DUGMEETUP

August 29, 2024

TEXAS REGIONAL

FO and AI: Making Intelligent Solutions

What day is it?

"The Skynet Funding Bill is passed. The system goes on-line August 4th, 1997. Human decisions are removed from strategic defense. Skynet begins to learn at a geometric rate. It becomes self-aware at 2:14 a.m. Eastern time, August 29th. In a panic, they try to pull the plug."

Just In!

- California legislature passes controversial “kill switch” AI safety bill
- https://arstechnica.com/ai/2024/08/as-contentious-california-ai-safety-bill-passes-critics-push-governor-for-veto/

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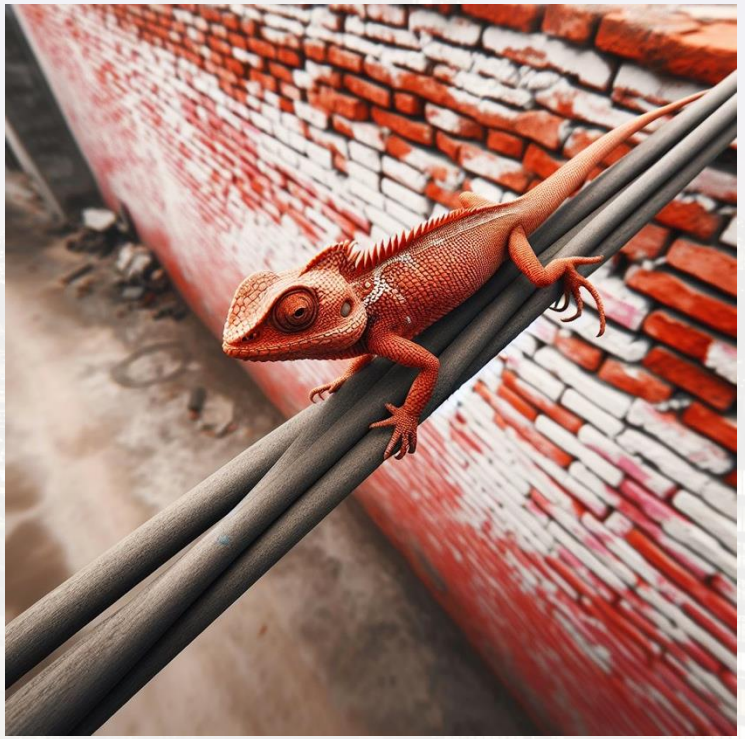
Overview

- What is AI?
- What can it *actually* do?
- How can I use it to solve a problem?

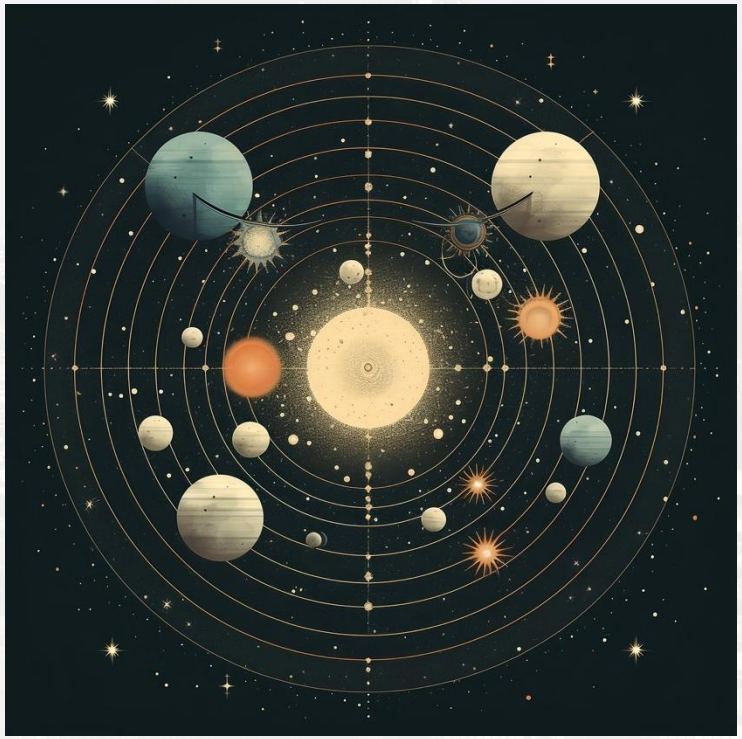
What is AI?

- Artificial intelligence is a field of science concerned with building computers and machines that can reason, learn, and act in such a way that would normally require human intelligence or that involves data whose scale exceeds what humans can analyze.



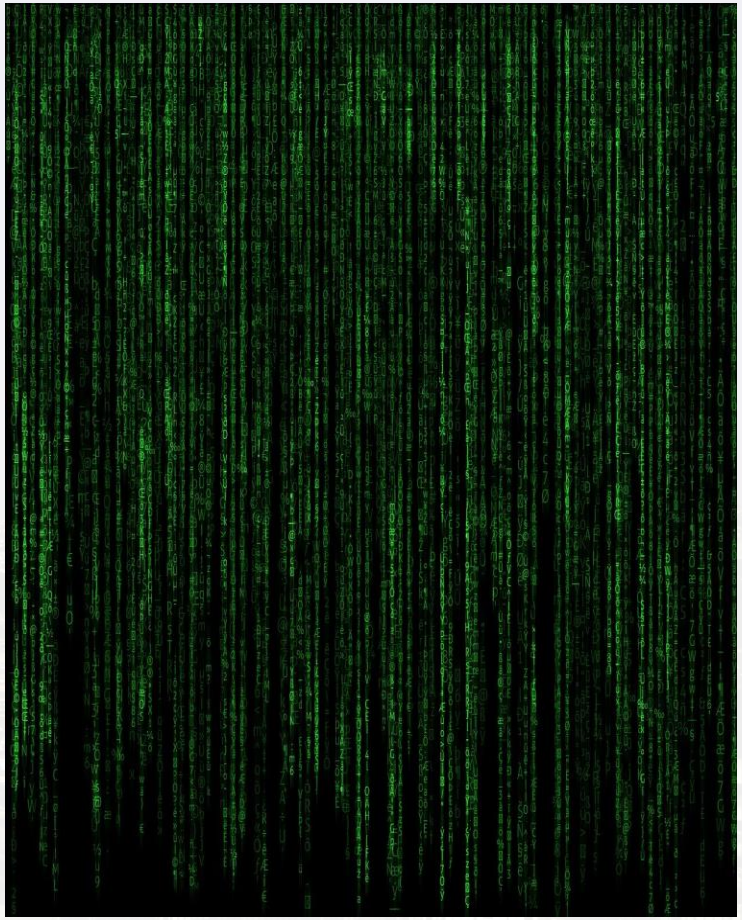
What Actually is AI?

- AI systems work by ingesting large amounts of labeled training data, analyzing that data for correlations and patterns, and using these patterns to make predictions about future states.

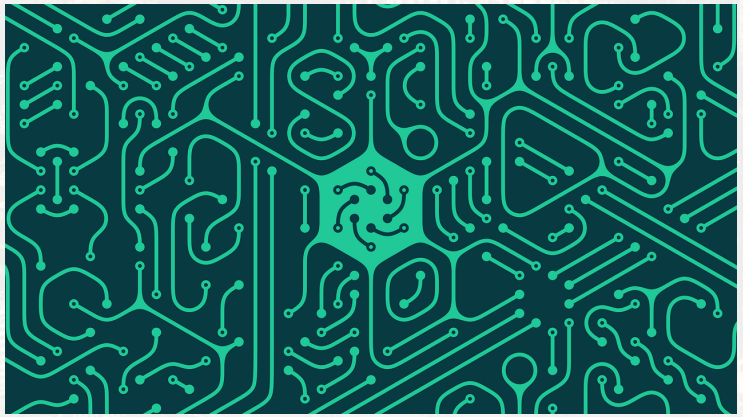


Training Data

- Data about a (noun)
- Used to find patterns, meanings, values, etc
- Data Science
- “just right”
- Bias, other negative outcomes

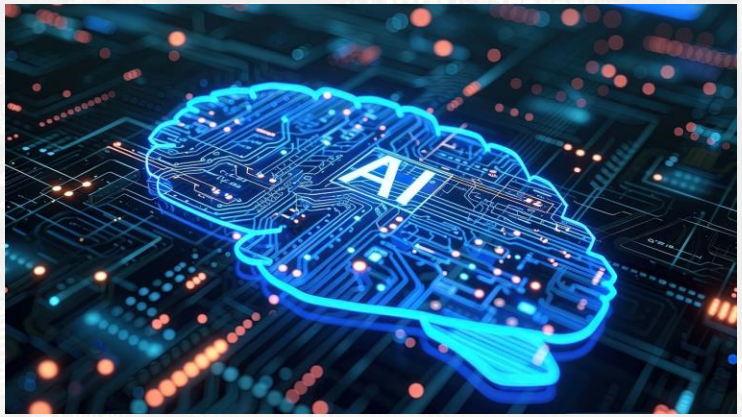


Machine Learning (ML)



- A method of data analysis that automates analytical model building. ML is based on the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention.

ML Example



- Product Recommendations
  - Match you to a “profile” – X axis
  - Match that profile to products – Y axis
  - “profile” is the Z axis
- Email Spam Filtering
  - Identify text anomalies
  - Separate out “junk”

Natural Language Processing

- The ability of a computer to understand, interpret, and generate human language, including speech and text.

NLP Example

- Search Results
  - Type in a request
  - Get a list of pages that are related
- Predictive Text
  - Start typing
  - It “predicts” what it thinks may be next
  - Ie; your cell phone always getting it wrong

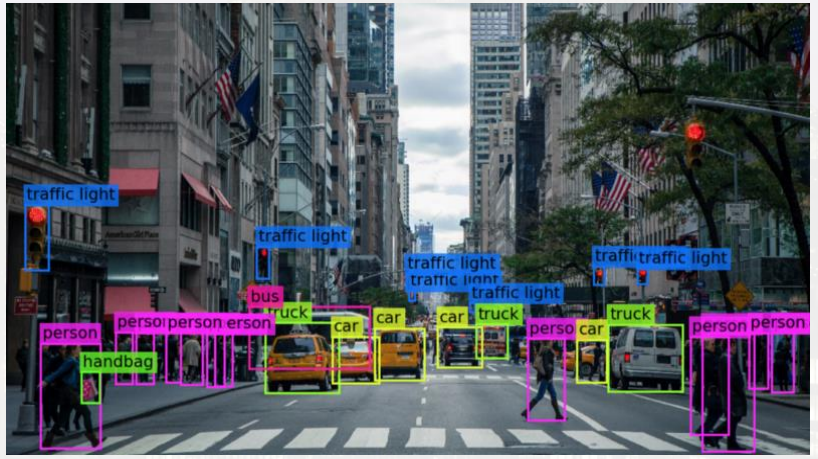
Computer Vision

- Enabling machines to interpret and make decisions based on visual input from the world, like identifying objects in an image or video.

Computer Vision Example

Computer Vision Example

- Medical Anomaly Detection
  - Review medical imagery for anomalies
  - Raise concerns for human review
  - Ie; create 3D model of patient's heart using a new mapping algorithm with tracer dye and relative flow volumes for scanned area (Arterys' 4D Flow)
  - Ie; advanced diagnostics for complex and confounded cases



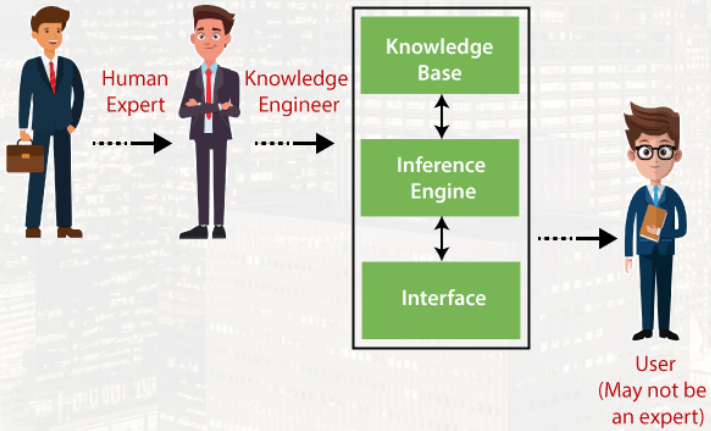
Robotics

- The branch of AI that involves the design and operation of robots, which are often powered by AI algorithms to perform tasks autonomously or semi-autonomously.

Robotics Example

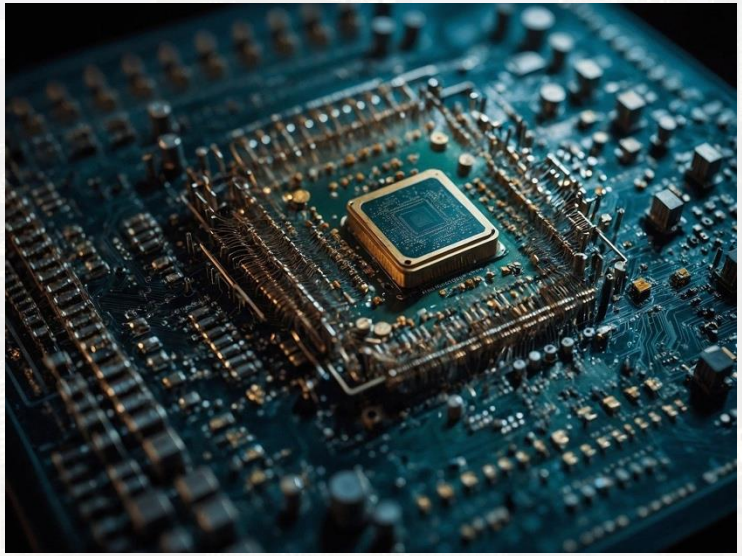
- Robot vacuums
  - User sets up operating environment along with some parameters
  - Robot performs tasks and “learns” basic facts and remembers them for later
- Security Bots
  - Roam hallways of commercial buildings and report anything out of the ordinary
  - What is “ordinary”?

Expert Systems



- AI programs that mimic the decision-making ability of a human expert, often used in fields like medicine or finance.

Expert Systems Example

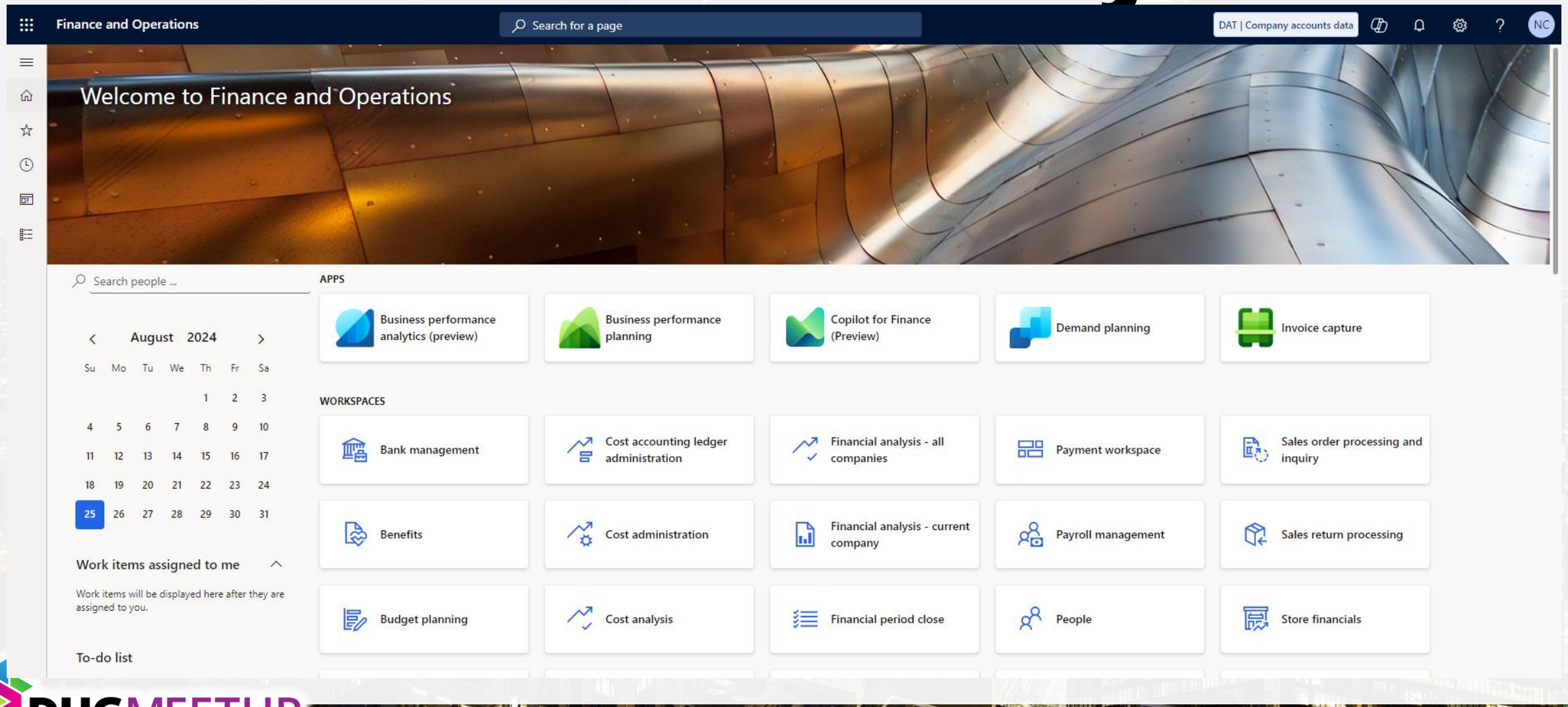


- DENDRAL: An expert system leveraged to predict molecular structure via chemical analysis.
- CaDet: It is a unique expert system example that can detect cancer at its early or preliminary stages.
- PXDES: This expert system is used to predict the type and stage of lung cancer.
- MYCIN: It follows the backward chaining methods to detect multiple bacteria that can lead to acute infections.

“Filling In the Blanks”

- “We have an (agent) for that”
- No, you have a set of systems for that and the user interacts with 1 of those systems

What "AI" Do I already have?



Where can AI Help?

- Predictive Analytics: AI can analyze historical sales data, market trends, and other external factors to forecast demand more accurately. This helps in optimizing inventory levels, reducing stockouts, and minimizing excess inventory.
- Automated Replenishment: AI can trigger automatic reordering of inventory when levels fall below a certain threshold, ensuring optimal stock levels.

Where can AI Help?

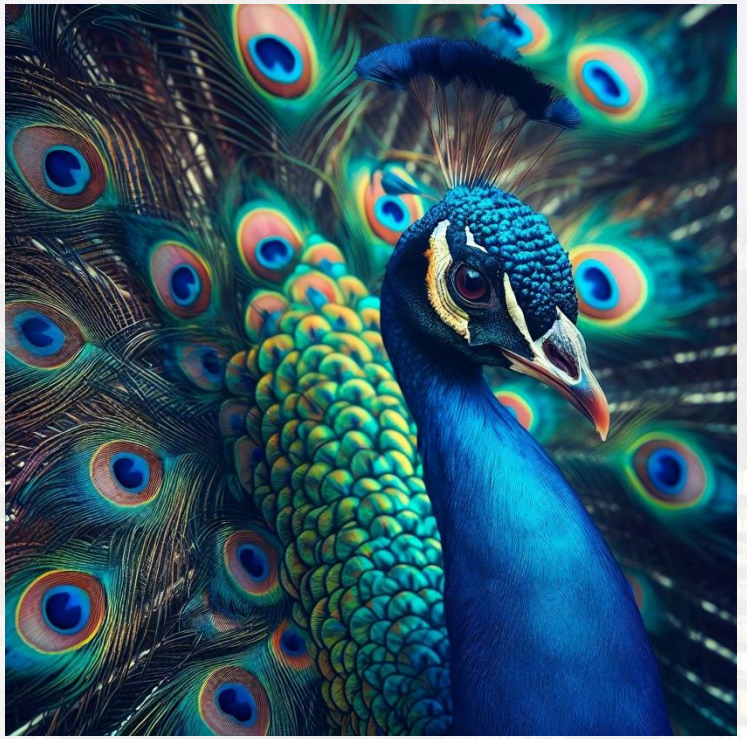
- Automated Invoice Processing: AI can extract data from invoices and other financial documents, reducing manual data entry errors and speeding up the accounts payable process.
- Fraud Detection: AI algorithms can analyze transaction patterns to detect anomalies that may indicate fraudulent activity, providing real-time alerts to the finance team.

Where can AI Help?

- Recruitment and Talent Acquisition: AI can help in screening resumes, identifying the best candidates based on job requirements, and even conducting initial interviews through chatbots.
- Employee Performance Management: AI can analyze employee performance data to identify patterns, predict future performance, and suggest personalized training and development programs.

Where can AI Help?

- Logistics and Route Planning: AI can optimize delivery routes, predict potential delays, and suggest alternative routes to minimize costs and improve delivery times.
- Supplier Risk Management: AI can evaluate supplier performance, predict potential risks, and suggest alternative suppliers to ensure continuity of supply.



Where can AI Help?

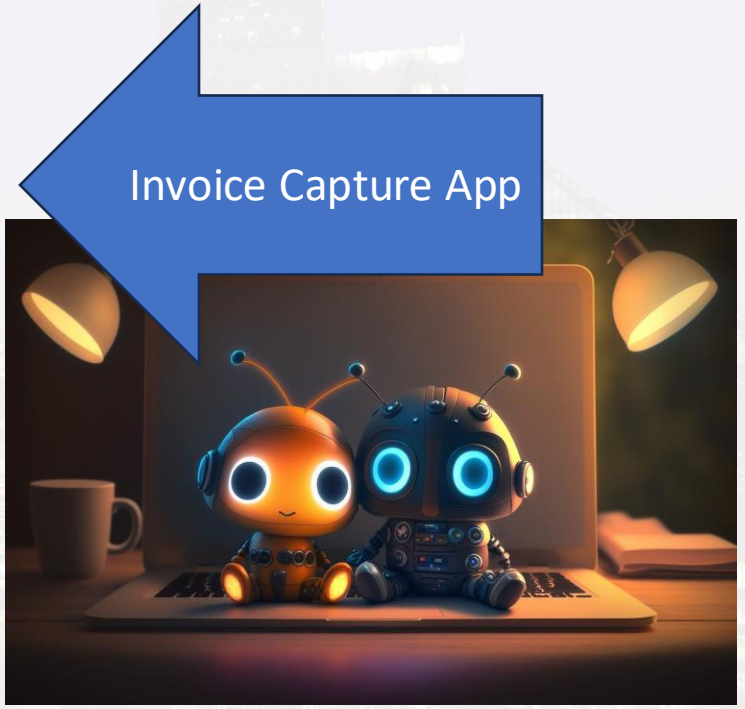
- Predictive Maintenance: AI can predict equipment failures before they happen, allowing for scheduled maintenance that minimizes downtime and extends the life of machinery.
- Production Optimization: AI can analyze production data to optimize scheduling, reduce waste, and improve overall efficiency in manufacturing processes.

Where can AI Help?

- Spend Analysis: AI can analyze purchasing patterns to identify cost-saving opportunities, negotiate better deals with suppliers, and reduce procurement costs.
- Supplier Selection and Evaluation: AI can evaluate supplier performance, predict potential risks, and recommend the best suppliers based on quality, cost, and delivery performance.

Where can AI Help?

- Automated Data Entry: AI can automate the process of data entry by extracting information from documents, emails, and other sources, reducing errors and saving time.
- Advanced Analytics and Reporting: AI can generate insights from large datasets, providing real-time, actionable intelligence for decision-making.



What Can I do with Generative AI?

- Fun with words
- Context aware help that describes a process of what to do / how to do
- Product Descriptions with different tones or emphasis
- HR Job Descriptions

Challenges With Generate AI

- Nondeterministic
- Doesn’t provide the same answer twice for the same question
- Opposite of what we’ve been doing for the past 80 or so years
- Give me a number: 2 or two?

Where can AI help the ERP User?

How to be successful with AI

- Enhanced Decision-Making
- Increased Efficiency and Productivity
- Personalization and Customer Experience
- Risk Management and Compliance

https://github.com/NathanClouseAX/