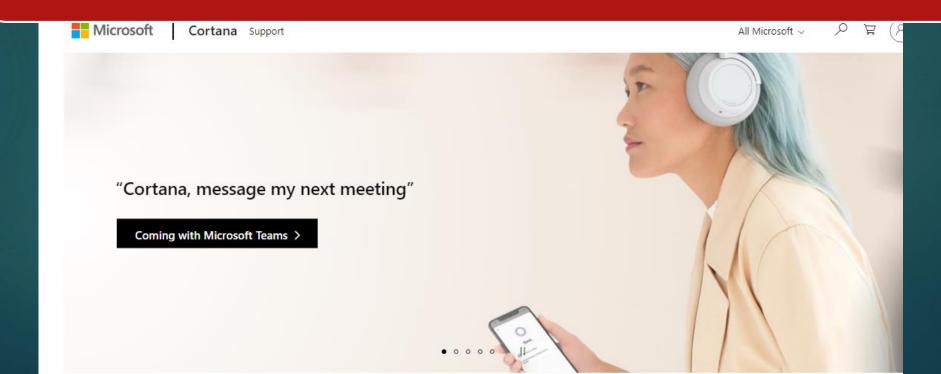


Knewton, a platform with adaptive learning capabilities for higher education. The software leverages AI and ML to find gaps in a student's knowledge and remediate them with adaptive assignments while students complete their courses.



2. Adoption of voice assistant: Voice assistants such as Amazon Alexa, Google Home, Apple Siri, and Microsoft Cortana are giving students a chance to interact with educational material without the interaction of the teacher.

3. Universal access for all students



4. Assisting educators with organizational tasks. Example of such an education Al solution is the Century Tech platform.



Explore CENTURY

About us

Our impact

Book a demo

Sign up for home learning

Supercharge your teaching

CENTURY is the tried and tested intelligent intervention tool that combines learning science, Al and neuroscience.

- Identifies gaps
- Addresses misconceptions
- Supports teacher interventions

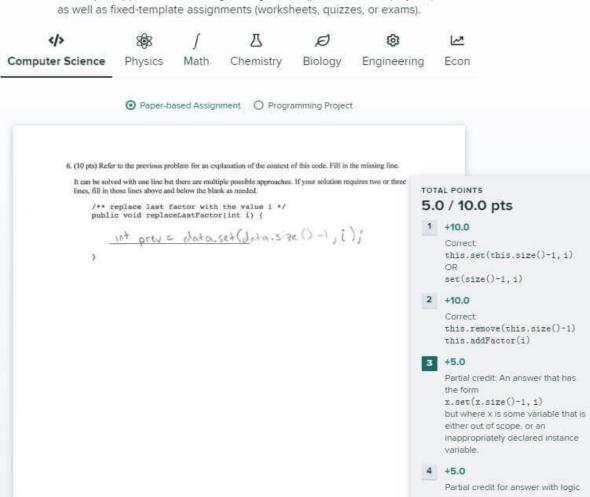


Learn more about CENTURY

Apart from tests, Al can be applied for grading handwritten students' work. One example is Gradescope, an online grading app developed by a group of UC Berkeley researchers.

Grade All Subjects

Gradescope supports variable-length assignments (problem sets & projects)



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5. Intelligent Assistants

6. After school support





OTHER APPLICATIONS OF AI IN EDUCATION

- 1. Content analytics that organize and optimize content modules:
- a. Gooru, IBM Watson Content Analytics

- 2. Learning analytics that track student knowledge and recommend next steps:
- a. Adaptive learning systems: DreamBox, ALEKS, Reasoning Mind, Knewton
- b. Game-based learning: ST Math, Mangahigh

- 3. Dynamic scheduling matches students that need help with teachers that have time:
- a. NewClassrooms uses learning analytics to schedule personalized math learning experiences.

4.Grading systems that assess and score student responses to assessments and computer assignments at large scale, either automatically or via peer grading:

a. Pearson's WriteToLearn and Turnitin's Lightside can score essays and detect plagiarism.

5. Matching teachers and schools:

a. MyEdMatch and TeacherMatch are eHarmony for schools.

THANK YOU FOR PARTICIPATING