

# Beyond AI Hype

## General Introduction to AI

Chinasa T. Okolo  
[www.chinasatokolo.com](http://www.chinasatokolo.com)

### Session I



# Session I Schedule

Group Discussion

AI Lecture

AI Activity

Brainstorming Session



# Group Discussion

- What do you know about AI?
- What do you want to know about AI?
- What do you think is important for students your age to know about AI?

# AI Lecture

# What is Artificial Intelligence (AI)?

Artificial intelligence is the field of computer science that aims to make machines (computers, phones, etc.) “think and behave” like humans to perform tasks such as learning, problem solving, identification, planning, reasoning, and decision-making.



# What is Machine Learning (ML) ?

Machine learning is a subfield of AI. It is the use and development of computer systems that are able to learn and adapt without following explicit instructions. Machine learning uses algorithms and statistical models to analyze and draw inferences from patterns in data.



# ML Subfields

While ML is a subfield of AI,  
it also has many subfields:

- Deep Learning
- Computer Vision
- Natural Language Processing
- ...and many more!

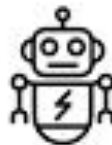
## Subfields of Artificial Intelligence



Machine Learning



Neural Networks



Robotics



Natural Language  
Processing



Vision



Speech  
Processing

# AI History

- Early work in AI began in 1950 by a British mathematician named Alan Turing
- He created what is now known as the “Turing Test”, a test that decides whether a computer is intelligent
- In this test, a human and a computer answer questions from a human judge. If the judge cannot determine which answers came from whom, the computer is considered as intelligent



# AI Timeline

**ADVANCING AI TOOLS & METHODS**  
**2011-2014:** Advancements in Technology: GANS, Smart Assistants (Siri, Watson, Alexa)  
**2020:** DeepMind showcases their system AlphaFold that uses genomic data to predict protein structure. There was a boom of publications and systems using AI this year.

2000's

2010's

## FIRST AI FOR SCIENTIFIC DISCOVERY

**2009:** First demonstration of AI being used for Scientific Discovery. Law et al published their work on Route Designer: A retrosynthetic analysis package that can generate complete synthetic routes for target molecules.

## WINTER BREAKS - DIFFERENT METHODS

**1990:** Scientist Rodney Brooks published a paper "Elephants don't play chess" that helped drive a revival of a bottom-up approach to AI including Neural Networks.

**1997:** Excitement is rekindled for AI when IBM's Deep Blue Chess Computer defeats world chess champion.

1990's

## 2nd AI WINTER

1987-1993

The market for specialised AI hardware collapsed.

1980's

## NEURAL NETWORKS & AI4CHEMISTRY

**1985:** Expert task force assembled to develop tools for the "Instruction of AI in Chemical Engineering".

**1986:** Rumelhart, Hinton and Williams reinvent BPL algorithm for training feedforward neural networks to learn hidden patterns in input-output data.

## ALGORITHMIC ADVANCEMENT

**1971-1972:** Further expert systems were developed: LHASA (Logic and Heuristics applied to Synthetic Analysis) & MYCIN (Diagnostic System).

**1974:** Paul Werbos proposed the back propagation-learning (BPL) algorithm in his thesis.

1970's

## 1st AI WINTER

1974-1980

In 1973 Lighthill published a report on AI that started the first AI Winter.

1960's

## FIRST EXPERT SYSTEM

**1965:** The first expert system DENDRAL was created. This was a knowledge based system that used heuristic programming to hypothesise the molecular structure of organic compounds. This expert system was followed by many others over the next two decades.

## THE BIRTH OF AI

**1950:** Alan Turing devised the Turing test to determine "intelligence" based on whether a machine can convince a human being that it is also human.

**1956:** John McCarthy coined the term AI to describe "the science and engineering of making intelligent machines".

1950's

# Examples of AI

- Recommendation systems
- Self-driving cars
- Voice recognition
- Autofill and predictive text
- Face recognition






<https://bernardmarr.com/how-tesla-is-using-artificial-intelligence-to-create-the-autonomous-cars-of-the-future/>

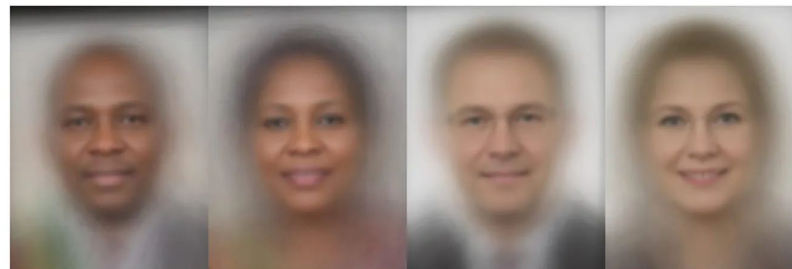
...however, AI isn't  
perfect!



# Bias in AI

- Face recognition
  - Darker skin tones
  - Women
- Voice recognition
  - Accents
- Self-driving cars
  - Unfamiliar objects

Gender Classifier	Darker Male	Darker Female	Lighter Male	Lighter Female	Largest Gap
 Microsoft	94.0% <div><div></div></div>	79.2% <div><div></div></div>	100% <div><div></div></div>	98.3% <div><div></div></div>	20.8% <div><div></div></div>
 FACE++	99.3% <div><div></div></div>	65.5% <div><div></div></div>	99.2% <div><div></div></div>	94.0% <div><div></div></div>	33.8% <div><div></div></div>
 IBM	88.0% <div><div></div></div>	65.3% <div><div></div></div>	99.7% <div><div></div></div>	92.9% <div><div></div></div>	34.4% <div><div></div></div>



<https://ars.electonica.art/outofthebox/en/gender-shades/>

AI Activity

"Discover AI in Daily  
Life"

by Google

[bit.ly/DiscoverAIActivity](https://bit.ly/DiscoverAIActivity)



# AI Activity Instructions

[Start Activity](#)

- Choose 3 words to translate
- Create a Google Slides presentation
- Put one word on each slide
- Create an AutoDraw image of each word and use in slides
- Get translations of each word
- Link the translations and finish your slides

# AI in Daily Life Extensions

## CHOOSE AN EXTENSION



### Create Your Own Song with Blob Opera

Create your own opera song and add a link to it in your presentation.



### Play a Word Association Game in Semantris

Explore a word association game that uses artificial intelligence.



### Write a Poem Using Verse by Verse

Use artificial intelligence to help you compose a poem in Verse by Verse.



### Add a Colorful Scene to Your Title Slide

Add color to your title slide.





# Activity Debrief

- How did you like the activity?
- What did you learn?
- What questions do you still have?

# Brainstorming Session

# Brainstorming

- How do you use AI in your daily life?
- What are some interesting things you could do with AI?
- What are some potential use cases of AI?

Questions?

# End of Session I

Thank you!

Chinasa T. Okolo

[www.chinasatokolo.com](http://www.chinasatokolo.com)



**This presentation is copyrighted by Chinasa T. Okolo.**

It is available under a  
[Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/)  
(CC BY-NC-SA 4.0)

