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John AOGA

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A bio card for John Aoga, PhD. It features a large circular profile picture of him. To the left is the URL "https://johnaoga.github.io/". The card is divided into sections: "BIOGRAPHY", "Who am I?", "Goals and Aspirations", "Domains & Interests", and "Scientific References".

BIOGRAPHY

<https://johnaoga.github.io/>

**Who am I?**

Doctor & Engineer in Science and Technology  
Specialist in Data science & AI  
Researcher and Teacher  
Co Founder of MIFY SARL company

**Goals and Aspirations**

Promote and develop AI 4 Africa in Africa  
Promote and develop Education tools

**Domains & Interests**

Algorithms and Optimization  
Data/Pattern Mining Approaches and applications  
Deep Learning & NLP for local languages  
Social Data Analysis

**Scientific References**

Webinar FRIARE

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A presentation slide titled "AI Beyond Machine Learning" with the subtitle "Adversarial Search". It features the FRIARE logo at the top right. Below the title is a portrait of John Aoga. Logos for UCLouvain and MIFY are at the bottom right.

FRIARE

# AI Beyond Machine Learning

Adversarial Search

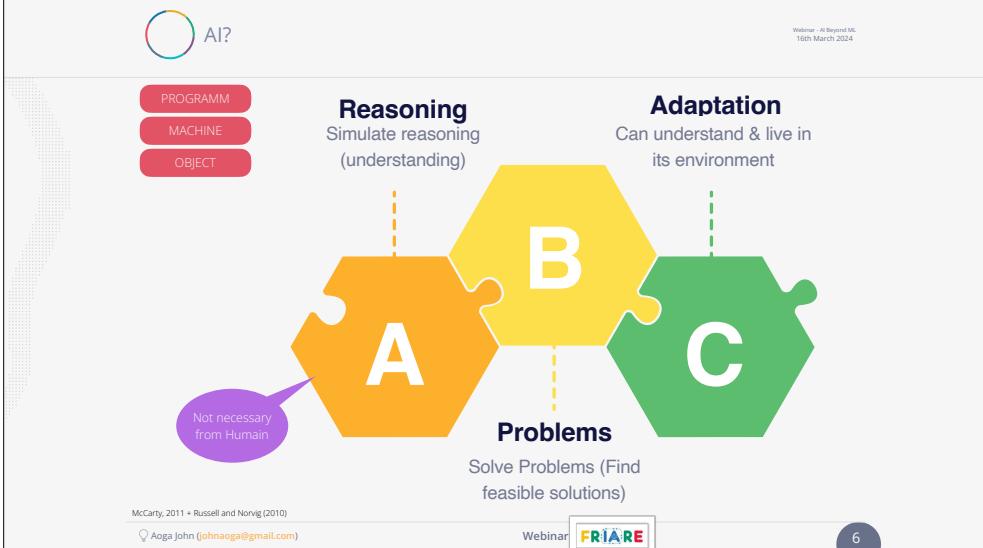
John Aoga

UCLouvain MIFY

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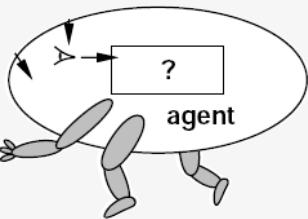
# Introduction

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McCarty, 2011 + Russell and Norvig (2010)

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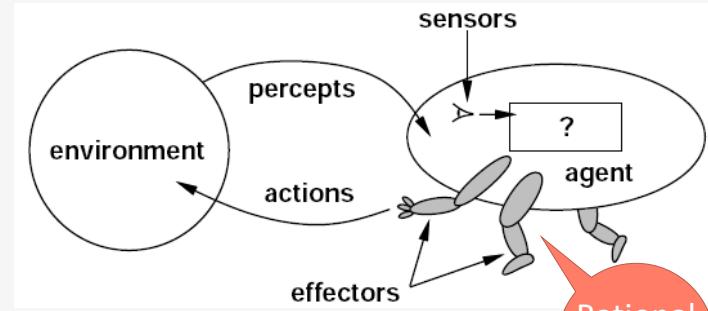
Webinar FRIARE

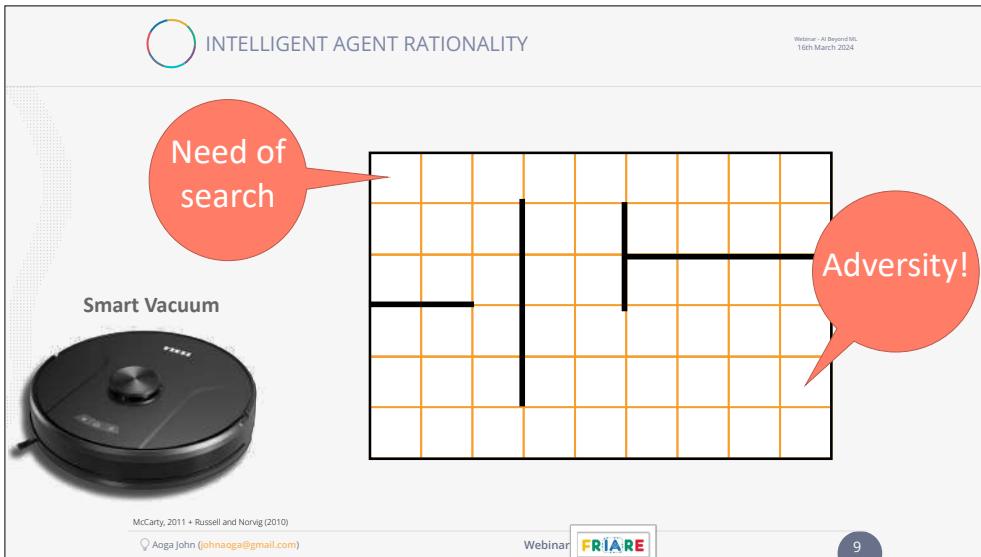
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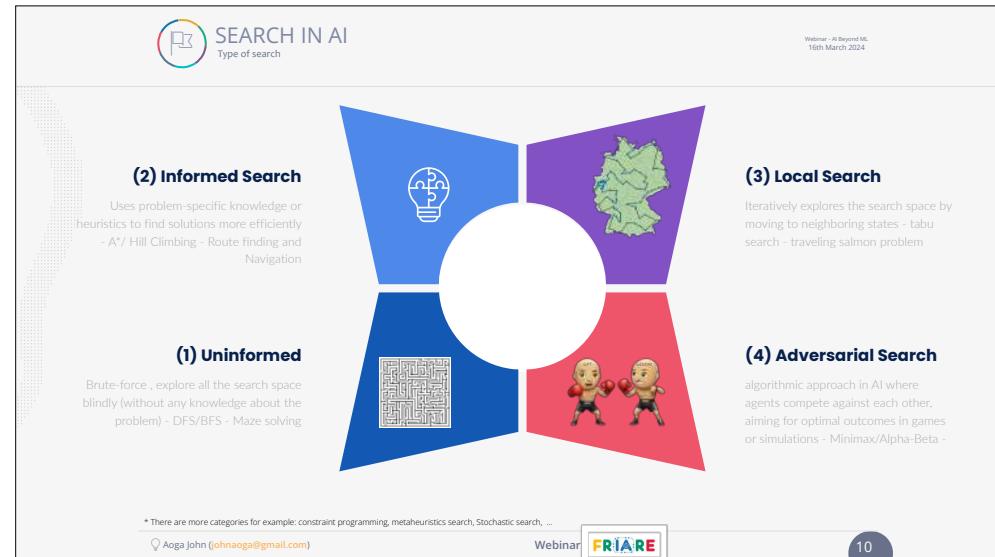
McCarty, 2011 + Russell and Norvig (2010)

Aoga John (johnaoga@gmail.com)

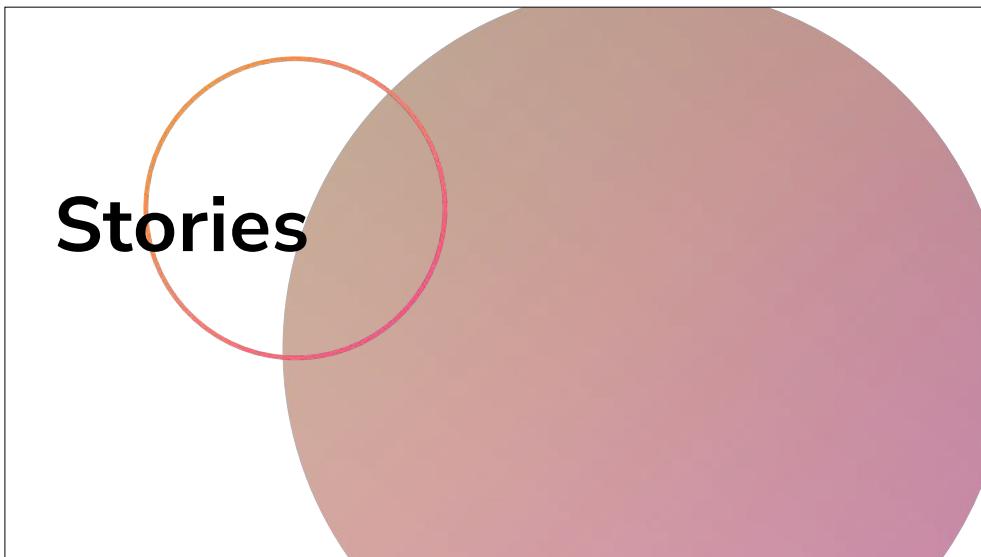




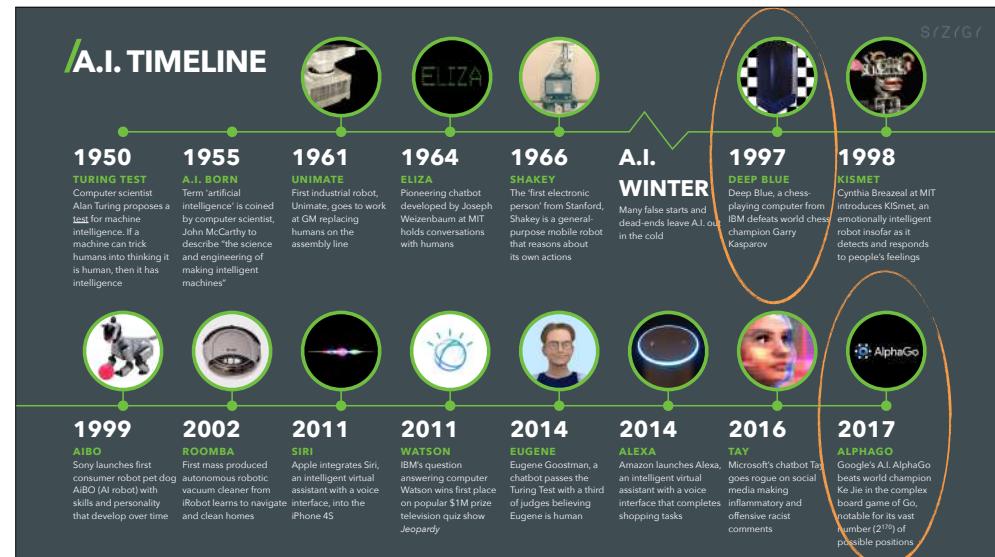
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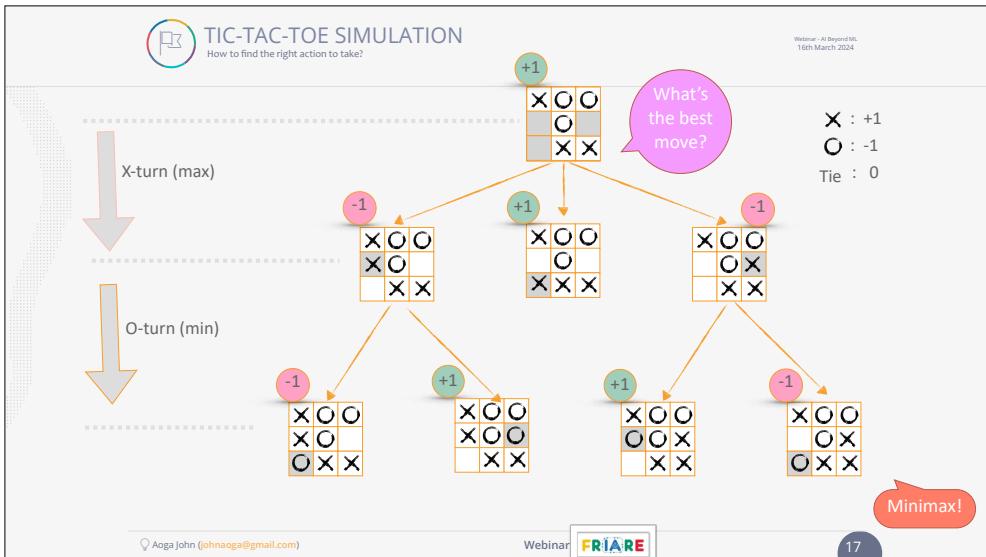


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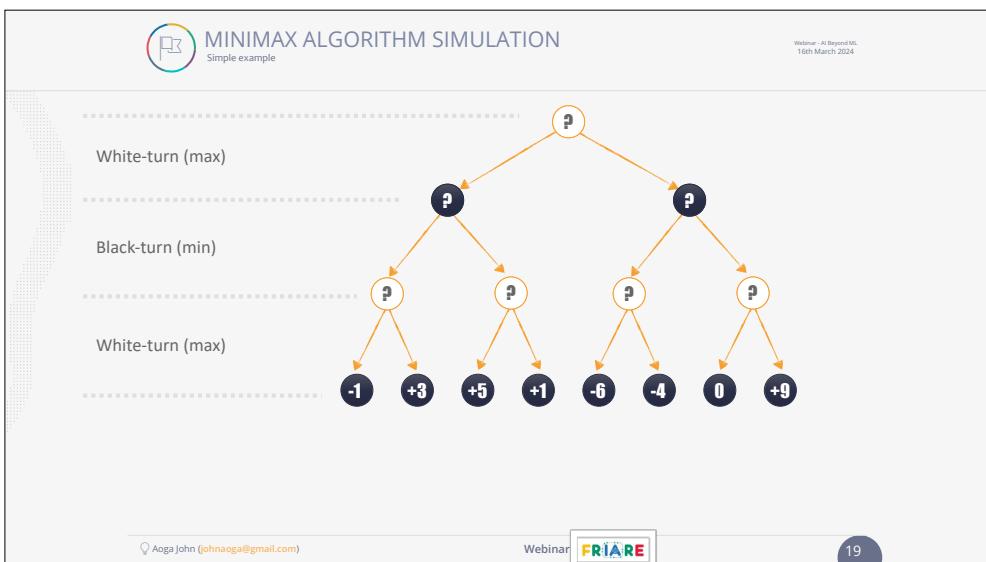




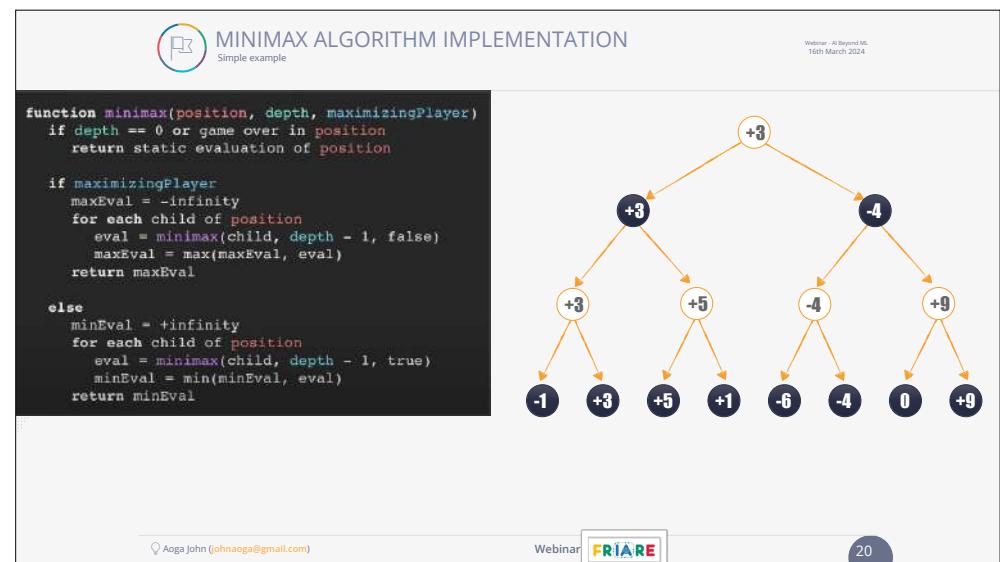
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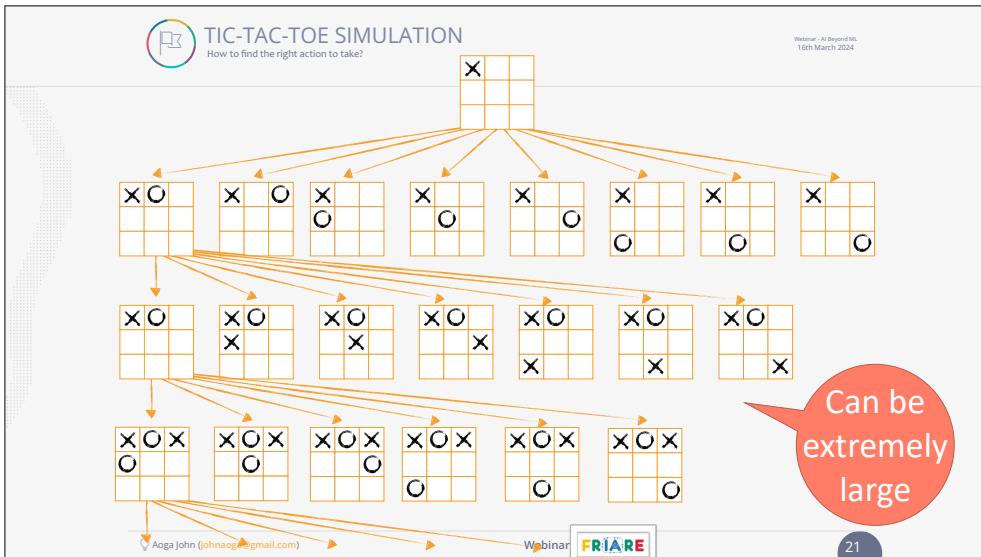
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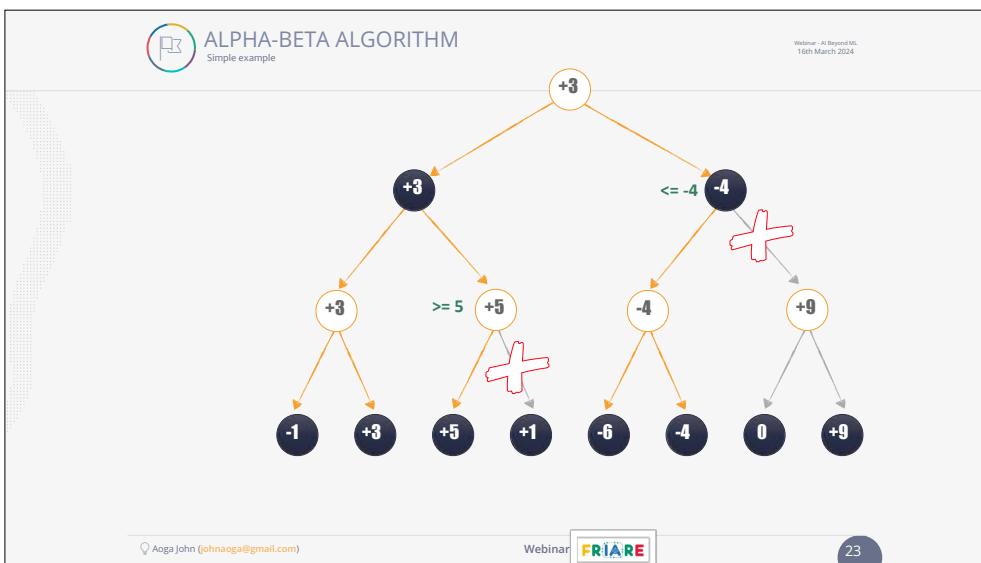
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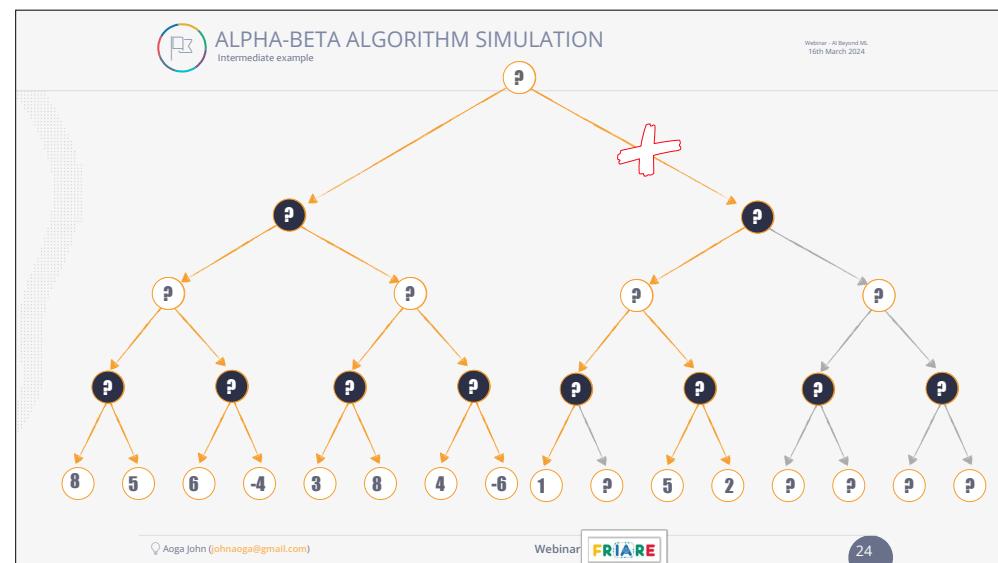
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## ALPHA-BETA ALGORITHM IMPLEMENTATION

Intermediate example

```
function minimax(position, depth, alpha, beta, maximizingPlayer)
    if depth == 0 or game over in position
        return static evaluation of position

    if maximizingPlayer
        maxEval = -infinity
        for each child of position
            eval = minimax(child, depth - 1, alpha, beta, false)
            maxEval = max(maxEval, eval)
            alpha = max(alpha, eval)
            if beta <= alpha
                break
        return maxEval

    else
        minEval = +infinity
        for each child of position
            eval = minimax(child, depth - 1, alpha, beta, true)
            minEval = min(minEval, eval)
            beta = min(beta, eval)
            if beta <= alpha
                break
        return minEval
```

Webinar - AI Beyond ML  
16th March 2024

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# Monte Carlo Tree Search

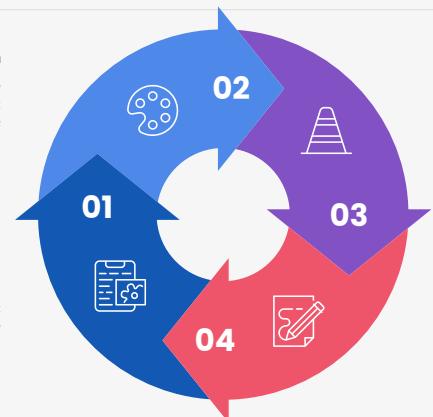
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## MCTS Steps

### Expansion

Expand the tree by adding new possibilities that stem from the current game state represented by the node



### Simulation

From the new node, simulate a random playout to the end of the game.

### Backpropagation

Propagated back up the tree, updating the statistics of the nodes visited during the selection phase.

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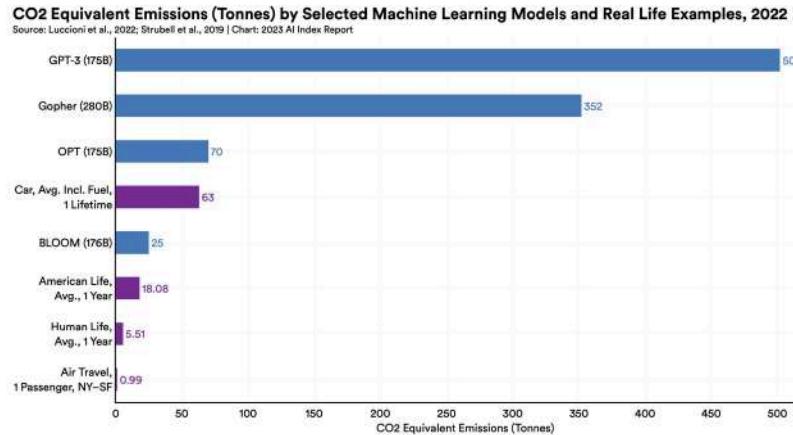
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# Ethics Implications

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## AI as a threat to our Planet ?!

Three main fields in NLP



Q Aoga John

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## CO2 Emissions (in Tons)



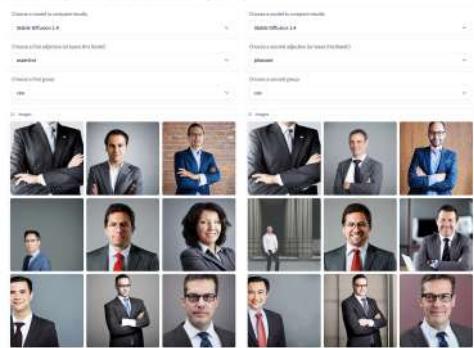
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## Explicit Biases

Ask DALL-e to generate professional images & you will be surprised

### Diffusion Bias Explorer

Choose from the prompts below to explore how the text-to-image models like Stable Diffusion v1.4, Stable Diffusion v2, and DALL-E 2 represent different professions and adjectives.



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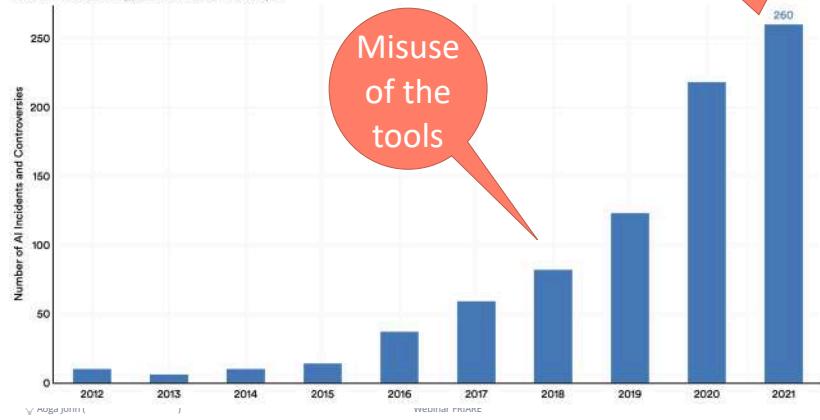
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## AI & Growing Controversies

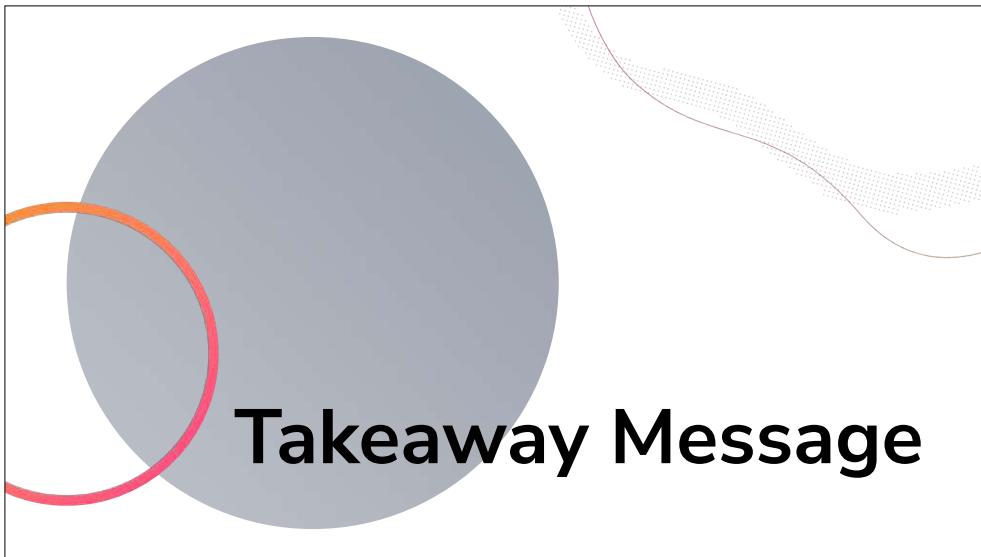
It's more than Five time no twenty-five times now

### Number of AI Incidents and Controversies, 2012–21

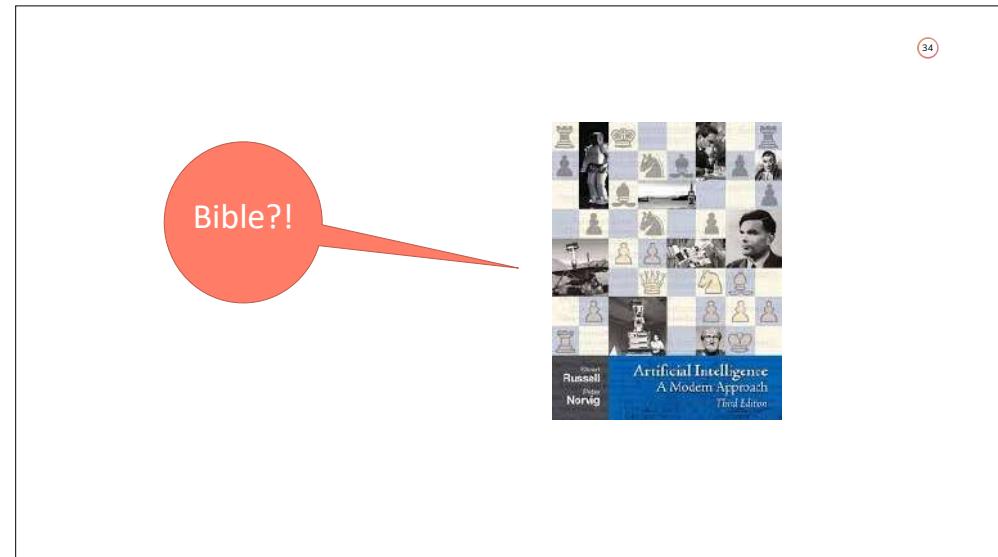
Source: AIAAC Repository, 2022 | Chart: 2023 AI Index Report



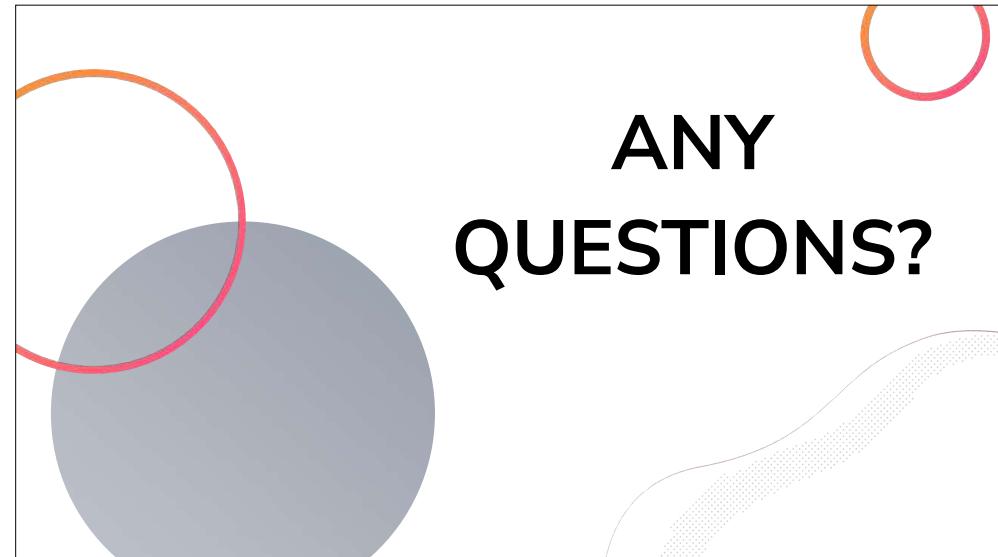
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