



AI + LA:

ARTIFICIAL INTELLIGENCE AND THE
FUTURE OF LANDSCAPE ARCHITECTURE



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DESIGNWORKSHOP



LANDSCAPE ARCHITECTURE FOUNDATION

- 501(c)(3) nonprofit based in Washington, DC
- Founded in 1966 to preserve, improve and enhance the environment
- Research, Scholarship, and Leadership programs
- Increase collective capacity of landscape architects to achieve sustainability:
 - Invested over **\$3 million** in research since 1986
 - Awarded over **\$1.25 million** in scholarships to over **550** students



MODERATOR



Phillip Fernberg
Utah State University
OJB Landscape Architecture
2022-23 LAF Fellow

PANELISTS



Karla Saldaña Ochoa
University of Florida



Jeff Cutler
space2place



Zihao Zhang
City College of New York

AUDIENCE POLL 1:

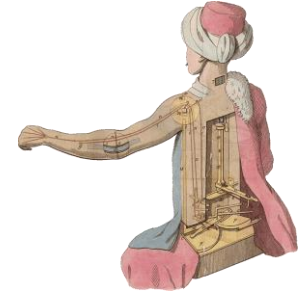
Have you used any form of
image or text generation AI?



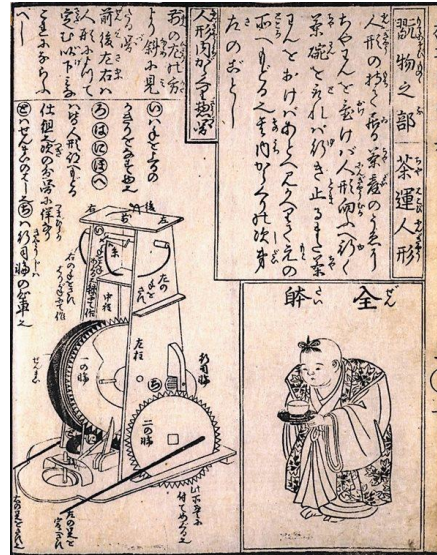
AI is not **new**.
Questions of
human and
non-human
intelligence
have been
pondered for
millennia.



Golem



The Mechanical Turk



Japanese Karakuri



Mesopotamian Automaton

The Dartmouth Workshop




DARTMOUTH SUMMER WORKSHOP ON ARTIFICIAL INTELLIGENCE

We propose that the workshop be carried out during the summer of 1956 in Hanover, New Hampshire. The study should be an aspect of learning or problem solving, precisely described that can be made to find how to solve kinds of problems. We think that a significant advance will be made if a carefully selected group of men can solve these problems if they are given the chance.

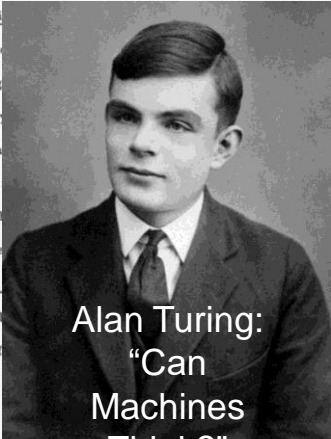
The following are the topics to be discussed:

- 1) Automatic Intelligence
If a machine can be programmed to simulate human intelligence, it must have a memory to simulate the human brain, but the machine must have its own intelligence, but we have no idea of what it is.
- 2) How Can We Make a Machine Think?
It may be possible to design a machine that can think, but we have no idea of what it is.

Ada Lovelace, Analytical Engine



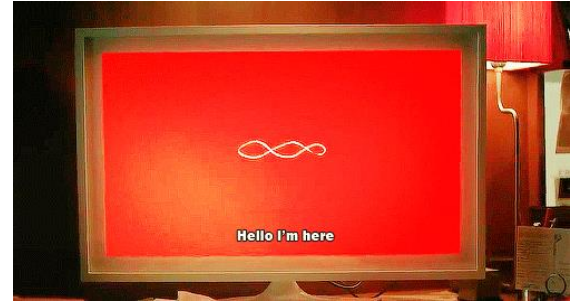
Alan Turing: "Can Machines Think?"



“The *theory* and *development* of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.”

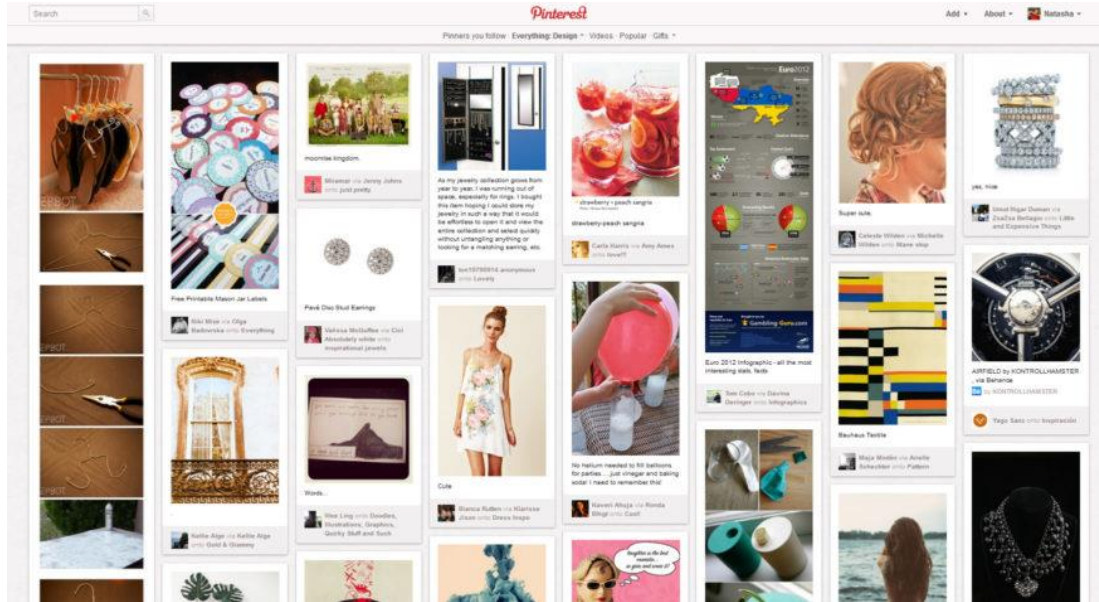
Oxford English Dictionary

What is AI?



ARTIFICIAL GENERAL INTELLIGENCE (AGI)

Artificial Narrow Intelligence (ANI)

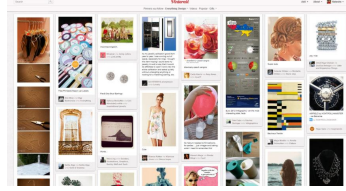




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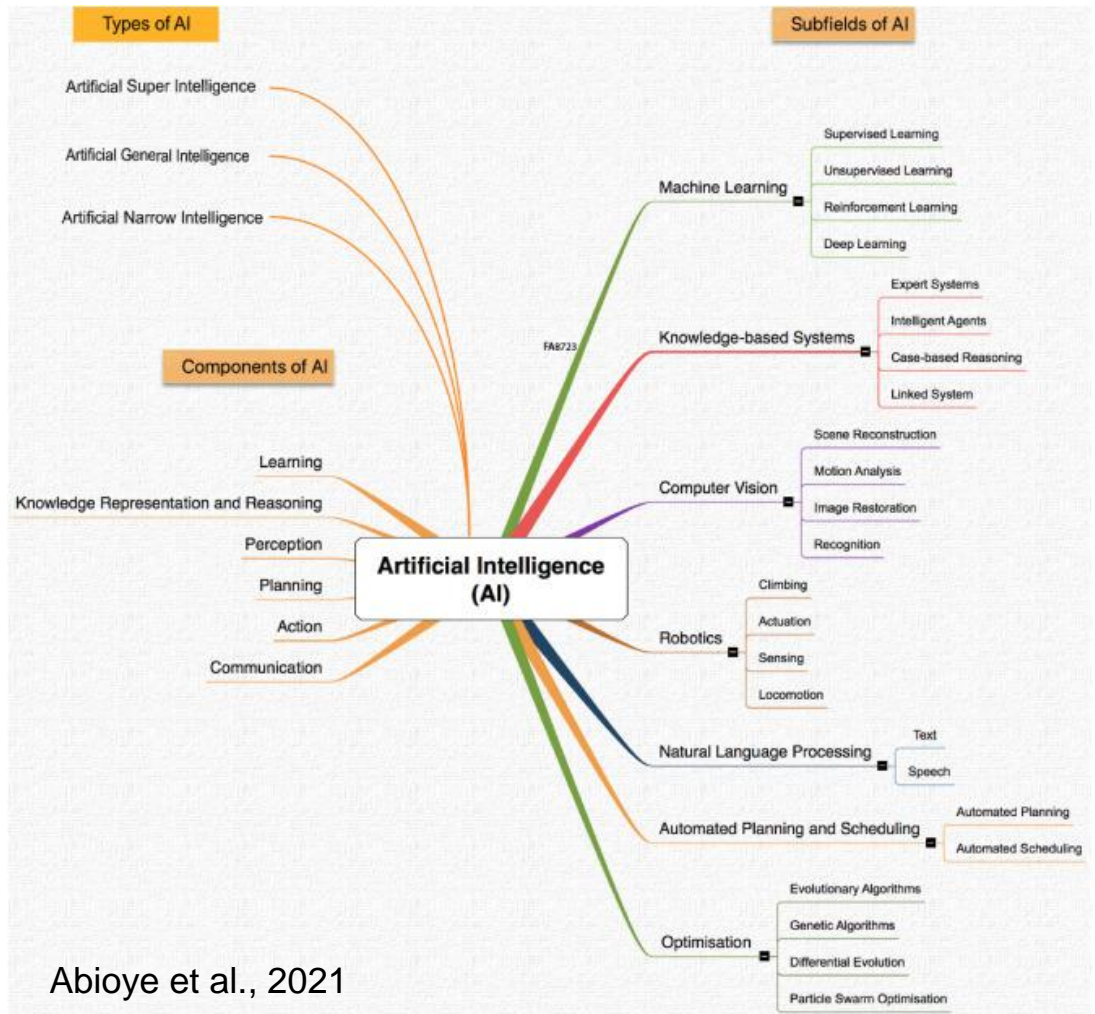
= AI



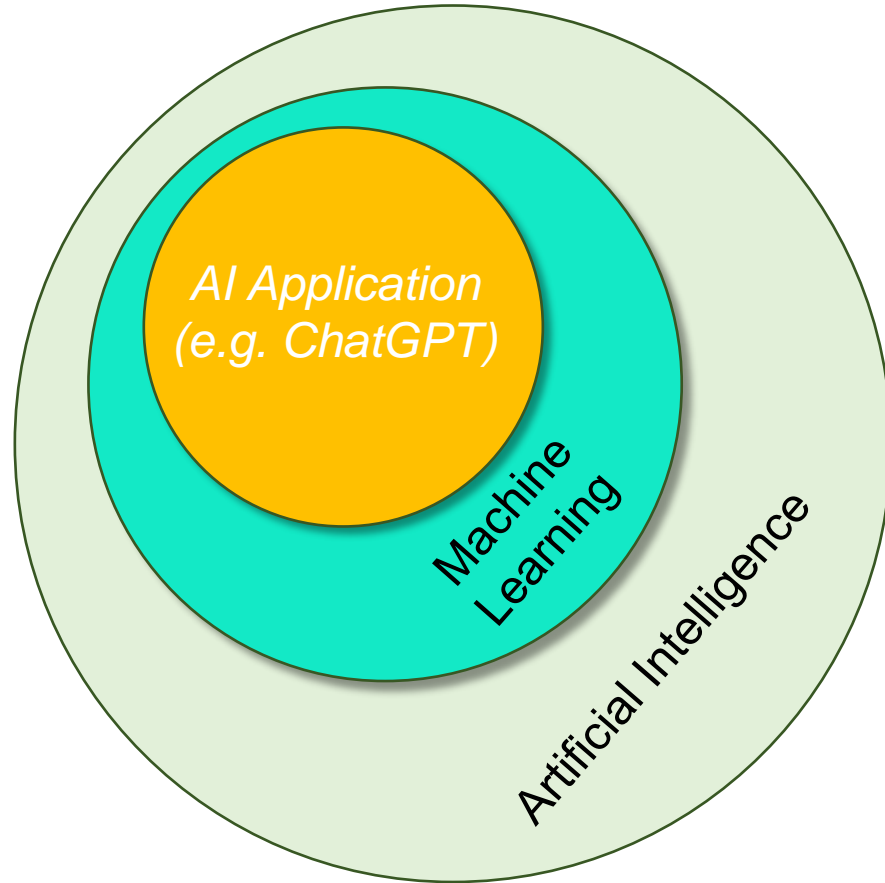
x

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AI



Abioye et al., 2021



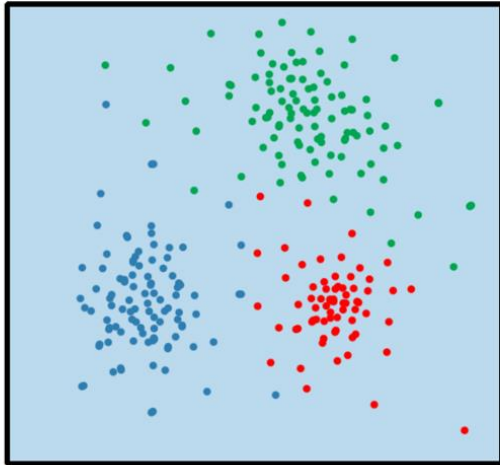
*AI Application
(e.g. ChatGPT)*

**Machine
Learning**

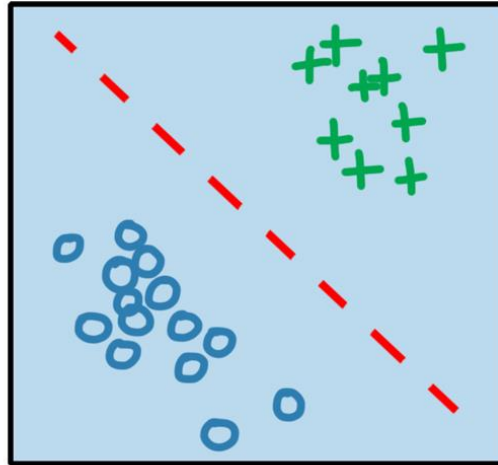
Artificial Intelligence

machine learning

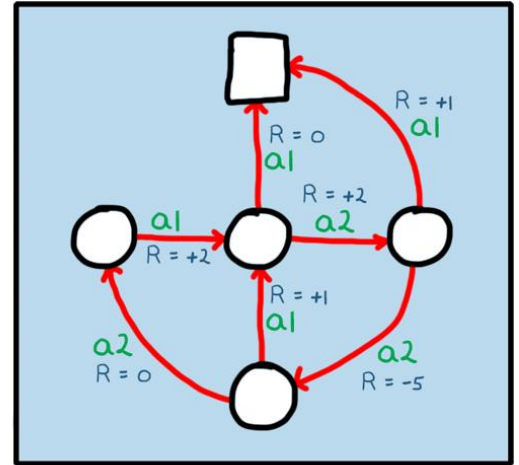
unsupervised learning



supervised learning



reinforcement learning



assess the impact of design choices on various stakeholders, and make informed decisions based on evidence and analysis.

6. Collaborative Design: AI can facilitate collaboration among landscape architects and other professionals involved in the design process. By leveraging AI-powered tools, multiple stakeholders can work together in real-time, sharing ideas, providing feedback, and making adjustments to designs. This collaborative approach can lead to more inclusive, holistic, and well-coordinated landscape designs.

While AI offers significant potential for the future of landscape architecture, it is important to note that human expertise, creativity, and intuition will remain vital. AI should be seen as a tool to augment the capabilities of landscape architects, enabling them to make more informed decisions and create landscapes that are more sustainable, functional, and aesthetically pleasing.

 Regenerate response

 Send a message. 



How do LLMs work?

You can use the tool below to understand how a piece of text would be tokenized by the API, and the total count of tokens in that piece of text.

GPT-3 Codex

Enter some text

Clear Show example

Tokens	Characters
1	1

TEXT TOKEN IDS

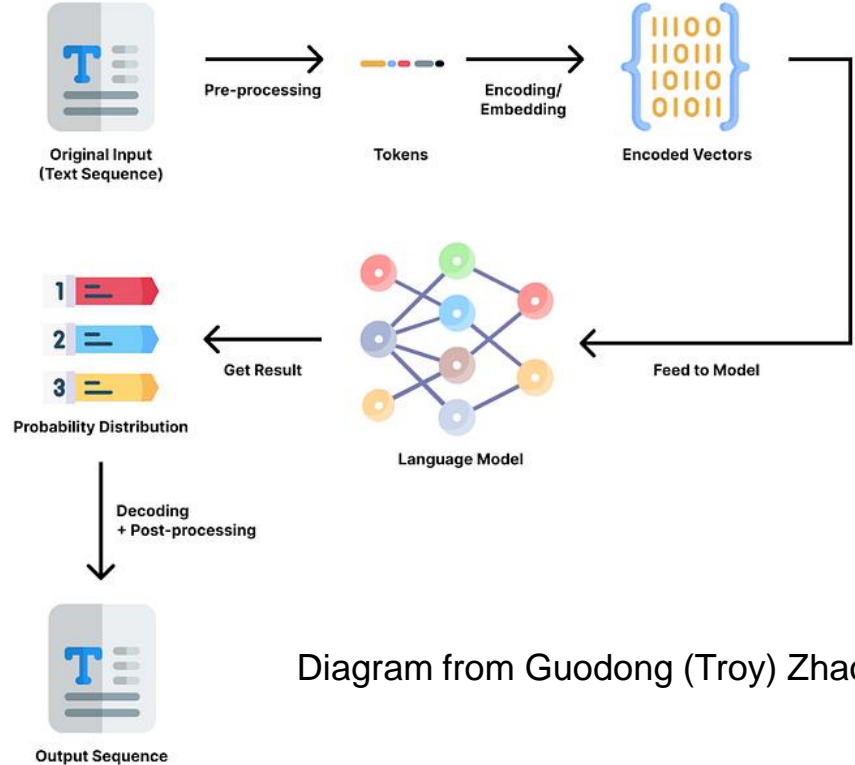
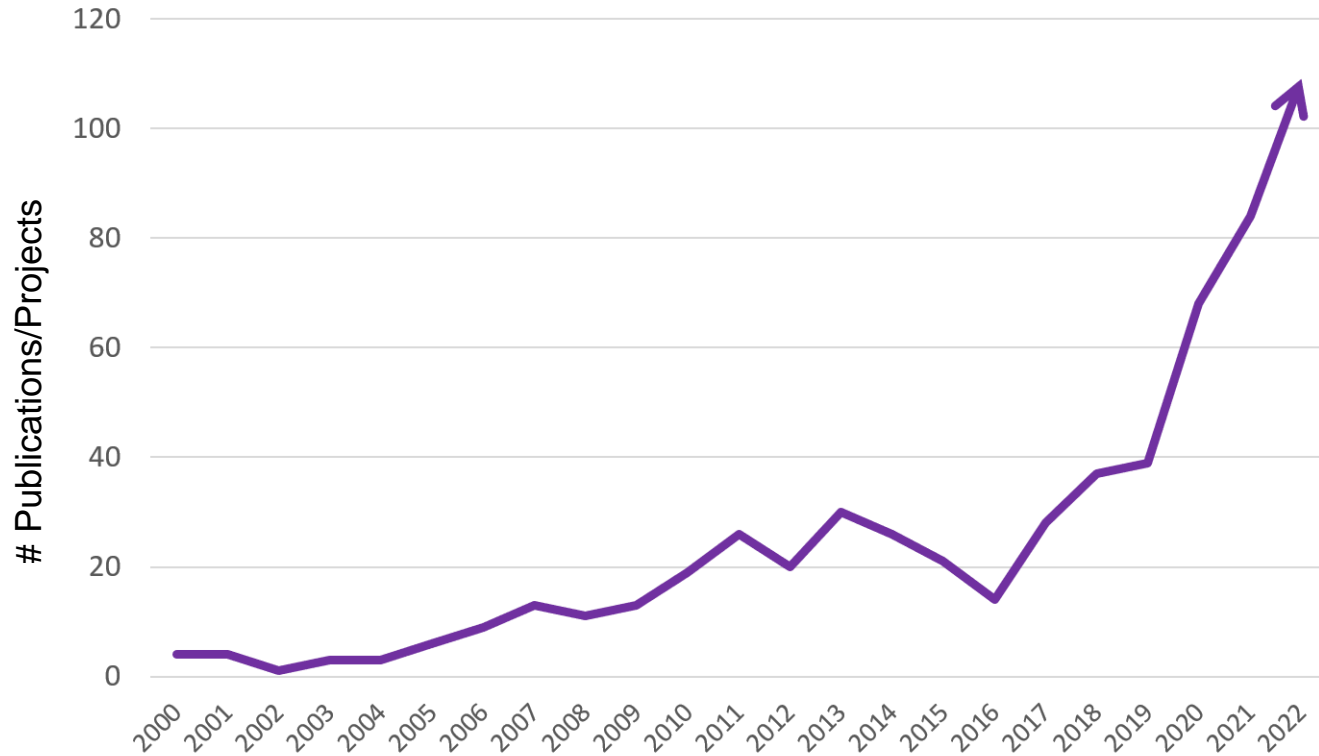


Diagram from Guodong (Troy) Zhao

AI in Landscape Architecture

Possible AI Integrations with Landscape Architecture		Landscape Design Process												Aspects of Design								
		Marketing	Des Research	Public Outreach	Inventory/Analysis	Concept Des	Master Planning	Schematic Des	Des Development	Construction Docs	Bidding	Implementation	Post Occupancy	Maintenance	Site Des/Layout	Grading	Stormwater Mgmt	Planting Des	Hardscape	Transport infra	Urban Des	Land Use Planning
Branches of AI	Expert Systems	Green	Green		Green						Green			Green	Green	Green						
	Robotics											Red	Red	Red					Red	Red		
	Machine Learning	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Neural Networks	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
	Fuzzy Logic			Yellow	Yellow					Yellow			Yellow	Yellow								
AI-adjacent tech	NLP	Purple	Purple							Purple	Purple	Purple	Purple					Purple				
	Algorithmic Design				Purple	Purple	Purple							Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple
	BIM/ABM/IBM/etc				Pink	Pink	Pink	Pink	Pink	Pink												
	Geodesign																			Blue	Blue	Blue

Growth in AI-LA Work through Time



Fernberg, P., & Chamberlain, B. (2023). Artificial Intelligence in Landscape Architecture: A Literature Review. *Landscape Journal: design, planning, and management of the land* 42(1), 13-35.

PANEL DISCUSSION

FUNDAMENTALS ◆ PRACTICE ◆ IMPLICATIONS



What is AI to you?



What do people need to know about AI?

AUDIENCE POLL 2:

**Are you integrating AI into your
practice or teaching?**



**What does it look like
to integrate AI
into the design process?**

AUDIENCE POLL 3:

**Do you think AI
will take your job?**



What are the implications of AI for the landscape architecture discipline?

What can designers do to keep up + integrate AI in their work?

Interested in learning more?

Resources, further reading, and info on panelists



Get involved!

AI + LA Industry Roundtable



- **Benchmark knowledge base for AI in industry**
- **Leveraging Generative AI for everyday practice**
 - **AI + LA standards of practice**
- **Creative, moral, and ethical implications of an AI-driven design process**
 - **AI's effect on the geopolitics of landscape**
 - **AI integration in landscape education**

AUDIENCE Q&A



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