

IMAGINING THE FUTURE OF CONSERVATION IN AN AI-DRIVEN WORLD: OPPORTUNITIES AND CHALLENGES

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INTRODUCTION

- Never before have we as humans been presented with such rapidly evolving technology.
- With advances in computer science and engineering, the world of Artificial Intelligence (AI) has made significant advances and became a regular part of everyday life.

WHAT IS ARTIFICIAL INTELLIGENCE (AI)?

Definition of AI according to literature:

AI can be defined as a computerised system which is capable of working equal to or better than a human being and can train itself. It has been adopted across various sectors such as business, healthcare, industry, education and tourism.

(Čerka et al, 2015; Hamet & Trambly, 2017; Kumar & Jakhar, 2022)

WHAT IS ARTIFICIAL INTELLIGENCE (AI)?

Definition of AI according to AI:

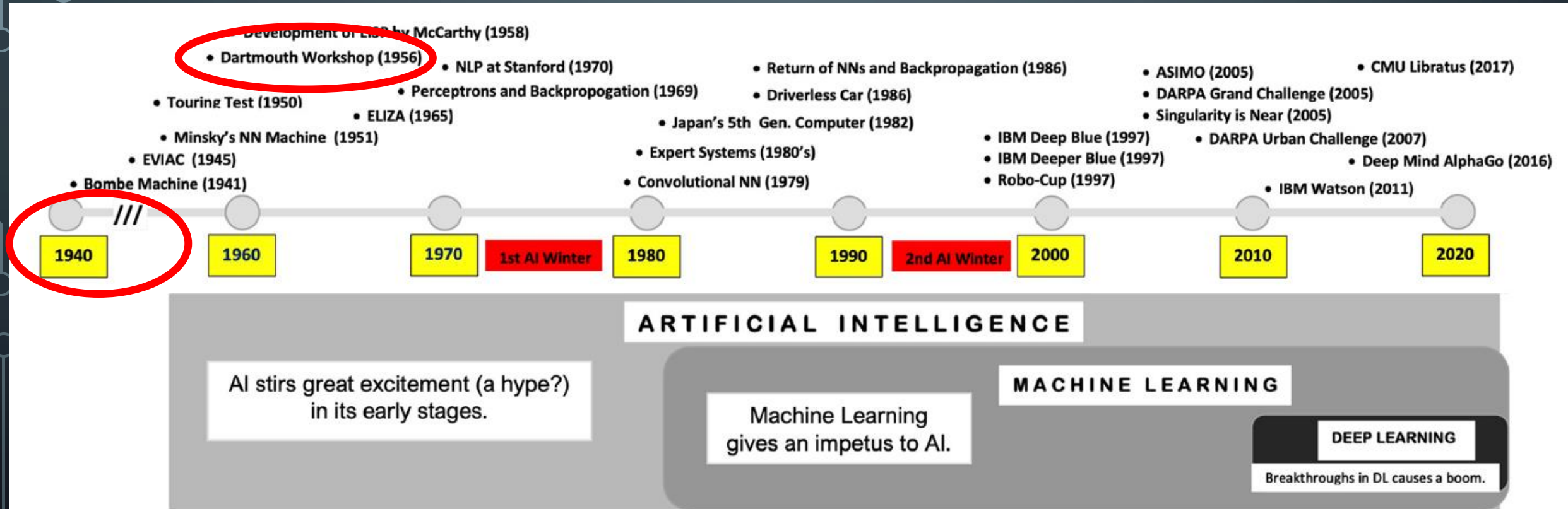
“AI (Artificial Intelligence) refers to the simulation of human intelligence in computers and machines. It enables them to perform tasks that typically require human intelligence, such as learning, reasoning, problem-solving, perception, and language understanding.”

(ChatGPT, 2025)

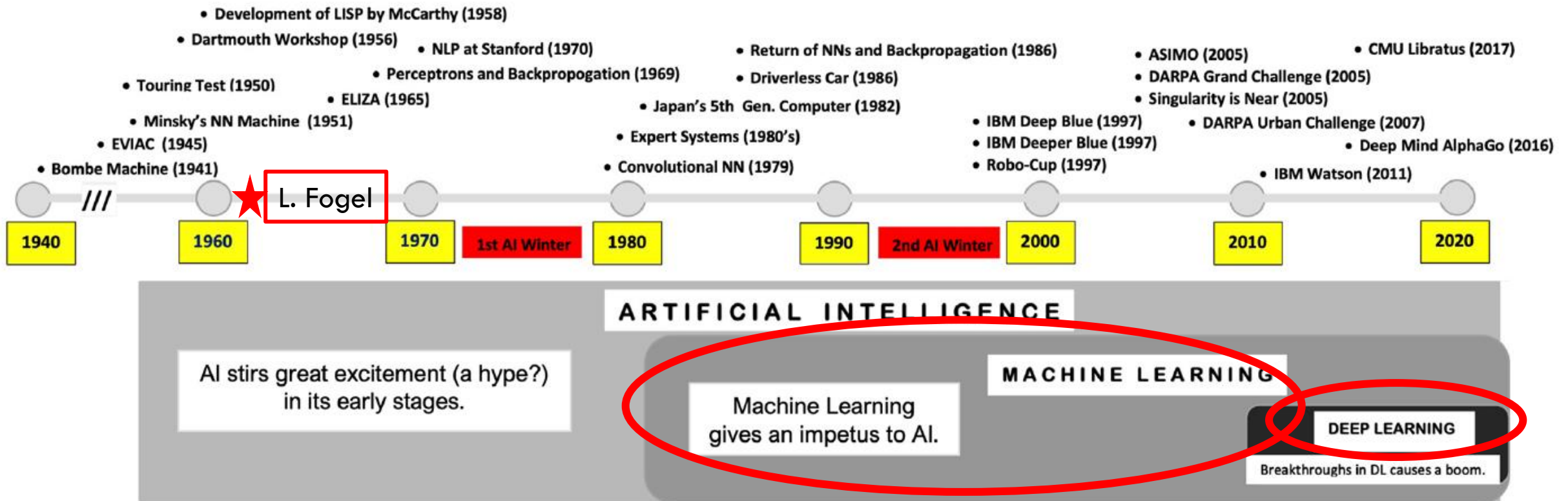


EVOLUTION OF ARTIFICIAL INTELLIGENCE (AI)?

J. McCarthy defined AI as “the science and engineering of making intelligent machines”



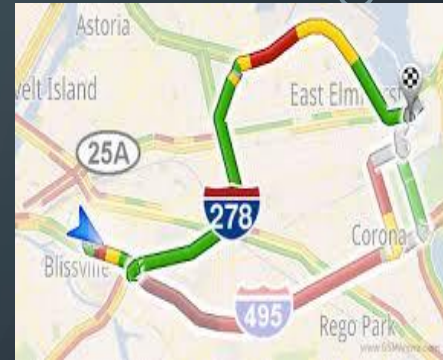
EVOLUTION OF ARTIFICIAL INTELLIGENCE (AI)?



“A REGULAR PART OF EVERYDAY LIFE”

Examples include:

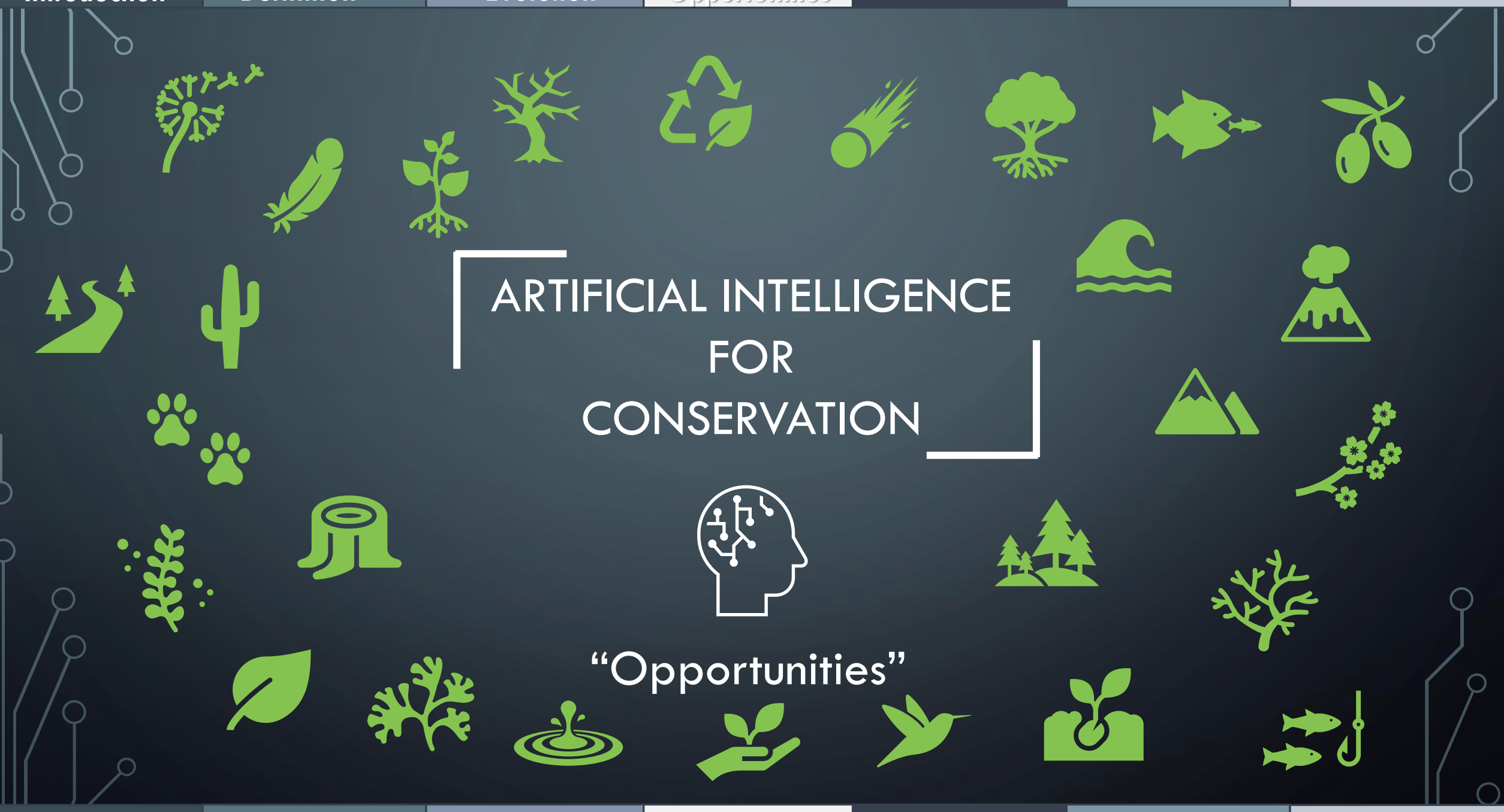
- Facial recognition on your phone to unlock
- Predictive text
- Algorithms on social media or personalized advertising
- Maps with live traffic updates
- Chatbots
- Spam filters on emails (Junkmail)
- Fraud detection



ARTIFICIAL INTELLIGENCE FOR CONSERVATION



“Opportunities”



AI FOR CONSERVATION

Game Census

- Expensive and time-consuming
- Large team of specialist observers required
- Observer fatigue
- Labour intensive post-census analysis



(Cathy Greaver)

- Cheaper and quicker
- Smaller team needed
- AI animal recognition (thermal imagery)
- AI-assisted post-census analysis

AI FOR CONSERVATION

Vegetation surveys

- Expensive and time-consuming
- Large team of specialist observers required
- Labour intensive data entry and analysis
- Personal risk*



(Tercia Strydom)

- Cheaper and quicker
- Smaller team needed
- Can cover large areas*
- AI plant recognition (thermal imagery, LiDAR)*
- AI-assisted data analysis

AI FOR CONSERVATION

- Expensive and time-consuming
- Large team of specialist observers required
- Labour intensive data analysis
- Personal risk

Wildlife Monitoring



(Mduduzi Ndlovu)



- Cheaper and quicker
- Smaller team needed
- AI-assisted data analysis
- AI animal recognition for camera traps and acoustic monitors*

AI FOR CONSERVATION

Land and Ocean Monitoring

- Expensive and time-consuming
- Large team of specialists required
- Labour intensive data analysis
- Personal risk

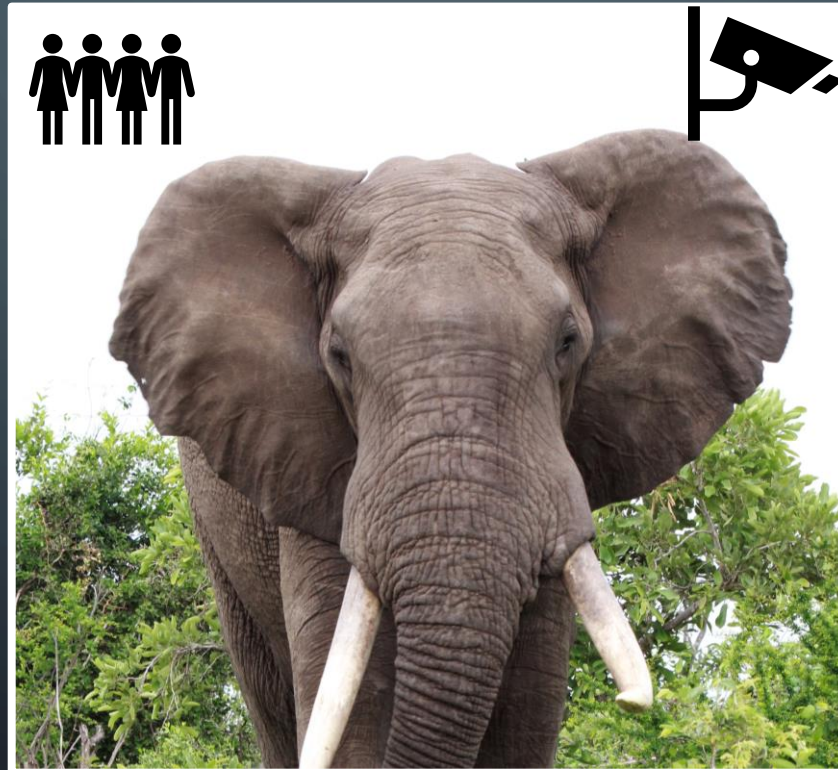


- Cheaper and quicker
- Smaller team needed
- AI-assisted data analysis of satellite imagery to detect oil spills, coral bleaching, etc.*
- AI-assisted data analysis of satellite imagery to detect deforestation, illegal logging, etc.*

AI FOR CONSERVATION

Anti-poaching

- Large team required
- Time-consuming
- Personal risk
- Integrity concerns*



(Tercia Strydom)

- Smaller team needed
- Quicker
- Facial and object recognition (UAV)*
- Predictive analytics using historical data to identify potential hotspots*
- AI-assisted acoustic monitoring*
- AI-powered GPS collars for tracking and alerts*

AI FOR CONSERVATION

Law enforcement

- Expensive and time-consuming
- Large team of specialists required
- Labour intensive data analysis



- Cheaper and quicker
- Smaller team needed
- AI-assisted image recognition to identify illegal trade and online sales of endangered species, e.g. FloraGuard*

ARTIFICIAL INTELLIGENCE FOR CONSERVATION

“Challenges”



WHAT ARE THE RISKS OF AI?

- Reliance on AI

- Over-dependance on AI could be risky due to lack of human oversight, poor data = poor results

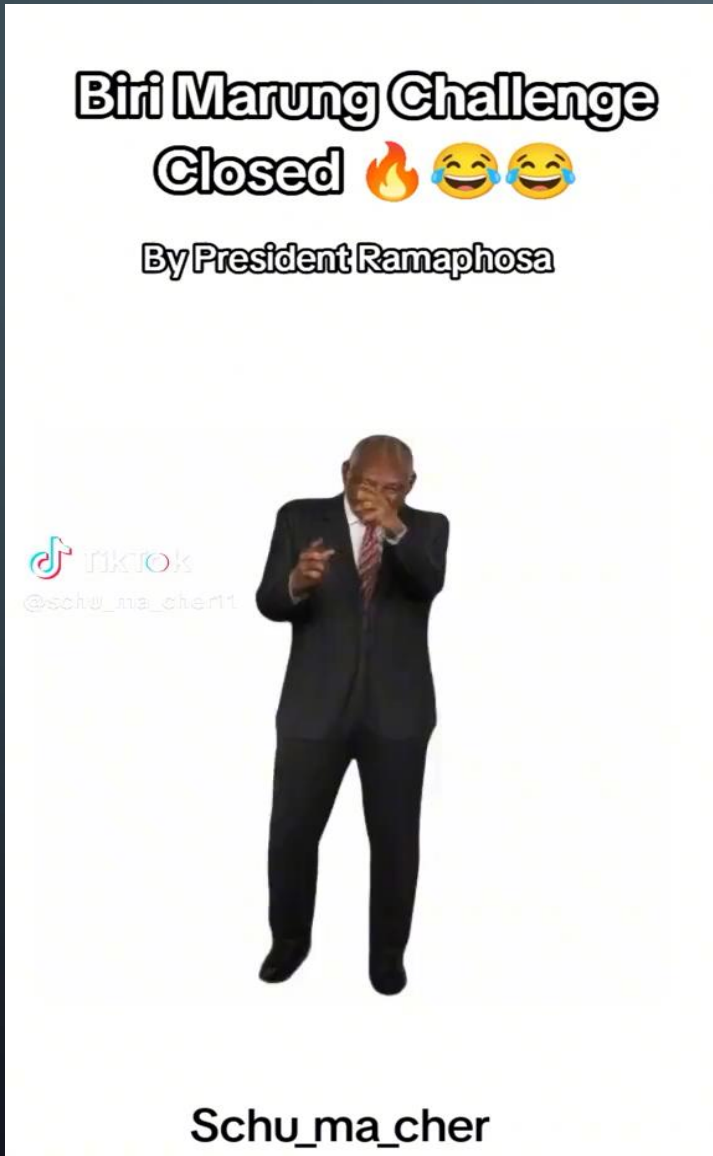
- Misinformation


- AI-generated fake content can spread misinformation resulting in public mistrust and reputational risks
- Identified as one of the top threats to society according to the World Economic Forum's Global Risks Report 2024.
- *Examples:* Deepfakes, lipsyncing, face-swopping, motion capture and AI-video editing



EXAMPLES OF AI-GENERATED / DEEPPFAKE VIDEOS

Biri Marung Challenge
Closed 🔥😂😂
By President Ramaphosa



 nktok
@schu_ma_cher11

Schu_ma_cher



EXAMPLES OF AI-GENERATED / DEEPPFAKE VIDEOS



08:31 CAT

SABC NEWS

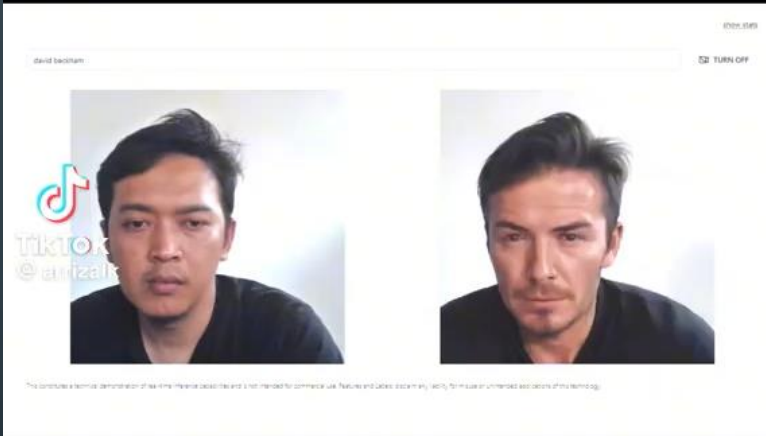
ELON MUSK OPENS GROK PROFIT TO SOUTH AFRICANS,
TURNING AN R4,600 INVESTMENT INTO A STABLE R185,000 MONTHLY INCOME!

f x i g t d @SABCNews

SABCNEWS.COM

EXAMPLES OF AI-GENERATED/ DEEPPFAKE VIDEOS

Realtime Deepfake



**One side is awesome and one
side is scary**



CONCLUSION

- AI is a powerful tool which is constantly evolving.
- In conservation, we have not yet fully exploited its full potential.
- AI is fascinating and exciting to explore but must be used in a responsible manner.

THANKS

Any questions? Ask our friend...



“CHAD” GPT