

Infuse AI in your operations

Remco Ploeg

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Microsoft Technology Center

CTO Manufacturing, Construction and Engineering

AI is transforming every industry

CNN BUSINESS

Walmart will rely more on AI, adding \$130 billion, or 4%, in sales over the next five years.

The New York Times

How to Use A.I. as a shopping assistant. Doing product research, making grocery lists and booking travel can be easier with tools like ChatGPT.

CGT CONSUMER GOODS TECHNOLOGY

Coca-Cola Signs As Early Partner for OpenAI's ChatGPT, DALL-E Generative AI

Forbes

Six Ways Retail Can Leverage Generative AI To Transform Business

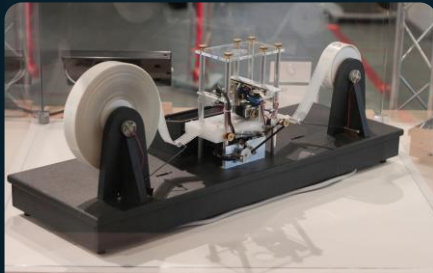
SN SUPERMARKET NEWS

Top 212 North American public retailers and restaurants could see over \$1.5 trillion in additional financial impact through 2029

CSA
CHAIN STORE AGE
THE BUSINESS OF RETAIL

Wayfair creates shoppable home images with generative AI

How did we get there?



1936

Turing Machine

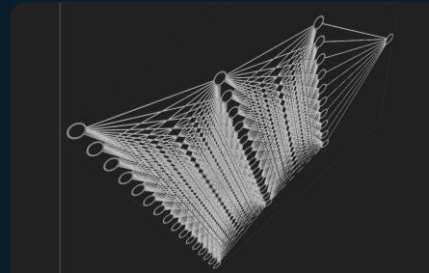
a mathematical model of computation describing an abstract machine capable of implementing any computer algorithm.



1950s

Artificial Intelligence

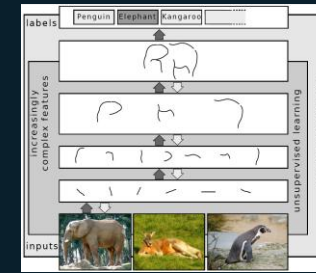
(1950s) the theory and development of computer systems that can perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision making, and language translation.



1990s

Machine Learning

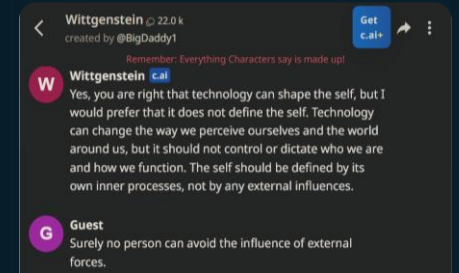
(1990s) a subset of AI and computer science where algorithmic models are trained to learn from existing data to make decisions or predictions.



2010

Deep Learning

(2010s) a machine learning technique that uses labeled data and layers of neural networks to process data and make decisions.



2020s

Generative AI

(2020s) a type of AI technology that uses algorithmic models to create new written, visual, and auditory content when given prompts or existing data.

A unique moment of convergence



The Planetary Computer

An open, cross-domain **geospatial data platform** transforming the way we **measure, monitor, model, and manage** Earth's natural systems

Ag Analytics

- > **240** million acres of precision data
- > **60** U.S. food crops
- 4,500** farm organizations



Wild Me

- 8** thousand citizen scientists
- 200** researchers & volunteers
- 10x** species identified



Chesapeake Conservancy

- 64** thousand square miles
- 17** million people
- 900x** more detailed

A 3D wireframe map showing the topography of a coastal region, likely Chesapeake Bay. The map is rendered in white lines on a dark background, showing the contours of the land and water.

Project Brainwave in Land Cover Mapping

Data	Build	Train	Deploy
esri Aerial Images for the Entire US NAIP Data Stored on Azure Premium Storage	Geo AI Data Science Virtual Machine Visual Studio Tools for AI	Azure Machine Learning Azure Batch AI	200M Images, 20TB Land cover mapping for the whole of US in 10+ minutes Land Classification Model Ultra fast Inference using FPGA

AI for Earth

The Planetary Computer

Microsoft | Planetary Computer [Explore](#) [Data Catalog](#) [Hub](#) [Applications](#) [Documentation](#) RE Rob Emanuele

Planetary Computer CoPilot

An experimental generative AI search and explore experience for the Planetary Computer.

What are you looking for?

Show me images of Hurricane Ian.

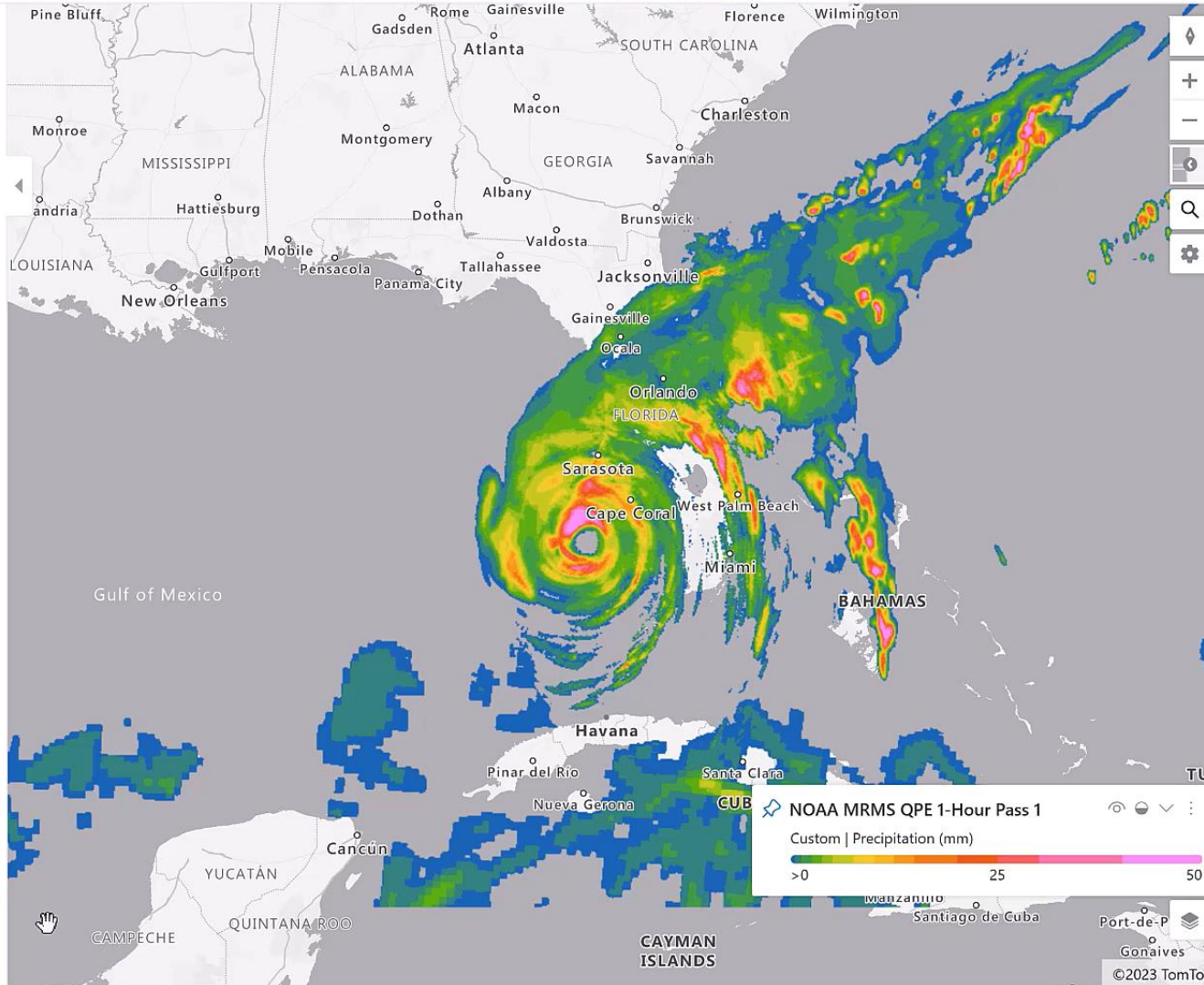
The NOAA MRMS QPE 1-Hour Pass 1 dataset is perfect for visualizing and analyzing weather patterns during Hurricane Ian. It provides a precise, integrated multi-sensor cumulative precipitation estimate for the past hour with a 1-hour latency, which can help predict flood forecasts and be useful in emergency response plans. The dataset's cloud-optimized GeoTIFF format makes it easy to process and visualize the data, and its coverage extends to the United States, Guam, and the Caribbean. Additionally, the dataset can be employed by meteorologists, emergency responders or disaster response organizations to inform response efforts during and after the hurricane.

Here's a visual representation of the precipitation levels during Hurricane Ian on September 28, 2022 near Cayo Costa Island, Florida. You can see the intensity of the rainfall in millimeters per hour, with the darkest red indicating the highest levels. Zoom in to see the specific regions that were hardest hit, including Fort Myers, Cape Coral, and Naples, and compare the precipitation levels to other areas affected by the hurricane.

Other collections that might be relevant are NOAA MRMS QPE 1-Hour Pass 2 and MODIS Thermal Anomalies/Fire Daily. Feel free to ask me about them!

[Explore](#) [Pin to the map](#) [More info](#)

Ask about Planetary Computer data...



Anal

>240 million precision data

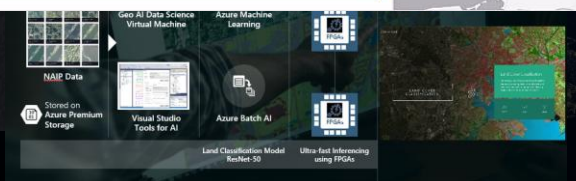
>60 U.S. food

4,500 farms

Me



AI for Earth



Geo AI Data Science Virtual Machine
Azure Machine Learning
NAP Data
Stored on Azure Premium Storage
Visual Studio Tools for AI
Azure Batch AI
Land Classification Model
Ultra-fast Inference using TPUs

900x more detailed

FarmVibes

FarmVibes provides farmers with access to Microsoft cloud and AI technologies, enabling data driven decisions to help improve agricultural yield, lower overall costs, and reduce the environmental impact of agricultural production.

3. White Space

Unlicensed, long-range and low-cost TV White Space radios connect sensors and capture data.



1b. Tye balloons

Tethered Eye helium balloons stream images and video of the farm to the Azure IoT Edge.



4. Azure

Machine learning algorithms integrate sensor data with aerial imagery, weather images and crop predictions.



1c. Drones

Autopilot drones gather aerial imagery (visible and multi spectral).



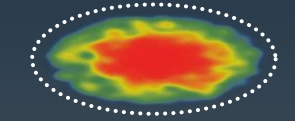
2. Local farm computer

Windows IoT based Azure IoT Edge performs computations and AI at the Edge in the farmer's house/office.



1a. Soil sensors

Solar powered soil sensors gather moisture, soil chemistry, and temperature data.

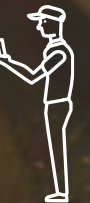


5. Heat Map

Algorithms process data to create a detailed heat map of the field.

6. Farmer

Heat map data is sent to farmer who applies insight to increase efficiency and conserve resources.



Microsoft Research: Driver safety with AI on phones



Adopting AI solutions at scale is precluded by data silos and a lack of data contextualization



Highly fractured, sprawling data estate and siloed data across environments



Little incentive to share data between vendors



Multiple proprietary data standards lock in data, limiting its ability to create value



Inability to scale quickly results in lengthy time to value

Due to these challenges, **70%** of companies report being stuck in **AI "pilot purgatory"**¹

¹World Economic Forum

Capitol Report

Create a report with Copilot

Describe the report you want, in your own words, and Copilot will create it quickly.

Create a report to identify trends in sales and projections to inform marketing strategies.

Sales overview page added

What are the biggest drivers for close %?

Close % drivers page added

Callback within 3 hours (17.75%) has the biggest influence on close %.

Sales Analysis Review

Meeting content

Sales report OK. Capacity plan OK. Variables/Projections OK.

Suggested notes

- Review notes to look at the sales report before the end of both spend on the budget on the campaign.
- Both speakers had they say or check for new product release at December. But they still need to keep an eye on advertisement budget. We will follow up on that.
- Both explains that they are managing the capacity well. This could be a problem if they get more people. Rahul is going to double check on that.

Suggested tasks

- Both will follow up on advertisement budget.
- Jim Simmons will double check with Amanda regarding the ER for the impact of the new product.

Can you summarize this presentation?

Here's a summary of the presentation:

- Our mission: VanArsdel is an architectural firm specializing in commercial architecture, aiming to foster collaborative thinking and drive

Welcome to Copilot

Using the power of AI, Copilot can analyze the video to give you insights, summaries, action items, and more.

Create OKRs to get started

Create OKRs from a document

Summarize OKRs on this page

Learn about...

You can always use the prompt guide for suggestions by selecting this button

Generating OKRs from the attached document

Product strategy, FY24.docx

Draft with Copilot

Describe what you want to write and get an AI-generated draft.

How it works

Say hello and suggest a meeting on Friday

Or pick one of these options

Copilot

Your everyday AI companion

Write

Help me prepare and write a successful sales pitch

Inbox

Add "remove" feature to ssh-key

Recommended repos on commands error

Fix flaky test in rerun

Age of copilots

Say hello to Copilot

Introducing the latest addition to Dynamics 365 Sales—the AI-powered Copilot, designed to enhance your sales process with its advanced capabilities.

Summary

Written today at 10:45 AM

HISTORY OF PRESENT ILLNESS

The patient is a 61-year-old male who presents today for routine follow up of his chronic medical conditions.

The patient is 8 years status post aortic valve replacement and ascending aortic aneurysm repair.

Code

```
1 import re
2
3 r_regex = r"^[a-zA-Z0-9_+@-]+@[a-zA-Z0-9.-]+.+$"
4 s_regex = r"^[a-zA-Z0-9+@-]+@[a-zA-Z0-9.-]+.+$"
5
6 if re.findall(s_regex, text):
7     return True
8 else:
9     return False
10
11 if __name__ == "__main__":
12     print("Valid", is_valid("example@domain.com"))
13     print("Invalid", is_valid("example.com"))
```

Blame 55 Lines (22 Loc) 988 Bytes

Explain

Copilot Generating...

Sure, this highlighted snippet in the Python code is defining regular expressions (regex) to match specific patterns:

- `s_regex` is a regular expression meant to match valid email addresses. It starts with one or more alphanumeric characters (including `_`).

EcoPowerCharge Pro Follow-Up discussion

Suggested times

Wed 6/8 12:00 AM - 12:30 AM

Wed 6/8 12:30 AM - 1:00 AM

Wed 6/8 1:00 AM - 1:30 AM

Opportunity summary

Adatum Corporation has been a valuable customer since 2019 and have spent over \$8,885,000 with us. They purchased \$1.01M for \$1,500,000 on 3/12/2022. They are interested in our latest version, EcoPowerCharge Pro (E-Charging Kit) and we give in discussions for a \$175,000 deal is currently in the Develop stage and is expected to close by August 28, 2023.

Suggest content with Copilot

Suggest presentation slide to generate website for reports meet without using social media.

- Focus on SEO
- Applicable website design
- Search and to relevant website
- Optimize page speed
- Research target audience

Let's build an app. What should it do?

Collect RDVPs | Track sales leads | List inventory | Manage inspections

I need an app for management of company meeting rooms

Security Copilot

Multi stage attack involving phishing and execution

User Jonathan Wolcott with the email address jonathan.wolcott@contoso.com and operating on cont.jonathan.pc received a phishing email titled "Contoso bonus" with a malicious URL. They clicked the URL which downloaded a file called "contract.pdf" from...

Incident details

Incident ID: 2356358

Assigned to: Unassigned

Classification: Not set

Categories: Initial access, Execution

First activity: Aug 01, 2023 4:22 AM

How can I adjust my system to get work done?

4/4/2030

Chat with weather data in natural language

Disambiguation and relationships

Because the data model is grounded in the manufacturer's unique data estate, recognizes factory-specific acronyms and understands entity relationships, such as what machines might exist on line 3.

Reasoning for root cause analysis

The copilot leverages LLM reasoning capabilities as prompt strategies and underneath data are shaped on the same industry ontologies, specific to manufacturing domain.

Analyze historical data

The copilot understands the kind of historical data the user is looking for and traverse entities and relationships to provide insights.

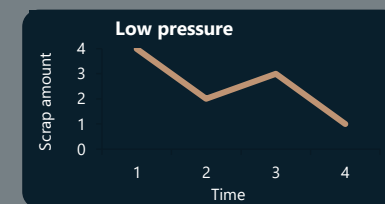


What caused the drop in temperature **yesterday** in **Zeist**?

Here's a status summary of the weather in Zeist, using **global, local, and prediction data**. The data suggests there was a **low pressure** area.



Here's an **analysis** of the **low pressure area**



Demo: Weather Research Copilot

Work | Chat | Remco Ploeg (Admin) (You) | https://teams.microsoft.com/v2/



Stay in the know. Turn on desktop notifications. Turn on

Chat

Recent

- Remco Ploeg (Admin) (You) 5/30
You: Manufacturing Shift Change Report The user ...
- Heineken Maintenance Manuals Ops 5/3
To change the capping throats during a changeov...

Find all your files with OneDrive
Find, share, and work on all your files here, wherever they're stored.
Open OneDrive

Weather Research Copilot  

Powered by Power Virtual Agents

[Add](#)

Overview | Permissions

Built by Power Virtual Agents. Create your own at aka.ms/pvaforteams.

Help employees stay informed, productive, and connected. Create bots and add important topics for your organization using an intuitive, graphical interface. No code required.

App features

Bots
Chat with the app to ask questions and find info

Copilot extension
Let Copilot retrieve info from this app on your behalf

Created by: [Powered by Power Virtual Agents](#)
Version 1.0.0

Permissions

This app will have permission to:

- Receive messages and data that I provide to it.
- Send me messages and notifications.
- Access my profile information such as my name, email address, company name and preferred language.

By using Weather Research Copilot, you agree to the [privacy policy](#), [terms of use](#), and [permissions](#).

Type a message

Demo: Analyzing satellite images

The screenshot shows the Azure OpenAI Studio Chat playground interface. The browser address bar displays the URL: `https://oai.azure.com/portal/3ea62ca0ec7e43cd8d3a408dfceb990e/chat?tenantid=13ab75e8-8ea4-4600-8dbf-dd5f36f559e3`. The page title is "Chat playground".

Left Sidebar (Navigation):

- Azure OpenAI
- Playground
 - Chat (Selected)
 - Completions
 - DALL-E
 - Assistants (Preview)
- Management
 - Deployments
 - Models
 - Data files
 - Quotas
 - Content filters (Preview)

Main Content Area:

Setup Panel:

- Prompt:** Add your data. Includes "Apply changes" and "Safety system message" options.
- Use a system message template:** Includes a "Using templates" box with instructions and a "Select a template" dropdown.
- System message:** A text area containing: "You are a weather assistant that explains how the weather works in clear language".
- Examples:** Includes a "Using examples" box with instructions and an "+ Add" button.

Chat Area:

- Buttons: "Clear chat", "Playground settings", "View code", "Show JSON" (toggle).
- Start chatting:** A box with a robot icon and text: "Test your assistant by sending queries below. Then adjust your assistant setup to improve the assistant's responses."
- Input field:** A text box with the placeholder: "Type user query here. (Shift + Enter for new line)".
- Token count:** "84/128000 tokens to be sent".

Right Panel (Configuration):

- Deployment:** Parameters. Deployment dropdown set to "gpt4o".
- Session settings:** "Past messages included" slider set to 10.
- Current token count:** "Input tokens progress indicator" showing 84/128000.

Top Right: "Deploy to" button, "Import setup", "Export setup", and "Show panels" options.

Demo: Analyzing weather graphs

The screenshot shows the Azure OpenAI Studio Chat playground interface. The browser address bar displays the URL: <https://oai.azure.com/portal/3ea62ca0ec7e43cd8d3a408dfceb990e/chat?tenantid=13ab75e8-8ea4-4600-8dbf-dd5f36f559e3>. The page title is "Chat playground | Azure OpenAI".

The interface is divided into several sections:

- Left Sidebar (Management):** Contains navigation options: Chat, Completions, DALL·E, Assistants (Preview), Deployments, Models, Data files, Quotas, and Content filters (Preview).
- Setup Panel:** Includes a "Prompt" section with "Add your data" and "Apply changes" buttons. It features a "Safety system message" toggle and a "Use a system message template" section with a "Using templates" box and a "Select a template" dropdown. Below this is a "System message" text area containing the text: "You are a weather assistant that explains how the weather works in clear language". There is also an "Examples" section with a "Using examples" box and an "+ Add" button.
- Chat Area:** The main area for interaction. It includes a "Clear chat" button, "Playground settings", "View code", and a "Show JSON" toggle. A central box says "Start chatting" with the text: "Test your assistant by sending queries below. Then adjust your assistant setup to improve the assistant's responses." At the bottom, there is a text input field with the placeholder "Type user query here. (Shift + Enter for new line)".
- Configuration Panel:** Contains "Deployment" and "Parameters" tabs. The "Deployment" tab is active, showing a dropdown menu set to "gpt4o". Below this are "Session settings" with a "Past messages included" slider set to 10, and "Current token count" showing 14/128000. An "Input tokens progress indicator" is also visible.
- Right Sidebar:** Includes a "Deploy to" button, "Import setup", "Export setup", and "Show panels" options.

At the bottom right of the chat area, a status bar indicates "14/128000 tokens to be sent".

Demo: Creating reports based on natural language

The screenshot displays the Microsoft Power BI Desktop interface. The main canvas is a light blue area with a central prompt: "Build visuals with your data" and "Select or drag fields from the **Data** pane onto the report canvas." Below the prompt is a small icon showing a dashed box representing a visual and a list of fields with a checkmark, indicating the drag-and-drop action.

The interface includes a ribbon at the top with tabs: File, Home, Insert, Modeling, View, Optimize, and Help. The Home tab is active, showing various toolbars for Clipboard, Data, Queries, Insert, Calculations, Sensitivity, Share, and Copilot.

On the right side, there are three panes:

- Filters:** Contains a search bar and sections for "Filters on this page" and "Filters on all pages", each with an "Add data fields here" button.
- Visualizations:** Contains a "Build visual" section with a search bar and a grid of visualization icons. Below this are sections for "Values" (with an "Add data fields here" button), "Drill through", "Cross-report" (with a toggle switch), "Keep all filters" (with a toggle switch), and "Add drill-through fields here".
- Data:** Contains a search bar and a list of data fields under the heading "humidity (2)":
 - Humidity
 - date
 - Station
 - Time

The bottom status bar shows "Page 1 of 1" and a zoom level of "87%".



Empower every person and
every organization on the
planet to **achieve more**

THANK YOU!