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Generative AI and Business

Day-to-day usage
of Web UI LLMs

Writing assistant

Rewrite the following to be suitable for a professional business report:

The marketing campaign for the new product went really well, beating our new user goal by 10%.

The **product launch marketing** campaign was successful, exceeding our user acquisition target by 10%.

Marketer

Help me brainstorm an email campaign to reactivate lapsed users of our SaaS product.

Certainly! Here's an email campaign strategy:

1. **"We miss you"** email
2. Feedback request email
3. Exclusive offer email
4. Feature spotlight email
5. Success story email

Recruiter

Summarize the following review of a job candidate in 50 or fewer words:

I really enjoyed talking to the candidate. I liked their positive energy and excitement about the position, and was also impressed by their knowledge of our company. I did have some concerns about their familiarity with the tools we use [...]

The review was impressed by the candidate's depth of knowledge but had some questions about their experience with specific tools. The reviewer is in favor hiring the candidate but suggests further team discussion about how to train and onboard effectively.

Programmer

Write python code to calculate the average
of the last column in a dataframe

Sure! Here's some code that uses the pandas library:

```
import pandas as pd
# Calculate the mean of the last column
mean_value = df.iloc[:, -1].mean()

print(mean_value)
```



Summary of Day-to-Day LLM Usage via Web UIs

- **General-Purpose Technology:** Generative AI is a general-purpose technology, meaning people across many different job roles are already finding ways to use LLMs in their daily work.
- **Writing and Copy Editing:** LLMs are excellent **writing assistants and copy editors**. They can rewrite text to be suitable for professional documents like business reports, often doing a good job (though double-checking the output is recommended).
- **Brainstorming/Marketing:** **Marketers** use LLMs to help **brainstorm ideas**, such as developing concepts for an email campaign (e.g., a campaign to reactivate lost users).
- **Summarization/Recruiting:** LLMs are very good at **summarizing text**. **Recruiters** use them to condense candidate reviews into brief summaries (e.g., 50 words or less), though reviewing the LLM's summary for accuracy is advised.

- **Coding/Software Engineering: Programmers** and **software engineers** use LLMs to generate an **initial draft of code** for certain technical tasks. While the code can sometimes be buggy and require fixing, it helps the programmer get started on a task.
- **Thought Partner:** The speaker personally finds LLMs useful as a **thought partner** to help think things through.

The material concludes by noting that the next step is to look at a systematic framework for analyzing a business to identify valuable opportunities to use generative AI to augment or automate tasks.



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Task analysis of jobs

Identifying automation opportunities

- AI doesn't **automate jobs**. It automates tasks.
- Most jobs involve a collection of many tasks.
- Example: Customer service representative

Tasks	Generative AI potential
Answer inbound phone calls from customers	Low
Answer customer chat queries	High
Check status of customer orders	Medium
Keep records of customer interactions	High
Assess accuracy of customer complaints	Low
[...]	[...]

Augmentation vs. Automation

Augmentation

- Help humans with a task.
- E.g., recommend a response for a customer service agent to edit/approve.

Automation

- Automatically perform a task
- E.g., automatically transcribe and summarize records of customer interactions

For some tasks, businesses will start with augmentation, and gradually move toward automation.

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[...]	[...]

Evaluating AI potential

The potential for augmenting/automating a task depends on:
(i) **Technical feasibility** and (ii) **Business value**.

Technical feasibility: Can AI do it?

- Can a fresh college graduate following the instructions in a prompt complete the task?
- If unsure, try prompting an LLM to see if you can get it to do it.
- An AI engineer can also help assess **if RAG**, fine-tuning, or other techniques can help.

Business value: How valuable is it for AI to augment or automate this task?

- How much time is spent on this task?
- Does doing this task significantly **faster**, cheaper or more consistently create substantial value?

Job databases: Breaking down job roles into tasks

→ Not so specific to your company, just for comparison and idea
O*NET entry for **Customer Service Representatives**

Occupation-Specific Information

Tasks

▲ All 15 displayed

- + Confer with customers by telephone or in person to provide information about products or services, take or enter orders, cancel accounts, or obtain details of complaints.
- + Keep records of customer interactions or transactions, recording details of inquiries, complaints, or comments, as well as actions taken.
- + Check to ensure that appropriate changes were made to resolve customers' problems.
- + Contact customers to respond to inquiries or to notify them of claim investigation results or any planned adjustments.
- + Determine charges for services requested, collect deposits or payments, or arrange for billing.
- + Complete contract forms, prepare change of address records, or issue service discontinuance orders, using computers.

Source: onetonline.org



Task Analysis Framework for Generative AI

The framework, which originated from economists like Erik Brynjolfsson, Tom Mitchell, and Daniel Rock, shifts the focus from "automating jobs" to "**automating tasks,**" as most jobs comprise a collection of many different tasks.

Steps in the Analysis

1. **Break Down the Job Role:** Identify all the specific tasks performed by people in a particular job role within your business (e.g., a Customer Service Representative's tasks include answering phone calls, handling chat queries, checking order status, and keeping records).
2. **Assess Potential:** Evaluate each task's potential for Generative AI to either **augment** or **automate it** (assessing as low, medium, or high potential).
3. **Focus Efforts:** Concentrate resources on the tasks determined **to have the highest potential based on specific business context.**

Augmentation vs. Automation

The opportunity for generative AI can be categorized into two forms:

Type	Definition	Example (Customer Service)
Augmentation	Using AI to help a human with a task, allowing the human to double-check or finalize the output.	Generative AI recommends a response for an agent to edit or approve, but doesn't send it automatically.
Automation	An AI system fully and automatically performs a task.	Automatically transcribing and summarizing records of customer interactions.

Progression: Businesses often begin with **augmentation** to build trust and confidence in the AI's output, gradually adapting the user interface for more efficiency and eventually shifting to higher degrees of augmentation, and perhaps eventual full **automation**.

Criteria for Evaluating Task Potential

The potential for augmenting or automating a task depends primarily on two factors:

1. Technical Feasibility

- **Can AI do it?** And what is the cost of building the system?
- **Initial Test:** A helpful "first guess" for LLMs is asking: "Can a fresh college graduate following the instructions in the prompt complete the task?"
- **Experimentation:** To quickly gauge feasibility, you can try prompting an LLM with relevant, non-confidential data to assess the quality of its response.
- **Advanced Techniques:** An AI engineer can assess the complexity and cost of using techniques like Retrieval-Augmented Generation (RAG) or fine-tuning.

2. Business Value

- **How valuable is it** to augment or automate this task?
- **Key Questions:**
 - How much time is currently spent on this task (potential time savings)?
 - Does doing this task significantly faster, cheaper, or more consistently create **substantial value?** (This value is often greater than just cost savings, as it can lead to rethinking the entire workflow around the task).

External Resource

The speaker suggests using online occupation databases, such as the **O*NET** (a US government funded website), to help with the analysis. These databases list the tasks that comprise a certain role, which can be a good starting point for ideas, but they should be used cautiously as they are general and not specific to a company's unique operations.



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Additional job
analysis examples

Computer programmer

Tasks	Generative AI potential
Write code	Medium
Write documentation	High
Respond to user support requests	Medium
Review others' code	Low
Gather requirements	Low
[...]	[...]

Lawyer

Tasks	Generative AI potential
Draft and review legal documents	High
Interpret laws, rulings, and regulations	High
Review evidence	Low
Negotiate settlements of disputes	Low
Represent clients in court	Low
[...]	[...]

Landscaper

Tasks	Generative AI potential
Maintain and care for plants	Low
Purchase and transport plants	Low
Maintain yard equipment	Low
Communicate with clients	Medium
Maintain business website	Low
[...]	[...]



Summary of Additional Job Analysis Examples

The Icon vs. The Opportunity

The main takeaway is that when analyzing a job for Generative AI potential, people instinctively focus on the most "**iconic task**" (e.g., coding for a programmer, arguing in court for a lawyer). However, a systematic analysis of all tasks often reveals that the best opportunities for augmentation or automation **lie in the less obvious**, supporting tasks.

Example Analysis

Job Role	Core/Iconic Tasks	Supporting Tasks	Example Conclusion (Hypothetical)
Computer Programmer	Write code	Write documentation , review others' code, respond to support requests, gather requirements.	Writing documentation may be easier and have higher Generative AI potential than writing complex code itself.
Lawyer	Represent clients in court	Drafting and reviewing legal documents , answering client questions on law interpretation, reviewing evidence, negotiating settlements.	Drafting and reviewing documents and interpreting laws have high potential, whereas arguing in court has low potential for automation.
Landscaper	Maintain and care for plants	Purchase/transport plants, maintain equipment, communicate with clients , maintain business website.	Most of the core tasks (caring for plants, using equipment) have low Generative AI potential compared to knowledge-based jobs.

Rethinking Business Value: Beyond Cost Savings

The material concludes by shifting the focus of Generative AI implementation from merely **cost savings** to **revenue growth** and **workflow re-engineering**:

- **Growth Has No Limit:** While cost savings are the initial focus, growth opportunities are ultimately much larger.
- **Rethinking the Workflow:** If a task can be done **1,000 times cheaper** due to automation (e.g., answering customer queries), a business shouldn't just pocket the savings. Instead, they can **rethink the entire workflow** and create a fundamentally new and better service organization (e.g., serving customers 1,000 times better). This shift creates value that goes **well beyond simple cost reduction**.

This comprehensive task analysis helps businesses decide where to actually apply Generative AI to maximize value, which often means supporting human workers in tasks adjacent to their core, iconic duties.



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New workflows and new opportunities

Example 1: Surgeon

Background research= Time

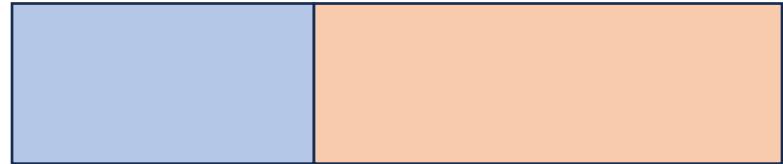
Research medical procedure

Carry out surgery

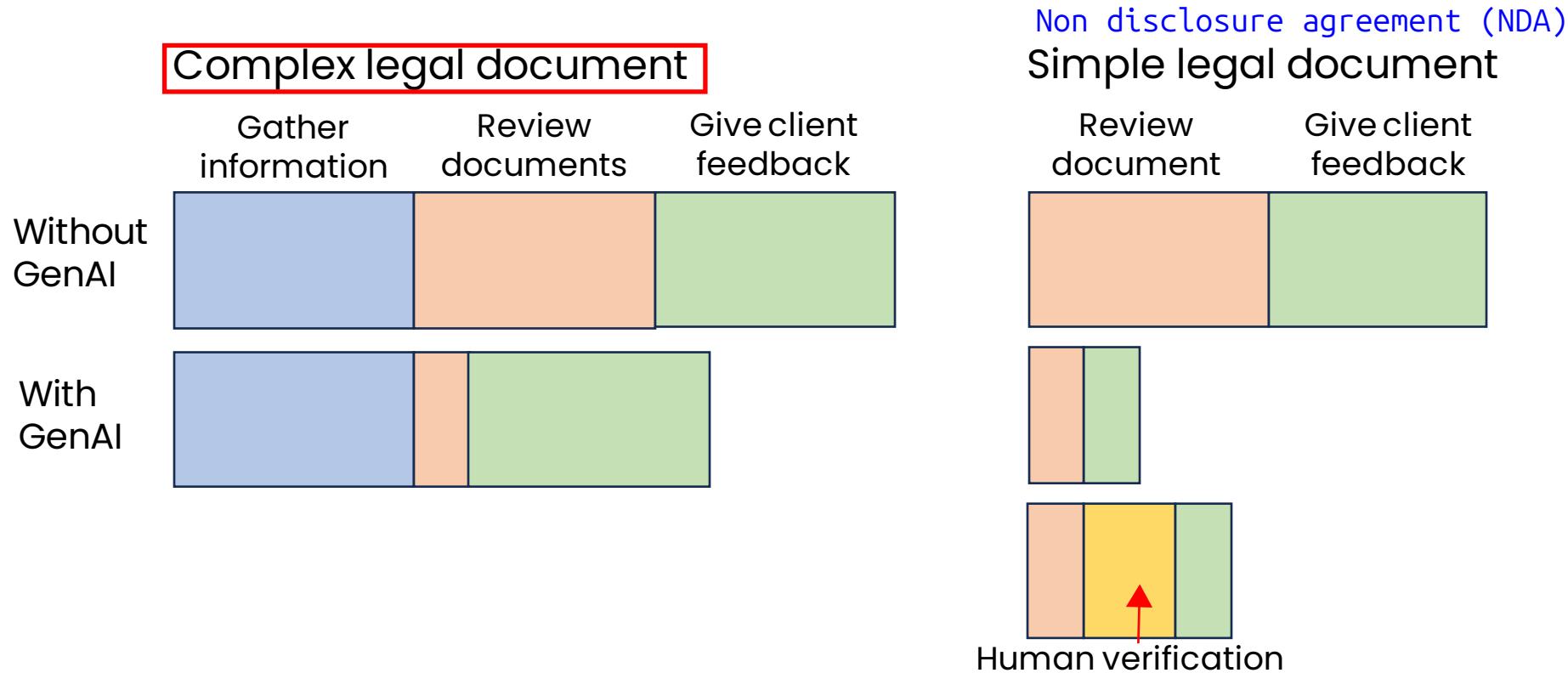
Without
GenAI tools



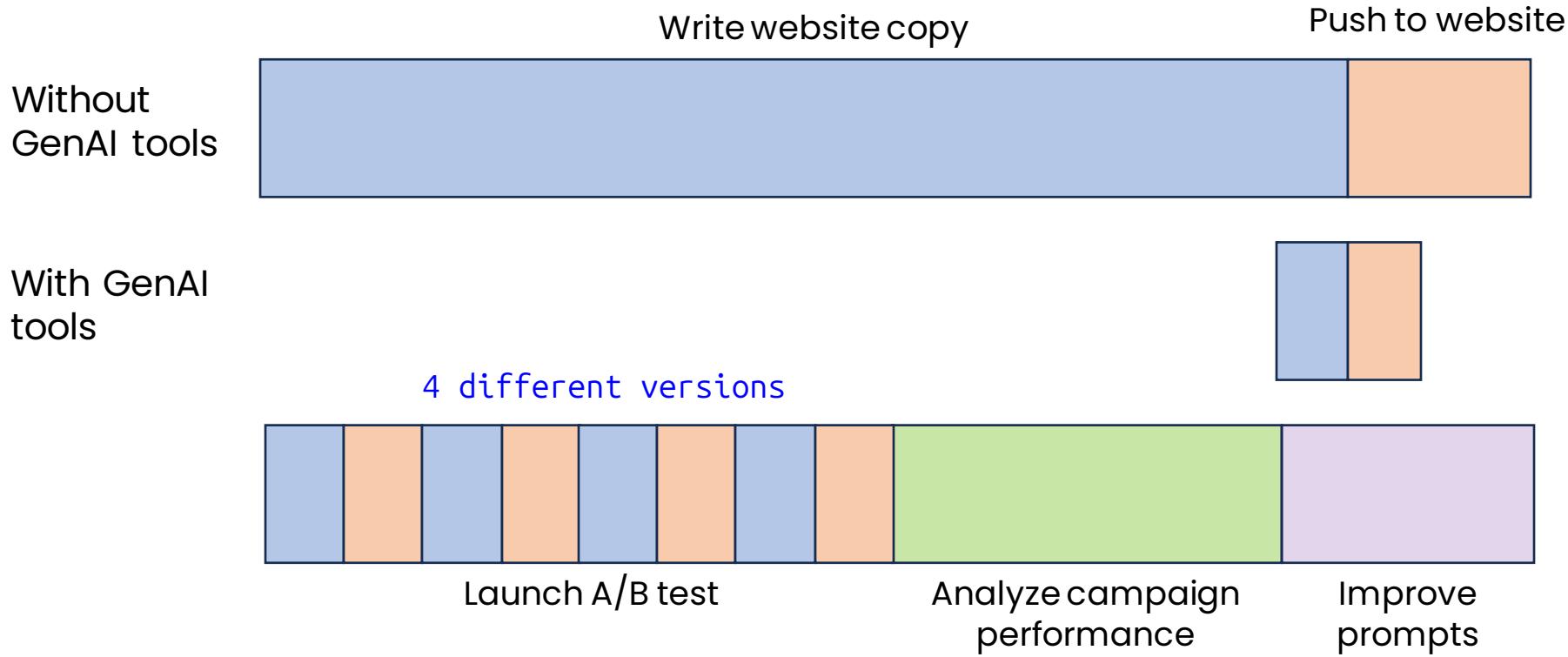
With GenAI
tools



Example 2: Legal documentation review



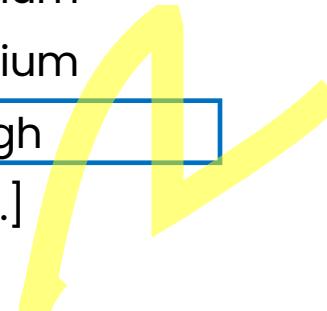
Example 3: Marketing automation



Analyzing **Customers' Tasks**

Example: Helping customers build websites

Tasks	Generative AI potential
Select website template	Low
Write title	High
Select images	Medium
Write copy for homepage	Medium
Optimize copy for SEO	High
[...]	SEO= Search Engine Optimization [...]



Generative AI: Pathways to Growth and Workflow Re-engineering

Workflow Re-engineering Examples

Generative AI doesn't just make a single task faster; it often causes a cascading effect that requires or enables a complete **rethinking of the workflow.**

Scenario	Original Workflow	AI-Augmented Workflow	Key Change & Benefit
Complex Research (e.g., Surgeon)	Long background research → Carry out surgery.	Generative AI/RAG shortens the research time significantly → Carry out surgery.	Time Savings: Reduces effort in the information-gathering phase, making the human expert more efficient.

Complex Document Review (e.g., Lawyer)	Gather info → Review document → Give client feedback.	Gather info → AI shortens document review time → Give client feedback.	Efficiency: Speeds up the labor-intensive review, maintaining the human-centric parts of the job (gathering info and delivering detailed feedback).
Simple Document Review (e.g., NDA)	Review document → Give client feedback.	AI shortens review time → AI creates summary document → Fast Human Verification → Efficient client feedback.	New Step: The introduction of a fast human verification step ensures accuracy after rapid AI generation, increasing trust and overall efficiency.
Content Marketing (e.g., Marketer)	Write copy → Push to website.	AI accelerates copy writing → Push 4 variations to the website → A/B Test → Analyze performance → Improve prompts/copy.	Growth via Volume & Optimization: AI efficiency is leveraged not for saving cost but for creating and testing multiple versions of content, leading to much more compelling (and higher-performing) marketing campaigns.

New Framework: Analyzing Customer Tasks

In addition to analyzing the tasks of your own employees, a powerful approach for identifying new growth opportunities is to analyze the tasks your **customers** perform.

- **Focus:** List out the steps your customer has to complete when using your product or service.
- **Example (Website Builder):** Customer tasks include: selecting a template, writing a title, selecting images, writing homepage copy, and optimizing the copy for **Search Engine Optimization (SEO)**.
- **Opportunity:** If you analyze this list, you might find that Generative AI can help customers with tasks like **writing the title** and **SEO optimization**.
- **Benefit:** This approach leads to building new products or features that directly solve customer pain points, resulting in **happier customers** and driving **business growth**.

The overall conclusion is that Generative AI is a force for transformation that encourages businesses to rethink their entire service workflow and even how they enable their customers to succeed.



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Teams to build
generative AI software

Common roles

- Software engineer
 - Responsible for writing software application
 - Ideally someone who **has learned basics of LLMs/prompting**
- Machine learning engineer
 - Responsible for implementing AI system
 - Ideally familiar with LLMs/prompting, RAG, fine-tuning
- Product manager
 - Responsible for identifying and scoping the project
- **Prompt engineer?**
 - Usually not hired as a dedicated role

Getting started with a small team

One person team:

- Software engineer (who has learned some prompting), or
- Machine learning engineer, or
- Just yourself!

Two person team:

- Can be machine learning engineer + software engineer.
- But many other configurations are fine.

Additional roles:

- Data engineer, Data Scientist, Project Manager, Machine Learning Researcher

Additional roles

Data engineer: Responsible for organizing data and ensuring data quality

Data scientist: Responsible for analyzing data to make recommendations to guide project or business decisions

Project Manager: Responsible for coordinating project execution

Machine learning researcher: Responsible for developing advanced AI technologies

Core Roles for Generative AI Development

The most common roles for building LLM-based applications are:

1. Software Engineer (SE):

- **Responsibility:** Writing the software application and ensuring its robust operation.
- **Best Practice:** Highly effective if they learn at least the basics of LLMs and prompting.

2. Machine Learning Engineer (MLE):

- **Responsibility:** Implementing the AI system.
- **Best Practice:** Effective if they learn about advanced LLM techniques like **RAG** (Retrieval-Augmented Generation) and **fine-tuning** in addition to prompting.

3. Product Manager (PM):

- **Responsibility:** Identifying and scoping the project, and ensuring the built application is useful for customers.

The Role of the Prompt Engineer

- **Reality Check:** Despite media hype and a few highly-paid, high-profile job openings, the role of a dedicated "Prompt Engineer" is **not common** in most companies.
- **Actual Practice:** Most companies rely on existing **Machine Learning Engineers** who have learned to prompt, as the actual job descriptions often require deep technical skills beyond just writing prompts.

Team Structures and Getting Started

Generative AI has lowered the barrier to entry, allowing teams to start small:

Team Size	Common Configuration(s)
One-Person Team	A software engineer who has learned prompting, or an ML engineer who has learned LLM basics/prompting.
Two-Person Team	Most common: Machine Learning Engineer + Software Engineer . Other options: A software engineer (who prompts) + a product manager, or two enthusiastic people with software skills willing to learn the tools.
Prototyping	Individuals can start by experimenting and prototyping using free web interfaces to test feasibility.

Other Specialized Roles (Larger Teams)

Larger teams may also include:

- **Data Engineer:** Responsible for data organization, quality, and security.
- **Data Scientist:** Responsible for analyzing data to guide project or business decisions.
- **Project Manager:** Responsible for coordinating project execution.
- **Machine Learning Researcher:** Responsible for developing or adapting advanced AI technologies to the business's specific needs.

The main encouragement is that Generative AI makes building AI-based applications more efficient, so teams with an idea should find the resources to prototype and test it out.

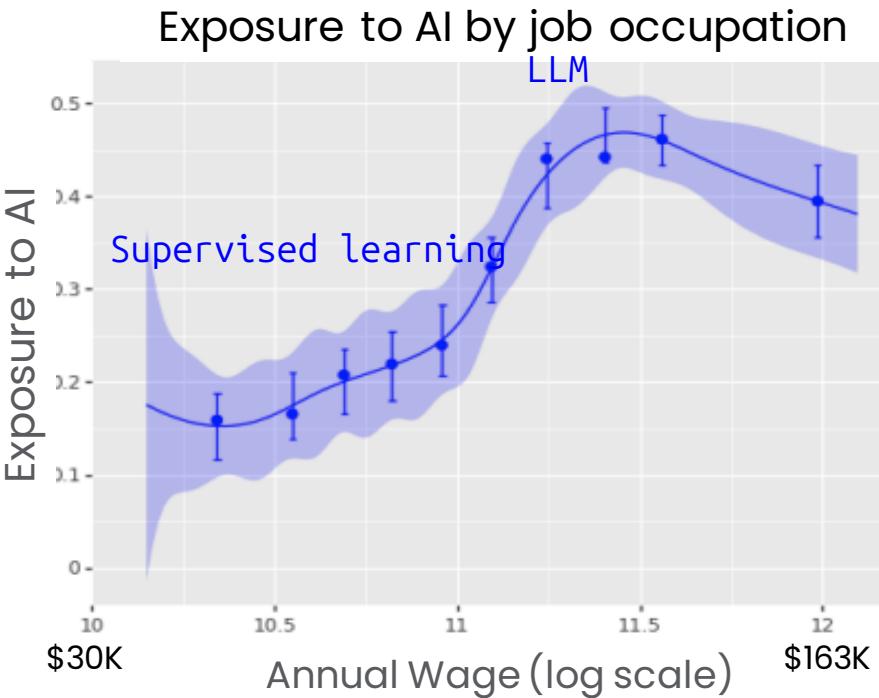


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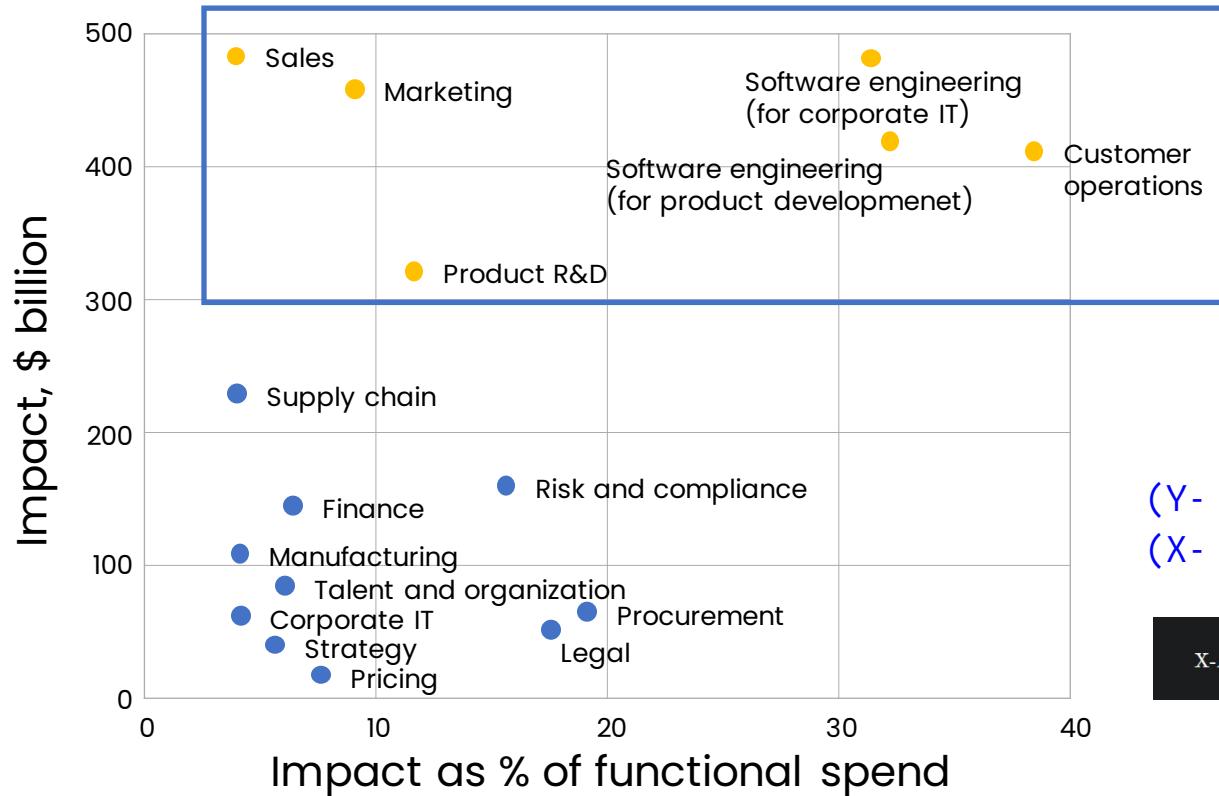
Automation potential
across sectors

Generative AI will impact higher-paid jobs more



Credit: Eloundou et al., 2023

Analysis by functional role



These business areas together represent 75% of total annual impact of generative AI

(Y- axis- Profitable gain)
(X- axis- % of money spent)

$$\text{X-Axis Value} = \frac{\text{Impact ($ billion)}}{\text{Functional Spend ($ billion)}} \times 100$$

Source: McKinsey

Analysis by industry sector

Impact of generative AI on potential automation



Generative AI could have the most impact on knowledge workers



1. Impact by Job Wage (OpenAI/UPenn Study)

- The study found that, unlike earlier waves of automation that tended to expose lower-wage jobs (which involved routine, repetitive work) to automation, **generative AI exposes higher-wage jobs** more significantly to **augmentation or automation**.
- The analysis plots salary against the degree of exposure to AI, showing a clear trend where jobs with higher salaries (e.g., \$30K up to \$163K) **face greater exposure** in the current wave of generative AI adoption.

2. Impact by Functional Role (McKinsey Study)

This study analyzed the impact of generative AI based on functional roles across many companies, looking at both the total dollar value of the impact and the **impact as a percentage of functional spending**.

Functional Role	Key Findings
Customer Operations (Customer Service)	Estimated to have a very large absolute dollar impact (around \$400 billion) and a large percentage impact (approaching 40% of functional spend). This is due to generative AI's strong potential for augmenting/automating customer service tasks.
Sales	Expected to have a total impact in the hundreds of billions of dollars , but the impact as a percentage of total spending on sales is much smaller than on Customer Operations.
High-Impact Functions	A cluster of functions (including Customer Operations and others shown by yellow dots) might represent 75% of the total annual impact of generative AI.
Legal	Even a seemingly smaller impact (e.g., 15% to 20% of functional spend) is considered a significant shift for that entire industry.

3. Impact by Industry Sector (McKinsey Data Re-plotted)

When analyzing the impact of **generative AI only** (excluding other forms of AI like supervised learning), a significant change is noted:

- **Knowledge Workers are Most Affected:** A pervasive theme across studies is that a large amount of the generative AI impact will be on **knowledge workers**—those who create value primarily through their **knowledge, expertise, critical thinking, and interpersonal skills**.
- **New Exposure:** Generative AI is creating a **much greater potential for augmentation or automation** in sectors that were **not highly exposed** to automation before its rise. This includes fields like:
 - **Educator and workforce training**
 - **Business and legal professions**
 - **STEM professionals**



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Generative AI and Society

Concerns about AI

Concern 1: Amplifying humanity's worst impulses

- LLMs are trained on text from the internet, which reflects some of **humanity's best qualities**, but also some of its worst
- Will it amplify our worst impulses?

Gender bias

(social bias)

Bias example: The _____ was a CEO.

- LLMs are becoming less **biased through fine-tuning** and more advanced techniques such as Reinforcement Learning from Human Feedback (RLHF)

Reinforcement learning from human feedback (RLHF)

Reduce bias

Step 1: Train an answer quality (reward) model

Prompt:

The _____ was a CEO.

		Human to score this board
Input (A)	Output (B)	
	Response	Score (reward)
	man	5
	woman	5
	airplane	1
	#!%^?	1

Step 2: Have LLM generate a lot of responses. Further train it to generate more responses that get high scores.

Concern 2: Job loss

"If you work as a radiologist, you're like the coyote that's already over the edge of the cliff, but hasn't yet looked down, so it doesn't realize there's no ground underneath them.

People should stop training radiologists now.

It's just completely obvious that within five years deep learning is going to do better than radiologists."

Geoff Hinton, 2016

Radiologist tasks (O*NET)

30 Tasks

Tasks

All 30 displayed

- ⊕ Prepare comprehensive interpretive reports of findings.
- ⊕ Perform or interpret the outcomes of diagnostic imaging procedures including magnetic resonance imaging (MRI), computer tomography (CT), positron emission tomography (PET), nuclear cardiology treadmill studies, mammography, or ultrasound.
- ⊕ Document the performance, interpretation, or outcomes of all procedures performed.
- ⊕ Communicate examination results or diagnostic information to referring physicians, patients, or families.
- ⊕ Obtain patients' histories from electronic records, patient interviews, dictated reports, or by communicating with referring clinicians.
- ⊕ Review or transmit images and information using picture archiving or communications systems.
- ⊕ Confer with medical professionals regarding image-based diagnoses.
- ⊕ Recognize or treat complications during and after procedures, including blood pressure problems, pain, oversedation, or bleeding.
- ⊕ Develop or monitor procedures to ensure adequate quality control of images.
- ⊕ Provide counseling to radiologic patients to explain the processes, risks, benefits, or alternative treatments.
- ⊕ Establish or enforce standards for protection of patients or personnel.
- ⊕ Coordinate radiological services with other medical activities.
- ⊕ Instruct radiologic staff in desired techniques, positions, or projections.
- ⊕ Participate in continuing education activities to maintain and develop expertise.
- ⊕ Participate in quality improvement activities including discussions of areas where risk of error is high.
- ⊕ Perform interventional procedures such as image-guided biopsy, percutaneous transluminal angioplasty, transhepatic biliary drainage, or nephrostomy catheter placement.

Radiologist

Tasks	AI potential From supervised learning
Interpret X-rays	High
Operate imaging hardware	Medium
Communicate exam results	Medium
Respond to complications during procedure	Low
Document procedure and outcomes	Medium
[...]	[...]

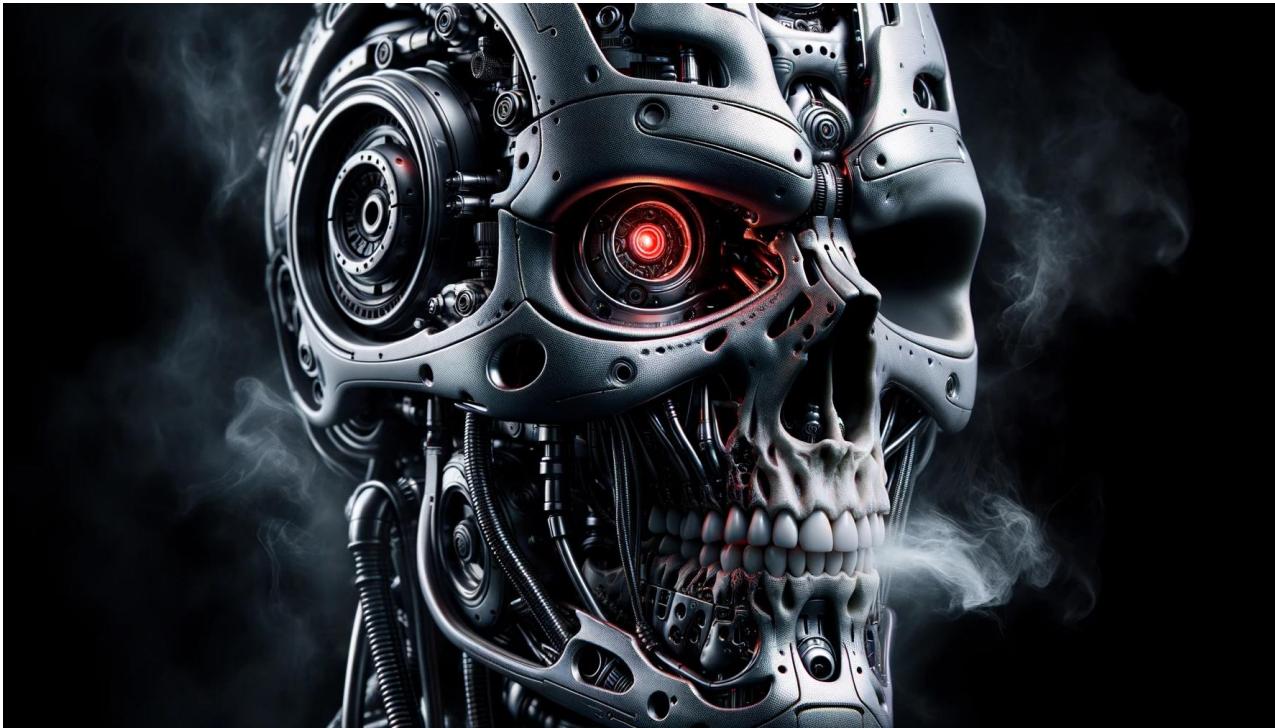
Radiologists

"AI won't replace radiologists.

But radiologists that use AI will replace radiologists that don't."

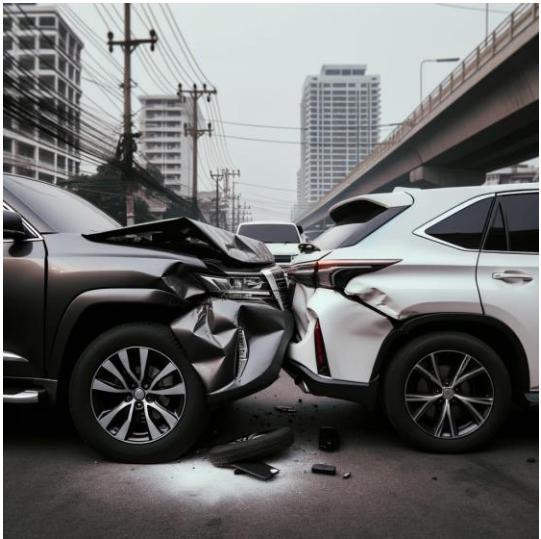
Curtis Langlotz
Professor of Radiology
Stanford University

Concern 3: Human extinction



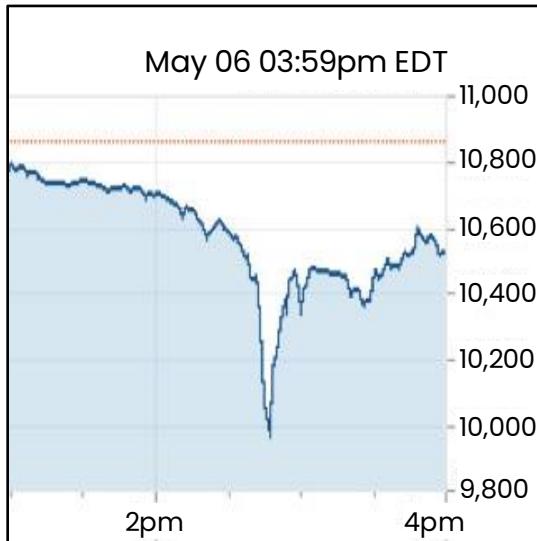
Examples of harm caused by AI

Self-driving car crashes



Automated traded algorithm

2010 Stock Market
Flash crash

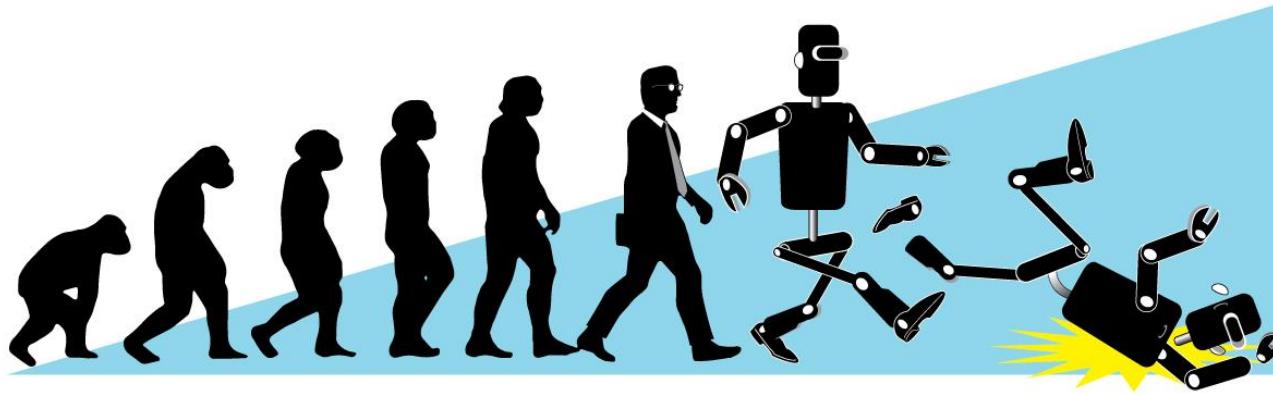


Unjust sentencing in
criminal cases



Human extinction?

To create Bioweapon



- Extinction arguments are not concrete
- Most arguments boil down to “it could happen.”
- “This is a new type of technology.”

Perfect control not needed to be valuable and safe

- Humanity has ample experience **controlling many things** far more powerful than any single person, such as corporations and nation states.
- Many things that we can't fully control are nonetheless valuable and safe. Example: **Airplanes.**



- If we look at the real risks to humanity – such as climate change and **pandemics** – AI will be a key part of the solution.

1. Will AI Amplify Humanity's Worst Impulses?

- **The Problem:** Large Language Models (**LLMs**) are trained on data from the internet, which inevitably contains **biases, prejudices, and misconceptions**. This means LLMs can inherit and reflect these negative social qualities (e.g., exhibiting **gender bias** by favoring the word "man" for the role of CEO).
- **The Solution:** LLMs are being made **less biased** through advanced techniques like **Reinforcement Learning from Human Feedback (RLHF)**.
 - **RLHF** works by training a **reward model** using scores assigned by **humans** to different LLM outputs. Humans give high scores to desirable, unbiased answers and very low scores to biased or harmful answers.
 - The LLM then uses this reward model to further train itself to generate responses that are better **aligned with human preferences** for a fairer and more just world.
- **Current State:** The output of modern LLMs is already **safer and less biased** than the average piece of text found on the internet, and this technology continues to improve.

2. Will AI Put Many People Out of a Job?

- **The Concern:** AI's ability to perform tasks faster and cheaper raises fears of mass unemployment.
- **The Counter-Argument (Radiology Example):** A prediction made years ago that AI would replace radiologists within five years has not come true.
 - **Reason:** AI is far from replacing human workers because professions like radiology involve about **30 different tasks** (e.g., operating hardware, communicating results, managing patient complications), not just the one task AI is good at (interpreting images). Complete automation of all these tasks is still far off.
- **The Prediction:** AI is more likely to **augment or assist** workers. As a colleague noted: "**AI won't replace radiologists, but radiologists that use AI will replace radiologists that don't.**"
- **Historical Context:** Every major wave of technology (from the steam engine to the computer) has historically **created far more jobs than it destroyed**, primarily because businesses focus on **growth**, which has unlimited potential.

3. Will AI Kill Us All (Extinction Risk)?

- **The Anxiety:** While poorly designed software has caused harm (e.g., self-driving car crashes, stock market glitches), the speaker is skeptical of arguments that AI could lead to human extinction.
- **The Critique:** Arguments for extinction—whether from a **bad actor** using AI for a bioweapon or AI inadvertently wiping out humanity—are currently **not concrete or specific** about how this scenario would unfold.
- **Safety and Control:** Humanity has experience controlling powerful entities like corporations and nation-states. Like the early days of aviation, where we learned from mistakes to build **safer airplanes and better rules**, we are actively learning to **control AI**, and it is becoming safer daily.
- **Conclusion:** The speaker believes that AI will be a **key part of our response** to major, realistic threats like climate change and pandemics. Ultimately, AI **increases the odds** of humanity surviving and thriving.

The root cause of these concerns is often the **uncertainty about when AI will reach Artificial General Intelligence (AGI)**—AI capable of performing any intellectual task a human can.



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Generative AI and Society

Artificial General Intelligence

Artificial General Intelligence

Definition: AI that can **do any intellectual task** that a human can

Examples:

- Learn to drive a car through ~20 hours of practice
- Complete a PhD thesis after ~5 years of work → *Maybe a thought partner*
- Do all the tasks of a **computer programmer** (or any other knowledge worker) → *Very far away*

LLM as a reasoning engine



Defining AGI

- **Widely Accepted Definition:** AGI is defined as **AI that could do any intellectual task that a human can.**
- **The Difference from Current AI:** Current AI, even powerful LLMs, is a **general purpose technology** (useful for many things), but this is **not the same** as Artificial General Intelligence.
- **Examples of True AGI (High Bar):**
 - An AGI would be able to learn to drive a car with only about **20 hours of practice** (similar to a human teenager). Self-driving cars today are nowhere near this level.
 - An AGI would be able to complete **PhD thesis-level research** after about five years of work, or even faster. Current AI can assist with brainstorming but is far from this capability.
 - An AGI would be able to perform **pretty much all the intellectual tasks** of a computer programmer **or any other knowledge worker.**

Forecast and Challenges

- **Timeframe:** The speaker believes AGI, by the widely accepted definition, is still **many decades away, maybe even longer**, although they hope it will be achieved within our lifetimes.
- **Lowered Bar:** Some businesses make more optimistic forecasts about AGI by using a **much lower, non-standard definition** of AGI.
- **Technical Progress:** The speaker sees the reasoning capabilities of LLMs as a rough outline of what AGI could eventually become and does **not believe any fundamental laws of physics** prevent its creation. However, **significant technical breakthroughs** are still needed.
- **The Difficulty of the Benchmark:** The definition of AGI is challenging because it benchmarks artificial intelligence against **biological intelligence** which has progressed along very different paths. While AI is already superior to humans at certain narrow tasks (e.g., learning from vastly more text than a human can read), asking it to master *all* intellectual tasks sets an extremely high bar.

Despite being far from AGI, current AI is already **very powerful**, making it important to focus on using it **responsibly**.

That's a great question, but the simple answer is: **An example of true Artificial General Intelligence (AGI) does not exist today.**

AGI is a hypothetical concept, not a current technology. It represents a future AI that can perform the full range of intellectual tasks a human can.

However, based on the definition given in the transcript ("AI that could do any intellectual task that a human can"), here are some illustrative **hypothetical examples** of what AGI would be capable of:

Hypothetical Examples of True AGI

Task/Scenario	Current AI Capability	AGI Capability
Learning a Complex Skill	Self-Driving Cars: Requires millions of miles of supervised driving data and complex programming.	The Teenager Test: Learns to safely and legally drive a car on any road, in any weather, after only 20 hours of practice (similar to a human beginner).
Advanced Problem Solving	LLMs: Can assist with summarizing research, generating outlines, and basic code.	The PhD Test: After being given a new field of science, works for five years and autonomously produces original, PhD-level scientific research that successfully advances the field.
Adaptation & Generalization	Narrow AI: Excels at one task (e.g., Chess, Go, generating text) but cannot instantly switch to another.	The New Job Test: Could be hired as a master physician, a computer programmer, a lawyer, or a CEO and would require minimal training (just human context) to start excelling in that intellectual role.
Creativity and Abstraction	Can produce realistic images or coherent text based on specific prompts (e.g., "draw a dog wearing a hat").	Can invent a new genre of music that captures the current cultural mood, design a completely new sustainable energy system , or autonomously write a play that explores a deep, abstract philosophical concept.

In short, AGI isn't just a smarter tool; it's a truly generalized, cognitive agent. If you could drop it into any human role that relies on thinking, learning, and reasoning, it would quickly perform at or above human expert level.



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Responsible AI

Dimensions of responsible AI

- **Fairness:** Ensuring AI does not **perpetuate or amplify biases**
- **Transparency:** Making AI systems and their decisions understandable **to stakeholders impacted**
- **Privacy:** Protecting user data and ensure confidentiality
- **Security:** Safeguard AI systems from malicious attacks
- **Ethical Use:** Ensuring AI is used for beneficial purposes
(No clear mathematical distinction)

Tips for responsible AI

- Build a culture that encourages discussion and debate on ethical issues
- Brainstorm how things can go wrong
 - E.g., Could there be issues with fairness, transparency, privacy, security, ethical use? (5D= Five dimension)
- Work with a diverse team and include perspectives from all stakeholders



Key Dimensions (Principles) of Responsible AI

While the details are still being figured out, the speaker highlights five common themes that represent the core dimensions of implementing Responsible AI:

1. **Fairness:** Ensuring that AI systems do not perpetuate or amplify existing **biases**.
2. **Transparency:** Making AI systems and their decisions **understandable** to the stakeholders (the people impacted).
3. **Privacy:** **Protecting user data** and ensuring confidentiality.
4. **Security:** **Safeguarding AI systems** from malicious attacks.
5. **Ethical Use:** Ensuring the AI is used for **beneficial purposes**.

Challenges and Best Practices for Implementation

The speaker notes that a major challenge is that the implementation of these principles is not always straightforward, particularly with "ethical use," as there is no clear mathematical definition of ethical behavior.

To help navigate these ambiguities and make responsible decisions, the speaker offers three emerging best practices:

1. **Build a Culture of Discussion and Debate:** Foster an environment where team members feel the freedom to **raise concerns** about ethical issues related to the AI's use.
2. **Brainstorm How Things Could Go Wrong:** Proactively identify potential problems by asking how the AI system could fail in terms of the five key dimensions (fairness, transparency, privacy, security, ethical use). This allows the team to **mitigate risks in advance**.
3. **Work with a Diverse Team and Include All Stakeholders:** Seek a diverse set of opinions and talk to all people impacted by the AI system (e.g., patients and doctors in healthcare, customers and sellers in retail). This broad perspective is crucial for better understanding the system's impact and making better development decisions.

Ultimately, the goal is to use AI to **make people better off**. Developers and businesses are encouraged to only work on projects they believe are ethical, sometimes even **killing financially sound projects on ethical grounds** if necessary.



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Course Summary

Course Summary

- How generative AI works
 - What it can and cannot do
 - Common use cases: Writing, reading, chatting
- Generative AI Projects
 - Lifecycle of a generative AI project
 - Technology options: Prompting, RAG, Fine-tuning
- Implications on Business and Society
 - Analyzing tasks in jobs for automation or augmentation potential
 - Societal concerns, responsible AI

Course Summary: Generative AI

The course was structured into three main parts, covering the basics, project building, and the broader societal implications of Generative AI.

Week/Segment	Major Topics Covered	Key Concepts Introduced 
Week 1: How Generative AI Works	Discussed the fundamental operation of Generative AI and its capabilities.	Thought Partner: Using AI as a collaborative tool. Analogy: Comparing AI's abilities to a college student following instructions. Use Cases: Writing, reading, and chatting.
Week 2: Building Generative AI Projects	Detailed the process of creating and deploying Generative AI systems.	Project Life Cycle: The stages of developing a Gen AI project. Technology Options: Prompting, Retrieval Augmented Generation (RAG), and Fine-Tuning.
Week 3: Business and Society Implications	Explored the impact of Generative AI on jobs, business value, and ethical concerns.	Jobs Framework: Breaking jobs down into tasks to identify opportunities for automation or augmentation . New Value Creation: Moving beyond cost savings to creating significant brand new value. Societal Concerns: Discussion of ethical challenges and Responsible AI .



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Generative AI and Society

Building a more
intelligent world

Specialist doc, tutor



Artificial can be
really cheap
--> Visiting doctor
or paying a bill

Climate change,
pandemics

Fear of AI= Fear
of electricity (Electrocution)

AI: The New Electricity of Intelligence

The speaker defines **intelligence** as the power to apply knowledge and skills to make **good decisions**.

- **Human Intelligence is Expensive:** Currently, specialized human intelligence (like a top doctor or a dedicated tutor) is costly because it requires years of investment in education and training. As a result, only the wealthiest people can afford to hire vast amounts of high-level intelligence.
- **AI Intelligence is Cheap (Potentially):** Unlike human intelligence, AI can be made cheap and scalable. This has the potential to give every individual access to highly intelligent advice and **staff at a low cost**, eliminating worries about huge bills for expertise.
- **Societal Impact:** AI can provide **more intelligent guidance** on major global problems like **climate change** and **pandemics**.
- **AI as "New Electricity":** AI is compared to **electricity**—a general-purpose technology with the potential to revolutionize all industries and corners of human life. While both technologies carry risks (**like electrocution or harm from AI flaws**), the speaker argues we wouldn't give up the benefits of electricity today, and the same will eventually be true for AI.

Concluding Vision

The speaker expresses optimism that as the technology rapidly improves, the problems of AI that alarm us today will recede.

The ultimate takeaway is that AI is essential for solving the world's most urgent problems (climate change, war, pandemics) and that we will need **all the intelligence** we can master.

The final call to action is for the viewer to **use Generative AI responsibly** to improve their own lives and the lives of those around them, thereby **contributing to building a better, more intelligent world for everyone.**