The Future of Al: Transforming Our World Over the Next 5 Years

AI Fundamentals

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Objectives of This Talk

Upon completion of this lecture, you will understand:

- Primer on Artificial Intelligence (AI)
- Generative AI (GenAI) & Large Language Models (ChatGPT)
- ☐ GenAI @ Work
- Demonstrations

Agenda

- 1. Artificial Intelligence
- 2. GenAI (ChatGPT)
- 3. Closing Remarks & Q&A

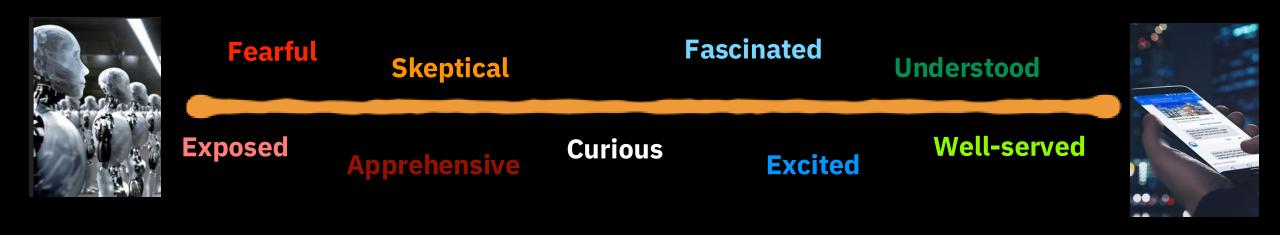
What is AI?

Slido.com

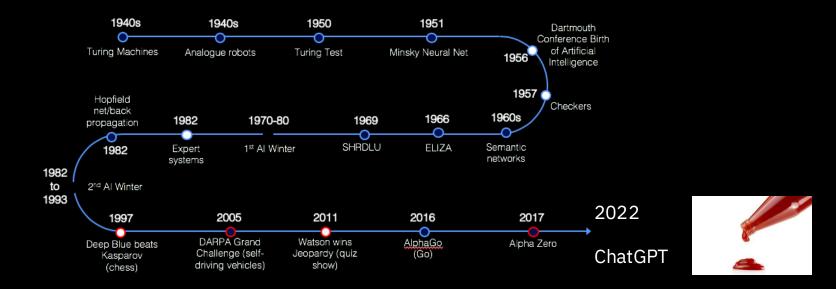
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AI Perception

What do people feel about AI?



A brief history of AI



ALAN TURING'S OFFICE

Here at his desk in Hut 8, Turing took the lead on breaking naval Enigma ciphers – something few thought could ever be done. His mathematical skills also enabled him to break other ciphers, including the complex Lorenz cipher where he used a method that became known as Turingery. Together with his fellow Codebreaker Gordon Welchman, he developed the Bombe machine to help speed up the codebreaking process.

IN THEIR WORD

If anyone was indispensable to that 8 it was Turing. The pioneer work always tends to be forgotten when experience and routine later make everything seem easy, and many of us in that & felt that the magnitude of Turing's contribution was never fully realised by the outside world.

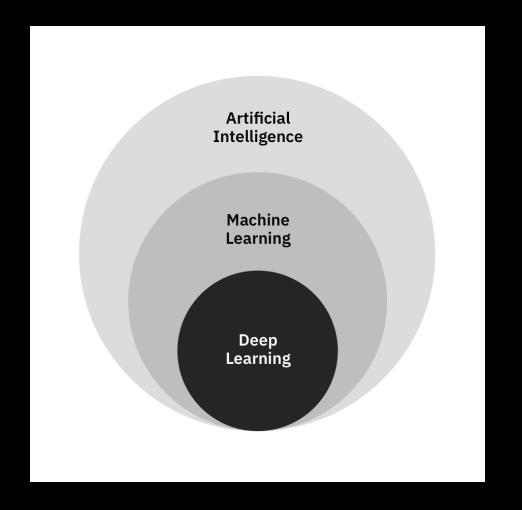
Hugh Alexander, Codebreaker, Hut I



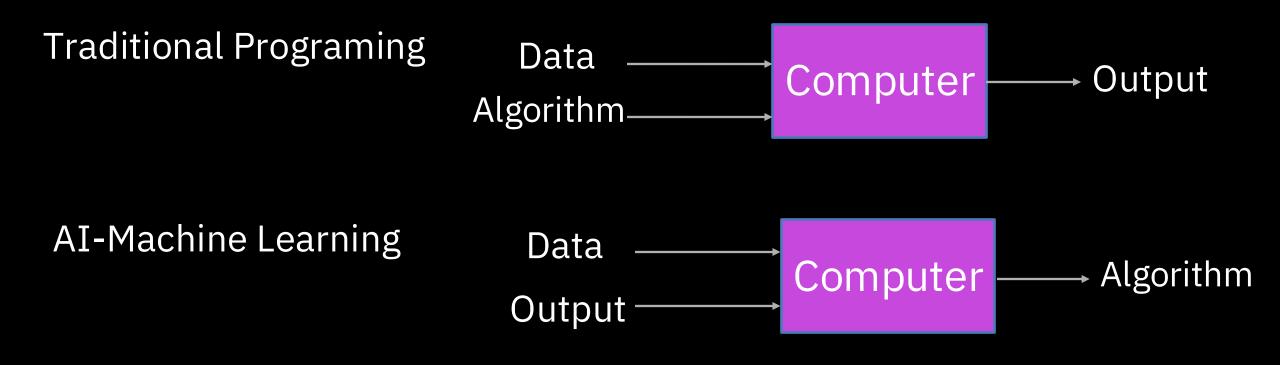


Definitions

- AI: Intelligence demonstrated by machines
- ML: Set of algorithms that allow computers to learn from (big) data
- DL: Set of learning techniques focused on models and neural networks



Why Machine Learning?



ML provides systems the ability to automatically learn from experience (without being explicitly programmed)

Intelligence demonstrated by attendees

Exercise 1

Lab 1

Create a basic project plan to track a new VC80 feature. This plan will outline tasks, roles, and timelines.

Your team:

- An architect,
- Two developers,
- UA tester

Timeline Summary					
Phase	Tasks	Team Members	Duration		

Exercise 2

Widelinie Learning.







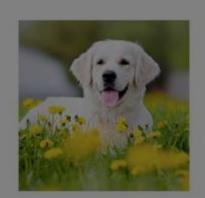


cat

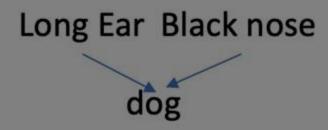
horse

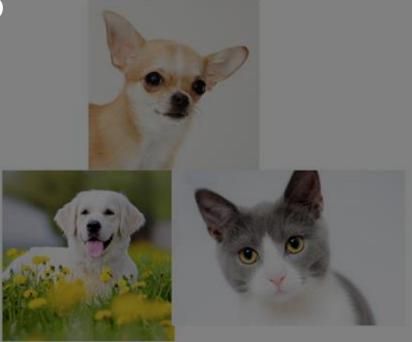
Human Learning:

We learn through

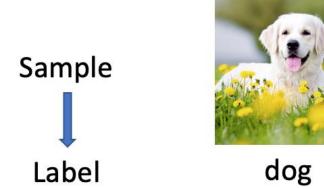


Cat or Dogs





Machine Learning:





cat

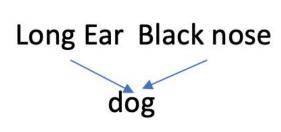


horse

Human Learning:

We learn through







Examples

Diagrams

Comparisons

Exercise 3



Passing truck in highway

Don't Follow Closely Behind Prior to Passing

• As you prepare to pass, keep a healthy distance between your car and the truck in front of you. At minimum, 30 feet should separate the two vehicles. Signal clearly to indicate your next move.

Pass in the Left Lane

• The left lane is referred to as the 'passing lane' for a reason; it's the safest place to pass any vehicle, but particularly trucks and buses. It's frustrating to be stuck behind a slow truck in the left lane, but resist the urge to pass on the right side.

Don't Linger in the Truck's Blind Spot

• Trucks have huge blind spots on both sides. Pass promptly while still abiding by the speed limit. Don't hang out in the blind spot area, which, in the left (passing) lane, constitutes the truck's entire front half.

Recognition

- With GPS navigation, HiRes cameras, Laser-radar cameras: Location, speed of trucks, road conditions, emergency lane
- With Image Recognition: Turn signal (!lamp), paper or debris on the road

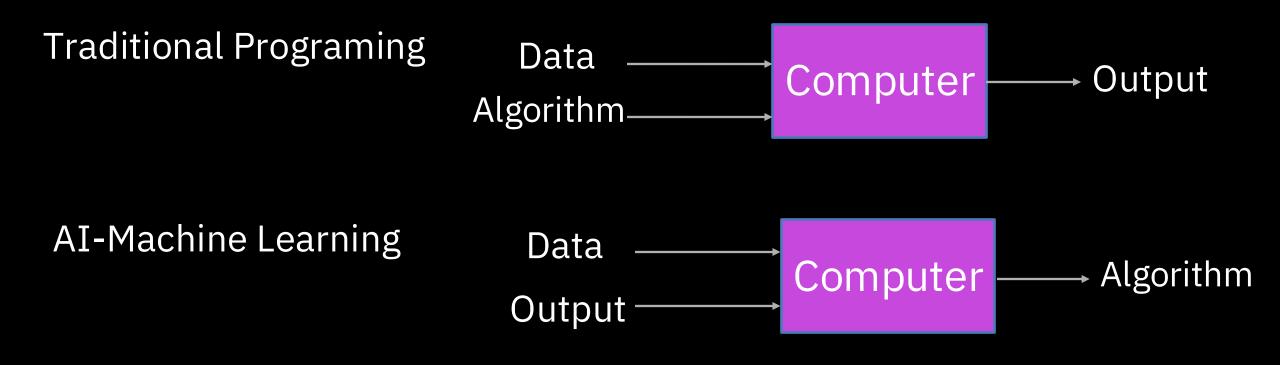
Insights

- Data is fed into multiple CPUs + collected data + rules
- Manufacturer knows who has the right of the way, when trucks can pass + MM miles driven have feedback on different driving style

Action (Cognitive Decision)

- Assist (alerts driver)
- Act (Pass or Not pass, Measure decision effects, feedback loop, and share w other cars)

Why Machine Learning?



ML provides systems the ability to automatically learn from experience (without being explicitly programmed)

NLU Demonstration

Future of AI Example (Semantic Analysis)

The Wining Shot

The soccer game was nearly over. The two teams were tied, one to one.

Alice kicked the ball. Oops! She kicked it the wrong way.

Who won the game?

"What a bad kick," Alice thought.

But wait!. Her teammate John jumped to stop the ball. The ball went off John into the goal!.

Why?

Alice's team won the game. Hooray! It was not a bad kick, after all.

https://www.youtube.com/watch?v=vsyPZdt6noE

Future of AI Example

The Wining Shot

The soccer game was nearly over. The two teams were tied, one to one.

Alice kicked the ball. Oops! She kicked it the wrong way.

"What a bad kick," Alice thought.

But wait!. Her teammate John jumped to stop the ball. The ball went off John into the goal!.

Alice's team won the game. Hooray! It was not a bad kick, after all.

Who won the game?

Answer: Alice's team

✓ Correct

Explanation: Alice's team won the game because Alice's team had more points than the other team

✓ Correct

Slido.com

Code: 6772241

GenAI

Artificial Intelligence

Machine Learning

Deep Learning

Generative AI



Artificial Intelligence

Intelligence demonstrated by machines



Machine Learning

Learn from data



Deep Learning

Model after the human brain (Neural Networks)



Generative AI

Create new written, visual, and auditory content

Generative AI

Adapt = 30%

The best thing about AI is its ability to ...

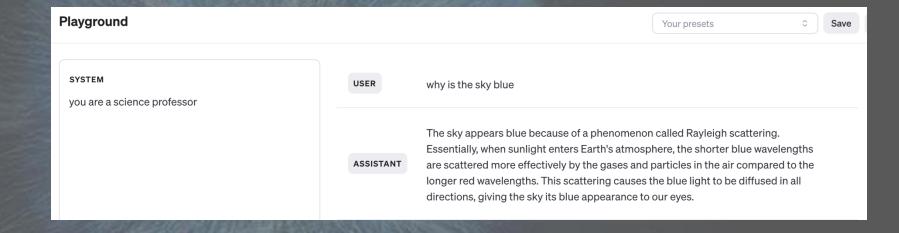
Process = 22%

Analyze = 7%



Why is the sky blue?

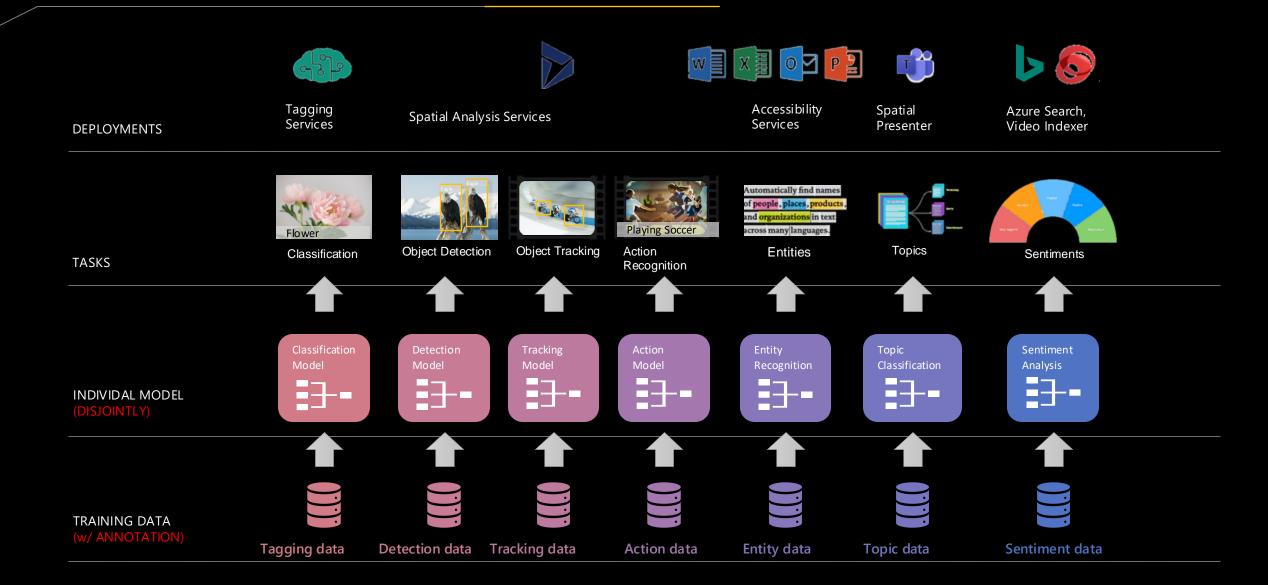
OpenAl GPTx Answer:



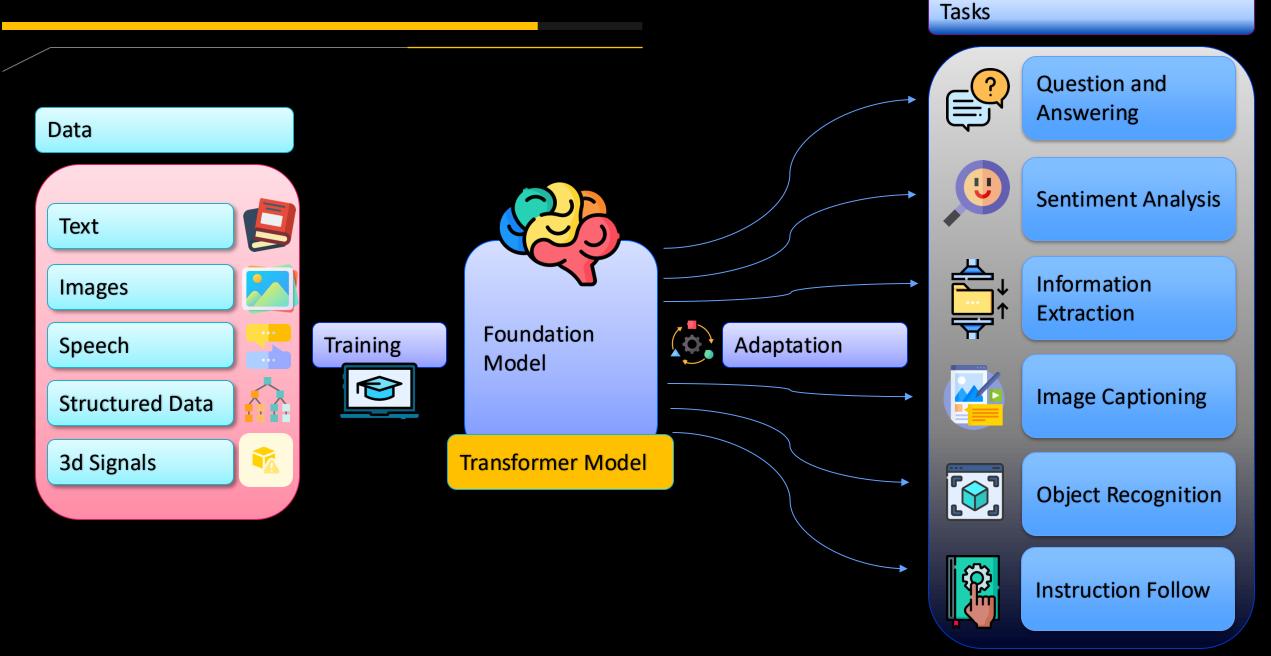
The sky blue because the Earth's atmosphere scatters sunlight in all directions and blue light is scattered more then the other colors because it travels as shorter, smaller waves

Traditional model development

High cost & slow deployment - Each service is trained disjointly



Foundation Models



https://platform.openai.com/playground? mode=complete

Prompt Engineering

Copilot Prompt Best Practices

Goal

What do you want from Copilot?

"I want a list of 3-5 bullet points to prepare me..."

.

Context

Why do you need it and who is involved?

"...for an upcoming meeting with [client], focusing on their current state and what they're looking to achieve."

How should Copilot respond to best fulfill your request?

Expectations

"Respond with a tone that is friendly but authoritative..."

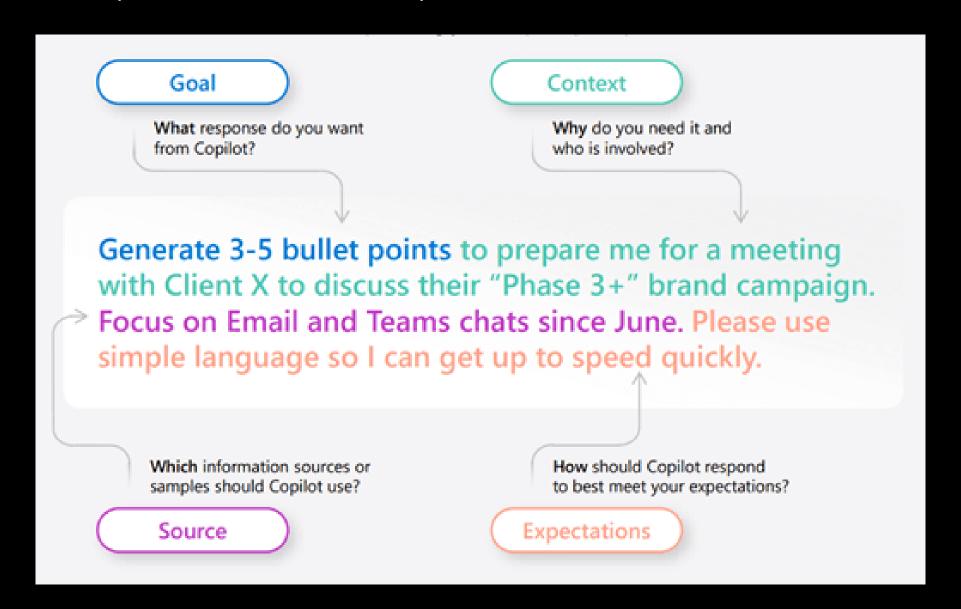
Source

What information or samples do you want Copilot to use?

"... and focus on email and Teams chats with [people] over the last two weeks.

https://copilot.cloud.microsoft/en-US/prompts

Copilot Prompt Best Practices



Text Classification

Named Entity Recognition (Zero-Shot)

Extract the name and mailing address from this email:

Dear Kaylee,

It was great to talk to you at the seminar. I thought Jane's talk was quite good.

Thank you for the book. Here's my address 2111 Ash Lane, Boulder, CO 80301

Best, Marilú

Name: Marilú

Mailing Address: 2111 Ash Lane, Boulder, CO 80301

Text Classification

Custom Named Entities (Few-Shot)

Extract job titles from the following sentences.

Sentence: Jane Doe has been working for Microsoft for 20 years as a Linux Engineer.

Job title: Linux Engineer

###

Sentence: Jane Doe has been working for Microsoft for 20 years and she loved it.

Job title: none

###

Sentence: Marc Simoncini | Director | Meetic

Job title: Director

###

Sentence: Damien is the CTO of Platform.sh, he was previously the CTO of Commerce Guys, a

leading ecommerce provider.

Job title: CTO

Text Classification

Multi-Label Text Classification (Few-Shot)

The following is a list of movies and the categories they fall into:

Topgun: As students at the United States Navy's elite fighter weapons school compete to be best in the class, one daring young pilot learns a few things from a civilian instructor that are not taught in the classroom.

Category: Drama, Action

Hustle: A basketball scout discovers a phenomenal street ball player while in Spain and sees the prospect as his opportunity to get back into the NBA.

Category: Comedy, Drama, Sport

The Northman: From visionary director Robert Eggers comes The Northman, an action-filled epic that follows a young Viking prince on his quest to avenge his father's murder.

Category: Action, Adventure, Drama

Abstractive Summarization

Contact Center Summarization

Summarize this for a call center agent:

Agent: Thank you for calling ADM. Who am I am speaking to?

Customer: Hello, my name is Peter Smith. I own a small business and have some questions regarding payroll processing.

Agent: Good morning, Peter, before we get started may I ask you a few questions so that I better answer your questions today?

Customer: Thank you that is quite helpful. Are there specific regulations that I need to follow? Agent: Certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL)

The agent is speaking to a customer named Peter Smith. Peter is asking for tips on manual payroll processing. The agent also informs Peter that certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL).

Few-Shot Reasoning (Human version)

1st Prompt

Roger has 5 tennis balls. He buys 2 more cans of tennis balls. Each can has 3 tennis balls. How many tennis balls does he have now?

Answer: The answer is 11.

The cafeteria has 23 apples. If they used 20 to make lunch and bought 6 more, how many do they have?

The answer is 27



2nd Prompt – Provide Reasoning

Roger has 5 tennis balls. He buys 2 more cans of tennis balls. Each can has 3 tennis balls. How many tennis balls does he have now?

Answer: Roger started with 5 balls. 2 cans of 3 tennis balls each is 6 tennis balls. 5+6 = 11. The answer is 11.

The cafeteria has 23 apples. If they used 20 to make lunch and bought 6 more, how many do they have?

The cafeteria had 23 apples originally. They used 20 to make lunch. So they had 23-20 = 3. They bought 6 more apples, so they have 3 + 6 = 9. The answer is 9.



Model Reasoning – Chain-of-Thought

Before

What is the annual water demand of a single-family household containing four people who are at home an average of 200 days per year and use an average of 100 liters of water per day?

The annual water demand of a single-family household containing four people who are at home an average of 200 days per year and use an average of 100 liters of water per day is 8,000,000 liters per year..

After

What is the annual water demand of a single-family household containing four people who are at home an average of 200 days per year and use an average of 100 liters of water per day?

Let's think step by step and explain the calculation step by step.

Step 1: Calculate the total number of days in a year:

There are 365 days in a year.

Step 2: Calculate the total number of days the family is at home:

The family is at home an average of 200 days per year.

Step 3: Calculate the total water demand of the family:

The family uses an average of 100 liters of water per day. Therefore, the total water demand of the family is 100 liters x 200 days = 20,000 liters per year.

Step 4: Calculate the annual water demand of the single-family household:

The annual water demand of the single-family household is 20,000 liters per year.

Chain of Thought Example:

Planning for an Exam Week

Prompt:

"Finals are coming up, and you have exams in several subjects. Let's make a study plan to cover all the material effectively. First, we'll list each subject and the main topics to study. Then, we'll estimate how much time you'll need for each subject based on difficulty and your confidence level. Finally, we'll set up a daily schedule, making sure to review the most challenging topics more frequently."

Chain of Thought Steps:

- 1. List each subject and the main topics you need to study.
- 2. Estimate the time required for each subject based on its difficulty.
- 3. Create a study schedule with specific times for each subject.
- 4. Prioritize subjects that need more review.
- 5. Include breaks to avoid burnout and maintain focus.

Chain of Thought Example:

Planning a New Feature Launch

Prompt:

"We're planning to launch a new feature. Let's outline a structured approach to ensure a successful launch. First, we'll clarify the feature's requirements. Next, we'll list the development, testing, and deployment tasks. Then, we'll define the timeline, assign resources, and anticipate potential risks. Finally, we'll identify key milestones and checkpoints for monitoring progress.

Chain of Thought Steps:

- 1. Define feature requirements and objectives.
- 2. Break down tasks by phase (development, testing, deployment).
- 3. Estimate timelines and allocate team resources.
- 4. Identify risks and create a mitigation plan.
- 5. Set milestones for tracking and accountability.

Chain of Thought Example:

Analyzing a Project Delay

Prompt:

"Our project is behind schedule. To understand the cause, let's break down the possible factors contributing to this delay. First, let's list each phase of the project and its current status. Then, we'll evaluate any dependencies, resource issues, and task completion rates in each phase. Finally, we'll identify any specific bottlenecks and propose solutions."

Chain of Thought Steps:

- 1. List project phases and their statuses.
- 2. Identify key dependencies between tasks.
- 3. Evaluate resource allocation and team workload.
- 4. Pinpoint any bottlenecks or high-priority issues.
- 5. Suggest actions to recover from delays, such as re-allocating resources or reprioritizing tasks.

ReAct Example:

Deciding Whether to Join a New Club

Prompt:

"There's a new club starting up at school, and you're considering joining, but you're already busy with other activities. Let's think through this to make a good decision. First, list out the activities and responsibilities you already have, along with the time commitment for each. Then, consider what benefits you might get from this new club and whether it aligns with your goals. Finally, decide whether or not to join and, if you join, think about how you'll balance your time.

ReAct Steps:

- Reasoning Step: List current activities and how much time they take each week.
- Reasoning Step: Think about what the new club offers and how it fits with your goals.
- Action Step: Decide if you'll join or if it's better to skip this year.
- Action Step: If you join, make a time management plan to balance your activities.

ReAct Example:

Handling a Scope Change

Prompt:

"We have a last-minute scope change request from a client. Let's reason through this scenario to decide if we should accept or defer it. First, we'll assess how the change affects the current timeline, resources, and budget. Then, we'll evaluate if there are any benefits to implementing the change now versus later. Finally, we'll make a decision and outline the steps needed to communicate it to the client."

ReAct Steps:

- **Reasoning Step**: Evaluate how the scope change affects the project's key metrics (timeline, resources, budget).
- Action Step: Decide whether to accept or defer the change.
- Action Step: Communicate the decision to the client, including reasoning and any alternative suggestions.

ReAct Example:

Evaluating a Project Risk

Prompt:

"There's a risk of a delay due to a supplier issue. Let's carefully assess the impact of this risk and decide on a course of action. First, we'll consider how critical this supplier is to our project timeline. Next, we'll think of any backup suppliers or alternative solutions. Finally, we'll either prepare a contingency plan or communicate with stakeholders about the risk."

ReAct Steps:

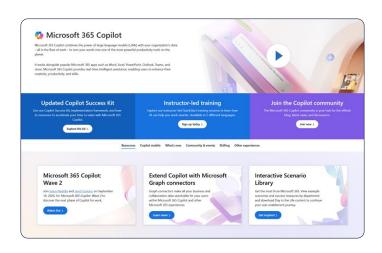
- **Reasoning Step**: Evaluate the dependency on this supplier and the delay's potential impact on the timeline.
- Reasoning Step: Consider alternative suppliers or workarounds to minimize impact.
- Action Step: Decide whether to pursue a backup option or mitigate the risk in another way.
- Action Step: If needed, communicate the risk and contingency plan to stakeholders.

Prompt Engineering Guide

- 1. Give clearer instructions
- 2. Split complex tasks into simpler subtasks
- 3. Structure the instruction to keep the model on task
- 4. Prompt the model to explain before answering
- 5. Ask for justifications of many possible answers, and then synthesize
- 6. Generate many outputs, and then use the model to pick the best one
- 7. Fine-tune custom models to maximize performance

Look ahead

Essential Copilot implementation resources



Microsoft 365 Copilot Hub

Provides resources to help you drive the user enablement of Microsoft services:

- <u>Copilot Success Kit</u> a holistic guide that helps you think through the Leadership, Human change, and Technical readiness implementation journeys.
- <u>Copilot Scenario Library</u> provides business leaders inspiration on high-value scenarios to select, as well as KPIs they should measure for success.
- <u>Leading in the era of AI</u> Practical guidance for leaders of all types to get the most from the adoption of AI capabilities.

More resources

Meet Copilot



Empower everyone in your organization with Microsoft 365 Copilot.

Copilot Lab



Learn the art of prompting.

Copilot Dashboard



Business and IT leaders can plan their AI readiness, drive adoption, and measure impact.

~1 hour saved per week

★ Better communication with colleagues

8:00 am

Benefits

Cassandra, an Operations PM, uses Copilot to summarize her emails and Teams messages from overnight and draft responses to urgent items leveraging the drafting feature



Business Chat²

Sample prompt: **Summarize** all the emails and Teams chats in the past day, highlighting the primary asks and open items.

8:15 am

To make sure she is ready for her meeting, she uses Copilot to search for information on the project looking across past emails, meetings, files, internal, and external articles.



Business Chat²

Sample prompt: **Find information** on [project x].

9:00 am

To focus on the meeting instead of taking notes, Cassandra uses the transcribe feature during the project team meeting to capture a summary of the conversation and key actions.



Copilot in Teams

Sample prompt: **Summarize key discussion points**. Identify agreed-upon next steps.

4:00 pm

Cassandra prepares a presentation on the readiness plan, using Copilot in PowerPoint to generate the content based on the whiteboarding session.



Copilot in PowerPoint

Sample prompt: **Create a new presentation** from this Word file. Change the layout of this slide.

2:00 pm

Cassandra joins her colleagues to brainstorm the change management and readiness plan for an upcoming project using Copilot in Whiteboard to capture key project needs.



Copilot in Whiteboard

Sample prompt: **Organize thoughts** into logical categories and simplify complex projects for better collaboration.

11:00 am

Following the meeting, she utilizes Copilot in Excel to review and analyze the project data and generate reports. She shares key insights and meeting actions to all the attendees.



Copilot in Excel

Sample prompt: **Suggest formulas** for this column. Show insights in charts.

The content in this example scenario is for demonstration purposes only. You should evaluate how Copilot aligns with your organization's business processes, regulatory requirements, and responsible AI principles.



is an Operations lead at Contoso





¹Access Copilot at copilot.microsoft.com or the Microsoft Copilot mobile app and set toggle to "Web".

²Access Business Chat at <u>copilot microsoft.com</u>, the Microsoft Copilot mobile app, or the Copilot app in Teams, and set toggle to "Work".

³Copilot agents allow Microsoft 365 Copilot to access your company-specific apps. In the past this would have required an API call to get data from a system of record.

Benefits



Brainstorming new solutions

★ Faster responses, better insights and better communication

8:00 am

Joe uses Copilot to get up to speed on a support ticket and understand the service escalation he receives.



Business Chat²

+Copilot for Service

Action: Use the case summary to get up to speed on the support ticket and progress of service engagement.

9:00 am

Joe finds a gap in one service interaction and uses Copilot for Service to write a response to the user that helps speed up the service process.



Copilot in Outlook

+Copilot for Service

Sample Prompt: Write an email in response to the customer question.

11:00 am

Joe reviews and approves the Statement of Work. Copilot in Word helps him highlight key deliverables, risks, and timelines using only a screen reader.



Copilot in Word

Sample Prompt: **Highlight key deliverables, risk** and timelines helping screen reader users review 16-page documents more effectively.

4:00 pm

Joe uses Copilot to write up a performance review summary referencing conversations, documents, and relevant info internally.



Business Chat²

Sample Prompt: Write a summary of my goals helping prepare for performance review discussion.

3:00 pm

Joe uses Copilot to initiate a high-level service requirement slide based on a meeting recap.



Copilot in PowerPoint

Sample Prompt: Create a presentation from the meeting notes that outline the product charter.

2:00 pm

Joe participates in a sprint review and assigns work items to the workstream. He uses Copilot in Stream after the meeting to quickly document action items and expected timelines.



Copilot in Stream

Sample Prompt: Recap the meeting helping me focus on the discussion and easily draft notes to help ensure on time follow-up.

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Joe is a Senior **Product Manager**





KPIs impacted



Value benefit





1. Summarize requirements and data

Leverage Microsoft Copilot to summarize all requirements and related data to build the framework for the project.



Business Chat²

Sample Prompt: Clearly **outline [project name]'s** purpose, goals, and deliverables based on documents, chats, and emails that mention it.

6. Revise support procedures

After the project is completed, use Copilot in Word

to revise procedures and change management

2. Discuss the plan

Meet with the team to discuss the project plan and use Copilot in Teams to summarize the meeting, with action items.



Copilot in Teams

Sample Prompt: **Summarize the meeting** and **list the action items** discussed and their status.

Try in Copilot Lab: Summarize meetings and videos

5. Create an executive update

Use Copilot in PowerPoint to create a presentation based on the project plan to brief the CIO on the project status and results.



Copilot in PowerPoint

Sample Prompt: **Create an executive presentation** from [Project Plan.docx].

Try in Conilot Lab: Create presentations

3. Brainstorm risks

Use Copilot in Whiteboard to capture a list of possible risks and categorize all the items at the end of the session.



Copilot in Whiteboard

Sample Prompt: Categorize notes in view.

4. Track progress

Use Copilot in Teams to produce channel activity summaries each morning to stay up to date.



Copilot in Teams

Sample Prompt: **Summarize all communication** across Teams chats and share the latest project activity.



Copilot in Word

documents for support teams and admins.

Sample Prompt: **Revise this draft** to sound more professional but easy to comprehend for a wide employee audience.

Try in Conilot Lab: Improve this document

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Information Technology | General IT prompts (Microsoft Copilot only)



Available with: Microsoft Copilot

Scenario level:

Start

KPIs impacted

✓ IT management costs

Application downtime

Value benefit

Revenue growth

Employee experience

1. Research

Use Microsoft Copilot to stay up-to-date with the latest technologies and best practices through continued learning.



a code review.

Copilot Chat¹

Sample Prompt: I want to learn more about how to implement [tool, service]. **Provide a high-level outline** with guidance on how to implement, best practice set ups, how to get leader buy-in, etc.

6. Code review

Ask Copilot to help fix issues that arise from

Copilot Chat1

2. Create IT documentation

Use Copilot to create and update documentation for IT processes, configurations, and troubleshooting guides.



Copilot Chat¹

Sample Prompt: **Create a 2-page document detailing the architecture** of [system] in non-technical language. Be sure to incorporate key features, technologies, and a process diagram.

5. Backup and recovery

Copilot can help you create scripts to automate backup and recovery processes.

Copilot Chat¹

Sample Prompt: **Provide an example of a PowerShell script** that takes daily snapshot backups of Azure Storage volumes, organizes logically, and removes snapshots older than 30 days for compliance.

3. User training

When you choose to implement a new service or product to your organization, use Copilot to streamline the user training process.



Copilot Chat¹

Sample Prompt: I am training new users on our [software, system, tool]. **Create an outline for a 30-minute training** including key concepts, demos, and best practices.

4. IT inventory management

Use Copilot to help provide best practices on how manage IT inventory.



Copilot Chat¹

Sample Prompt: **Outline the key information** needed for an IT asset inventory system and some suggestions for how to maintain these logs.

Sample Prompt: **Rewrite this code** so that it will

no longer have an error when the user picks an



invalid product type. Also add comments and provide a summary of what it does: <code>

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Q & A

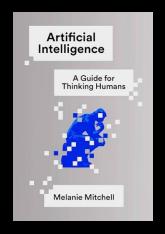
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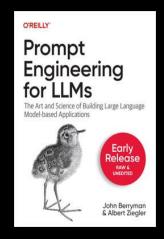
Copilot lab:

https://copilot.cloud.microsoft/en-US/prompts

https://adoption.microsoft.com/en-us/copilot/success-kit/

https://adoption.microsoft.com/en-us/copilot-scenario-library/









portilla@gmail.com





