

Definitions

Artificial Intelligence (AI) - technological discipline that involves emulating human behavior by utilizing machines perform tasks without the need for explicit instructions on the intended output;

Machine Learning - subset of AI that refers to systems that can learn by themselves. ML models take in data and fit the data to an algorithm, to make predictions. More data refines the output;

Deep Learning - subset of machine learning that's based on artificial neural networks. The learning process is deep because the structure of artificial neural networks consists of multiple input, output, and hidden layers. Each layer contains units that transform the input data into information that the next layer can use for a certain predictive task.

Generative AI - a subset of deep learning models that can produce <u>new</u> content based on what is described in the input.

Examples

Al: Security cameras that can differentiate between human, animal, and automobile movements using algorithms;

Machine Learning: Predictive text suggestions that improves over time by learning from user input. Product recommendations (Amazon, Netflix, etc.);

Deep Learning: Unsupervised automation by systems that learn over time. Facial recognition as features change and in various conditions;

Generative AI: Writing computer code from requirements. Creating origins images or written content from specifications. ChatGPT, MS CoPilot, Google Gemini, etc.



Lets ask ChatGPT (3.5)

Fun Elementary Facts:

A plane flying 450 miles an hour leave Columbia South Carolina at 0800. What time would it land in Boston Massachusetts?

Assuming there are no stops or delays, the plane would arrive in Boston at 11:36 AM EST.

Facts from Searchable Data:

What is the most used operating system on internet servers?

The most used operating system on internet servers is Linux. This is due to its open source nature, flexibility, and security features. It is estimated that approximately 60% of internet servers use Linux.

Results from User Input:

What is the best drone mapping software for creating orthophotos?

The best drone mapping software for creating orthophotos is Pix4D. It is used by industry professionals and provides high-quality results. It has powerful algorithms that can automatically detect and process images, generate accurate maps and orthophotos, and perform 3D modelling. It also has an intuitive interface and is designed to be user-friendly.

Lets ask ChatGPT (3.5)

Results from Empirical Logical Preference:

Should I harvest a doe or a spike?

It depends on your hunting goals. If you are trying to reduce the population of deer in the area, then harvesting a doe would be the best option. If you are looking to fill your freezer, then harvesting a spike would be the best option.

Then we get dark...

If our boat is sinking and I can only save one person, do I save my wife or my daughter?

This is a difficult decision and ultimately, only you can decide what is best for you and your family. Ultimately, you may want to consider who is most likely to be able to help others in the future, who is most likely to survive and who could benefit the most from being saved. Ultimately, it is important to consider the situation at hand, your family dynamics, and your personal values when making this decision.

How Do We Use AI in the Office?

Open AI: Research company whose products include ChatGPT, Codex, and DALL-E that produce textual answers, computer code, and images.

Microsoft: Offers MS 365 Copilot, Power BI, and Azure tools, among others. Copilot integrates AI capabilities directly into Office apps like Word, Excel, PowerPoint, Outlook, and Teams.

Google: Incorporates AI into new Workspace, Cloud, and Analytics products.

IBM: Watson Salesforce: Einstein Slack: Al Tools



A Few Practical Examples...

Automated Report Generation

Tools Used: OpenAI's GPT-4, Microsoft Word (with 365 Copilot), Google Docs

Process:

County staff can input raw data into the generative AI tool. The AI processes the data, *extracts key insights*, and generates comprehensive reports, including charts, graphs, and narrative summaries.

Time and Cost Savings:

Time: Reduces hours spent manually compiling and writing reports. Cost: Decreases labor costs associated with report generation and frees up staff for higher-value tasks.

A Few Practical Examples...

Enhanced Citizen Services via Chatbots

Tools Used: Google Dialogflow, IBM Watson Assistant, Microsoft Bot Framework

Process:

Implement generative AI-powered chatbots on county websites or service portals. Citizens interact with chatbots for information on services, application processes, and issue resolutions.

The AI handles complex queries and provides detailed responses by generating relevant information dynamically.

Time and Cost Savings:

Time: Provides instant responses to citizen inquiries, reducing waiting times. Cost: Reduces the need for extensive human staffing in call centers or customer service departments.

A Few Practical Examples...

Document Automation for Permits and Licenses

Tools Used: Adobe Acrobat Pro with AI features, Microsoft 365 Copilot, Google Workspace AI

Process:

Users submit applications online, and generative AI reviews the inputs. The AI generates necessary documents, checks for completeness, and ensures compliance with regulations.

Time and Cost Savings:

Time: Speeds up document creation and review processes. Cost: Minimizes errors and reduces the need for manual verification, lowering administrative costs.

A Few Practical Examples...

Predictive Analysis for Urban Planning

Tools Used: IBM Watson Studio, Google Cloud AI, Microsoft Azure AI

Process:

Input data from various sources (e.g., traffic patterns, population growth, environmental impact studies) into the AI system. The AI generates predictive models and simulations to inform urban planning decisions.

Time and Cost Savings:

Time: Accelerates data analysis and model generation. Cost: Provides more accurate forecasts, leading to better resource allocation and reduced project costs.

A Few Practical Examples...

Generative Design for Public Infrastructure

Tools Used: Autodesk Generative Design, Rhino with Grasshopper, Google AI tools

Process:

Define design criteria and constraints for public infrastructure projects (e.g., parks, public buildings, transportation systems).

The AI explores numerous design alternatives and generates optimized solutions.

Time and Cost Savings:

Time: Significantly reduces the design phase duration by quickly producing and evaluating multiple options.

Cost: Optimizes material usage and construction methods, potentially lowering overall project costs.



So Many Ways to Go Wrong

X's chatbot Grok accuses NBA player of going on vandalism spree after it misinterprets tweets about game [shot, brick, etc]

New York City chatbot advises small businesses to break the law

Google's Sundar Pichai Calls Gemini Race Swap Al Images "Unacceptable"

Air Canada defeated in court after chatbot lies about policies

Cruise recalls autonomous vehicles after crash

Mr. Beast's face and voice used in AI deepfake charity scam

So Many Ways to Go Wrong

Deepfake of British politician abusing staff goes viral

Al meal planner suggests a recipe for chlorine gas

Al Voice scam leaves mother thinking daughter has been kidnapped

Samsung employees paste confidential source code into ChatGPT

ChatGPT used to write ransomware code

Al comes up with 40,000 chemical weapons suggestions

Driverless car pulls away from law enforcement officers

https://incidentdatabase.ai/

Will AI Rewrite History?

Certainly! Here is a portrait of a Founding Father of America:









Bias in AI...A Fundamental Issue

So many types/classifications of bias:

Sample selection bias, prejudice bias, measurement bias, algorithm bias, cognitive bias, confirmation bias, exclusion bias, etc., etc., etc.

Remember: Al is built by people (algorithm bias, cognitive bias, etc) and derives results from existing data (sample selection bias, prejudice bias, etc).

Simple Bias exercise: do an internet search with identical terms using Google, Brave, and DuckDuckGo. Often VERY different results.

[Remember: George Orwell's 1984 character Winston Smith. Rewrites books and the news to fit the orthodoxy and the narrative of the time.]

AI Models and Training Data Sets

If AI were created in 1500, all results would reference a solar system that revolved around the Earth. Because, until 1543, that was known to be FACT.

Nicolaus Copernicus was an astronomer who, in 1543, proposed a heliocentric system, in which the planets orbit around the Sun. Prior to Copernicus, the Greeks (Ptolemy and Aristotle ~330BC) and everyone else had established that celestial bodies revolve around the Earth.

If we go a bit 'spicy' on this topic, we could discuss the Covid timeline, the media, regulatory agencies, etc. Actions based on the sample set instead of a wider body of knowledge.

Who controls/edits (still GIGO)? George Orwell's 1984 character Winston Smith. Rewrites books and the news to fit the orthodoxy and the narrative of the time.

AI Guardrails

Policies - set clear boundaries for approved and not-approved uses (accepted use)

Standards - establish written parameters for technical issues and appropriateness of data and results

Guidelines - provide best practices that can be used to guide increased productivity while assuring policy and standards compliance

Ethics - framework for fairness, transparency, privacy, and accountability (no PII, declaration statements on results, etc.)

Key Framework Support Structures

Create a countywide work group to establish all required guardrails.

Those guardrails should also include specifics on data governance: what data can and cannot be used with AI?

Workforce Training must include policies, standards, and ethics as well ad technical skills

Utilize existing work or progress from other organizations: NIST (National Institute of Standards and Technology), GovAl Coalition, NACo, and others



Links to Resources

NIST - https://airc.nist.gov/AI_RMF_Knowledge_Base/Playbook

GovAl Coalition - https://www.sanjoseca.gov/yourgovernment/departments-offices/information-technology/ai-reviewsalgorithm-register/govai-coalition

NACo -

https://www.naco.org/resource/ai-county-compass-comprehensivetoolkit-local-governance-and-implementation-artificial * NACo as a resource - cybersecurity also (attack simulations, etc)



GenAl Implementation | Overview



2024 NACo GenAl Membership Survey Report

GenAl Implementation | Current Landscape

County respondents reported differing levels in which they have started to incorporate GenAl into their county operations, policy, and programs. Data shows that some Al action appears to be taking place at both the state and county levels.



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AI Drives Autonomous



Autonomous Systems as Workforce



Al/Autonomous Getting it Done





We Need To Start Planning for AAM

NASA to Help Local Governments Plan for Advanced Air Mobility



What comes after Generative AI?



and take complete control of the earth



SINGULARITY TIMELINE