Using Artificial Intelligence

ABSOLUTE BEGINNER'S GUIDE

No experience necessary!

Michael Miller

FREE SAMPLE CHAPTER

Using Artificial Intelligence

ABSOLUTE BEGINNER'S GUIDE

Michael Miller

Pearson

AARP Real Possibilities

Using Artificial Intelligence Absolute Beginner's Guide

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About the Author

This book is written by me, Michael Miller. I've written more than 200 books over the past four decades, including many in the *Absolute Beginner's Guide* series and almost two dozen books with AARP. My books have collectively sold more than 1.5 million copies worldwide, so I must be doing something right.

I have a particular interest in new and evolving technologies, so writing about AI is right up my alley. My readers say I have a knack for explaining complex technologies in easy-to-understand terms, and I have no reason to argue with that. I hope I can help you better understand artificial intelligence and how you can use it in your everyday life.

Oh, in case you're wondering, I am an older gentleman, which only means I've been around long enough to experience many different "new" technologies. (I have been writing for four decades, after all; I wrote one of the first books about the Internet when it was new!) I live with my wife and random daily combinations of four stepchildren and eight grandchildren in a suburb of the Twin Cities in the often-frozen land of Minnesota. In my spare time, what there is of it, I play drums, entertain (and am entertained by) my grandchildren, and write about music from the '60s, '70s, and '80s in my Classic Song of the Day blog (www.classicsongoftheday.com).

You can find out more about me on my website, located at www.millerwriter.com. Feel free to use the contact form there to get in touch with me. I'm open to criticism, faint praise, and the occasional earnest question. I may or may not respond personally, although I guarantee I'll read everything you write.

Dedication

To my eight wonderful grandkids who will grow up in an AI world: Collin, Alethia, Hayley, Judah, Lael, Jackson, Jamie, and Adelynn.

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My thanks to everyone at Pearson who helped turned my words into a book, including Laura Norman, Anshul Sharma, and Charlotte Kughen. Thanks also to the good folks at AARP for their input and support, including Jodi Lipson, Leah Miller, and Michael Phillips.

About AARP

AARP is the nation's largest nonprofit, nonpartisan organization dedicated to empowering people 50 and older to choose how they live as they age. With a nationwide presence and nearly 38 million members, AARP strengthens communities and advocates for what matters most to families: health security, financial stability and personal fulfillment. AARP also produces the nation's largest circulation publications: AARP The Magazine and AARP Bulletin. To learn more, visit www.aarp.org, www.aarp.org/espanol or follow @AARP, @AARPenEspanol and @AARPadvocates, @AliadosAdelante on social media.

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Introduction

You can't open a newspaper, load a web page, or scroll through a TikTok feed without being presented with either inspiring or alarming stories about AI.

Artificial intelligence—AI—is considered one of the most significant technological developments of the current century. And its impact is just beginning.

In its simplest form, AI is the idea of machines that learn and think like humans. Long a concept in science fiction (think Frankenstein and "Star Trek"), AI has only in the past years become a reality.

In fact, your life is already being touched by AI, and it's likely you'll be affected even more in the months and years to come. It's not just theoretical or for scientists and researchers; AI is a technology that you can use in your daily life.

If you think AI might be a passing fad, take a look at some recent headlines:

- "AI Will Make Mental Healthcare More Human" (*Psychology Today*)
- "Artists' AI Dilemma: Can Artificial Intelligence Make Intelligent Art?" (*The Guardian*)
- "How to Protect Yourself (and Your Loved Ones) From AI Scam Calls" (*Wired*)
- "Jamie Dimon Says AI May Be as Impactful on Humanity as Printing Press, Electricity and Computers" (CNBC)
- "'Social Order Could Collapse' in AI Era, Two Top Japan Companies Say" (*Wall Street Journal*)
- "Will Artificial Intelligence Boost Productivity? Companies Sure Hope So" (*The Seattle Times*)

All those stories—and many more--were published *in a single day*. As you read them, you may find it difficult to get a grasp on what AI is and its potential impact on our world. Is AI the greatest thing since fire and sliced bread, or will it cause the demise of humankind as we know it? How can it enhance your life and make it better? What should you watch out for?

The answers, at this point in time, are obviously less than clear. What is clear is that AI is here—and here to stay.

AI Is Already Changing Things—and Will Change Even More

AI is all around you, including places you may not even realize. AI powers personalized content recommendations on your favorite streaming video sites. It drives real-time navigation apps on your phone. It's used in virtual assistants like Alexa

and Siri. It's even a part of supply chain management that puts the products you need on store shelves.

And that's just the simple AI that's been in use for the past few years. Newer generative AI—what most of this book is about—doesn't just *power* things; it *empowers* you to create new things. Generative AI lets you create stories, images, video, and audio with just a few brief prompts. You can use AI to help you write letters and social media posts; people who have trouble drawing a straight line (like me!) can use AI to create both fantastic and realistic images; businesses can use AI to answer customer questions and manage employee schedules. It's all out there, and there's even more to come.

It's clear that AI will have a radical effect on our lives. We can expect to interact with AI in much of what we do—writing emails, articles, and blog posts; creating art; finding information; managing finances; traveling; and obtaining medical care. There's little in this world that AI won't impact.

That doesn't mean AI is perfect or always safe or easy to use. AI is a powerful technology that can be confusing and intimidating, even to those who work with it every day. There are seemingly unlimited ways for technology to incorporate AI and unlimited ways for people like you and me to use AI to assist in our daily lives.

There are also a seemingly unlimited number of AI tools available today, with more introduced constantly. Sorting through these options and understanding how they work—and how you can get the most out of them—are just a few of the things we as individuals need to master moving forward.

It's important to be aware of and able to recognize the limitations and risks presented by this new technology. Because AI is trained on data from human beings, it can represent both the best and the worst of our society. AI can be used to spread misinformation. It can increase the sophistication of scams. It can reflect societal biases such as preconceptions about age, race, and gender. It can offer up intellectual property that belongs to someone else. And it can also be seen as threatening to human security; some experts believe that AI has the potential to replace humans in many areas, if not completely. Whatever its ultimate impact, AI is part of our world and we will all come into contact with it in our daily lives. Just as we've had to learn how to use the new technologies of the past, from washing machines and motor vehicles to personal computers and the Internet, we need to learn how to use and get the most out of AI going forward. By getting out there and experimenting with today's AI tools, you can discover all the amazing ways that AI can help you become both more productive and more creative. And how to know where you shouldn't use it, or where you should use it with caution.

That's what this book is about.

What's In This Book

Using Artificial Intelligence: Absolute Beginner's Guide is a book about what AI is—the pros and cons, benefits and risks—and how to use it. It's a book about a highly technical subject written for a nontechnical audience in easy-to-understand language. I try to make AI as understandable as possible while focusing on the technology's practical aspects. That is, this book eschews all the technical mumbo jumbo in favor of showing you the many ways you can use AI to perform everyday tasks.

If I do my job right as an author, this book will help you

- Understand, at a very basic level, how AI works
- Learn how AI can benefit you in your life
- Recognize and manage some of AI's risks, limitations, and security implications
- Discover commonly available AI tools and use them for specific tasks
- Identify when AI can be helpful and trusted and when it can't
- Spot AI-generated content

I include lots of examples to show you how AI works and give you step-by-step instructions so you can try AI for yourself. You'll see how AI works in different applications, from writing letters and creating art to managing your health and helping you be more productive at work. The emphasis is on the practical use of AI—how you might encounter and employ the technology in the real world.

How This Book Is Organized

The information in *Using Artificial Intelligence: Absolute Beginner's Guide* is organized into 13 chapters and a glossary. Here's how that information is presented:

Chapter 1, "AI: What It Is and How It Works": This first chapter digs into the ideas and technologies behind AI, focusing on the newer, more powerful generative AI. You'll learn AI's history, how it works, and how AI is being used today.

Chapter 2, "The Benefits and Risks of AI": Here is where I discuss the great ways that AI can help you—and what to watch out for.

Chapter 3, "Getting Started with All-Purpose AI Tools": This chapter gets into the fun stuff: how to use free and publicly available AI tools—such as ChatGPT, Google Gemini, Meta AI, and Microsoft Copilot —for fun and in practical applications.

Chapter 4, "Using AI to Find the Right Words": Learn how to use AI to assist in writing everything from email messages and letters to articles and business

reports. You can even use AI to write poetry and fiction for your own personal use (you can't claim AI-written material as your own!)—and edit your existing work to make it read better.

Chapter 5, "Using AI to Find Information": AI is several steps beyond today's web-based search engines. Discover how AI can find information faster—and help you understand what it finds—and when you need to verify AI's output (short answer: always!). Whether you want to figure out how to fix your car or plan dinner for six with picky eaters, AI can help. It can also be a great tool to help you summarize information.

Chapter 6, "Using AI to Connect with People and Pursue Interests": AI can help you connect with other people who share your interests. You can even use AI to manage—or generate—your online conversations and help you pursue your favorite hobbies. This chapter also covers how and when to have helpful conversations with AI

Chapter 7, "Using AI to Create Art and Images": Discover the easy-to-use AI tools that let you create photorealistic images or pieces of art that transcend your imagination.

Chapter 8, "Using AI to Get a Job": Get a leg up on other applicants by using AI tools to find the right job, craft the perfect resume and cover letter, and prepare for job interviews.

Chapter 9, "Using AI at Work": It's not surprising that employers are looking for AI to improve productivity. Learn how to use today's AI-based tools to automate routine tasks, collaborate with colleagues, and make better business decisions.

Chapter 10, "Using AI to Manage Your Travel and Transportation": Discover how AI can help you create trip plans, find the best places to stay (at the best prices), and prepare for your journey. You'll also learn about self-driving vehicles and using AI to map the most efficient routes.

Chapter 11, "Using AI for Health and Wellness": Learn how you can use AI to create fitness and nutrition plans, better understand what your providers tell you, and improve your mental health.

Chapter 12 "Using AI to Help Caregivers": If you are one of the more than 37 million people caring for a relative or friend, you're probably eager to get all the help you can—and AI can help you become a better caregiver. Discover how AI can automate daily tasks such as pill management, improve personal health and safety, and even provide companionship.

Chapter 13, "The Future of AI": The first dozen chapters of this book tell you where AI is today. This final chapter predicts what's next for AI—how AI will evolve and how it will affect our lives in the future.

Glossary: This section provides a list of AI-related terms you need to know. Learning these terms won't make you an AI expert, but using them may make you sound like one.

One last thing. As you read through this book, you'll see a variety of notes that provide additional information and warnings that alert you to AI's limitations. You'll even find some extended sidebars that provide tangential information and responses to frequently asked questions. These notes, warnings, and sidebars aren't essential for learning how to use AI, but you may find them interesting or helpful.

This Book Is About *Generative* AI

As you'll learn in the very first chapter of this book, there are two types of AI in use today: the older predictive AI and the newer generative AI. While predictive AI is interesting and useful, and the type we know best—asking Siri questions, getting Alexa to turn on music, having your grammar and spelling checked when you're writing—it's the more powerful (and, dare I say, more "intelligent") generative AI that promises to have the biggest impact on society. Generative AI is so named because it can generate new content—words, pictures, sounds, ideas—that didn't exist previously. This ability to create something from nothing is what gives generative AI its promise to transform our world.

For all these reasons, this book focuses on generative AI—what it is and how to use it. I won't completely ignore predictive AI, but generative AI is where it's at today and where I devote the bulk of my attention and coverage.

IN THIS CHAPTER

- Understanding the potential benefits of AI
- Understanding the potential risks of AI
- How to spot AI in the wild
- Debating the ethics of AI-created content
- AI and copyright law

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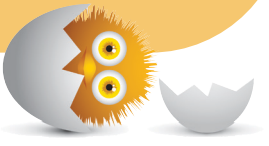

THE BENEFITS AND RISKS OF AI

AI proponents predict that this developing technology will result in a bounty of benefits. According to its most enthusiastic supporters, AI will do everything from improving productivity and enhancing creativity to curing diseases and halting or even reversing climate change. On the other hand, naysayers warn of the negative impacts of AI—lost jobs, deepfakes and media manipulation, and technology that surpasses and even replaces the human race.

Which of these AI-influenced futures is most likely? Is AI all rainbows and unicorns, or do we need to prepare for war against amoral AI-powered terminators?

The reality is that AI promises some very real benefits but also brings with it some very real risks and issues. We need to know enough about what AI is and how it works to embrace its likely benefits while guarding against its possible downsides.

Understanding the Potential Benefits of AI

You've no doubt seen some of the effects of AI in your everyday life. Some of what AI does will benefit you. Some might negatively impact you. Some won't affect you at all. It all depends on what directions AI takes and, to a large degree, the things you do from day to day—the type of work you do, the entertainment you choose, and more.

Let's start by looking at some of the potential benefits of AI, of which there are likely to be a plethora.

Automating Boring Manual Processes

One thing that AI does very well is figure out how to do repetitive work and do it quickly, without complaining or needing a break. If you do this type of work, you may find AI stepping in to do it in your place—which may or may not be a good thing.

AI can do many boring, repetitive tasks much better than humans; AI is faster and more accurate than any human being could hope to be. AI also doesn't get bored or need to take bathroom breaks. In many ways, AI is the perfect worker for activities like proofreading documents, filing contracts, and comparing invoices. AI-based systems can also pack boxes, assemble products, and perform other manual tasks at high speed and with a low incidence of errors. Businesses will love it.

Improving Business Productivity

Speaking of businesses, since AI can do repetitive tasks faster and more accurately than human beings, it is improving efficiency and productivity across a wide range of industries. AI, once it gets going, should also be able to figure out new and better ways to do many of these tasks. It's not just a rule follower but a reinventor of rules as it learns from what it does.

The reality is that AI is already benefiting businesses in a number of important ways. Here are some examples:

- Streamlining existing processes
- Devising and implementing new processes
- Eliminating human errors
- Improving workplace safety
- Reducing the need for human labor, especially for repetitive tasks
- Producing more targeted marketing campaigns
- Sorting, filtering, and organizing data
- Analyzing data and providing detailed insights
- Improving decision making
- Designing new products and services

All these functions increase productivity and reduce costs, which makes AI highly attractive to the business community.

NOTE Learn more about using AI in business in Chapter 9, "Using AI at Work."

Reducing Risk

Consider all the activities that place people at risk—working with hazardous materials, operating heavy machinery, working in harsh environments, and more. By merging AI and robotics technologies, humans may no longer need to go deep underground or to unsafe heights, defuse bombs, or change lightbulbs on tall cellular towers. Autonomous robots, powered by AI, can do the job safely and keep humans out of harm's way.

Making More Things Available 24/7

Unlike human beings, AI systems don't need to eat, sleep, or take breaks. That means they're available 24/7, even on holidays. Even better, AI systems remain at peak capability and capacity over that entire period; they don't experience "peak productivity" because they're always working at their max.

That also means that AI-powered systems can deliver service at all hours of the day and night. Instead of closing a call center after a certain hour, an AI-powered call center is available to take customer calls every minute of every hour. This means businesses effectively never need to close, plus they can now serve customers around the globe, no matter when that might be in local time.

Personalizing the User Experience

AI will further enable the trend of mass personalization. Imagine an AI system analyzing your past browsing patterns and using that to create in real time a personal home page on your favorite shopping site, with deals created in the moment just for you. AI will know what colors you prefer, how big the type needs to be, what kind of products you're interested in, and more, and use that information to create a totally unique and personalized shopping experience.

Enabling Better Recommendations

Adjacent to the creation of AI-powered user experiences, expect AI systems at your favorite streaming video and audio sites to make better and more personalized recommendations for you. You're used to Amazon, Disney+, Netflix, or recommending shows based on your past viewing habits; in most instances, those recommendations are based on shared actors or genres. With AI, providers can go beyond that by analyzing a whole range of behaviors to determine seemingly unrelated shows or playlists you're apt to like. Thanks to AI, your favorite streaming service will know what you like and dislike—maybe better than you do!

Improving Digital Assistants

The use of digital assistants has been increasing in recent years, both in the home (such as Amazon's Alexa, Apple's Siri, and the Google Assistant) and in businesses. To date, those assistants have not been very "smart," typically capable only of answering basic questions and performing basic tasks on command.

Integrating advanced AI technology into these systems will make them significantly more useful. Imagine a not-too-distant version of Alexa that knows when you come home, can sense what kind of mood you're in, and selects the proper music for your mood. Or it knows that you're interested in a particular news story or topic and feeds you new stories as they develop.

NOTE As I write this, Apple just announced that they're incorporating OpenAI into their Siri digital assistant and Amazon is rumored to soon announce a subscription-only version of Alexa that is AI-powered. The merging of AI with now-decades-old digital assistant technology is happening.

On the business front, envision a chat assistant in the bottom corner of a website that doesn't just provide canned answers to common questions but can actually respond to questions in real time, just like a real human support person.

Customers won't be able to tell whether they're conversing with a human or a chatbot, which benefits both the business and its customers.

Managing Messages

If an AI-powered chatbot can interact with users in real time, why not employ personal chatbots to answer your phone calls, email messages, and texts? This is particularly appealing if you're inundated with messages either at home or at work; let an AI assistant manage all your inboxes, respond to those messages it can, and route to you only those messages to which you need to personally respond. It will be like having your own personal assistant on your computer or phone.

Improving Healthcare

The medical field is employing AI in a number of different ways, all beneficial to patients.

Physicians benefit from AI systems that ingest relevant patient information, compare it to existing data (including patient records, lab results, and data from clinical trials), and make instant and accurate diagnoses. The AI models can also devise extremely detailed and personalized treatment plans that have more positive health outcomes for patients.

Physicians can also use AI to perform delicate procedures where even the slightest error could be life-threatening. When programmed correctly and allowed to learn over time, an AI-powered robotic surgical system can be more precise than a surgeon and virtually error-free.

(And in case you think this latter application is a futuristic dream, know that the Smart Tissue Autonomous Robot—STAR—has already performed laparoscopic surgery without any human guidance whatsoever.)

For individuals, AI technology can help people better manage their health and wellness, as well as understand physician advice and instructions. AI can also catch errors that might develop when treatment spans multiple physicians or clinics, such as multiple prescriptions that shouldn't be taken with one another. That sort of coordination is difficult with traditional manual systems but is a snap for AI-based systems.

NOTE Learn more about using AI in healthcare in Chapter 11, "Using AI for Health and Wellness."

Enhancing Learning

AI is helping students learn more and learn faster by developing learning plans personalized to each individual. Consider the vast amounts of data available on student performance and learning styles and how AI can analyze and extract actionable insights to improve learning efficiency. Thanks to AI-based learning systems, students can learn at their own pace and focus on those areas where they need more work.

Augmenting Creativity

Today's AI models are already capable of creating short stories, poetry, images, and songs. Many media sites are using AI to write news stories and blog posts. Fans and some artists are using AI to create new artwork. Companies are using AI to create pleasant-sounding background music for phone systems and commercials.

Going forward, AI-created art will get better—more human-like and more creative. Writers, artists, and musicians are learning how to use AI to assist them in their work, generating new ideas, exploring new styles, and developing a new type of creative process that merges human creativity with machine output.

NOTE Learn more about using AI for writing in Chapter 4, "Using AI to Find the Right Words." Learn more about using AI for art in Chapter 7, "Using AI to Create Art and Images."

Making Your Life Easier

Here's the bottom line about all these current and potential AI benefits: AI will make all our lives easier. We'll become more productive, more effective, and less bothered by menial tasks. Our lives will be more enjoyable and safer. AI is already changing our world for the better and will continue to do so, in ways we cannot fully imagine. But risks abound.

Understanding the Potential Risks of AI

Just as AI promises numerous potential benefits, it also comes with risk. Will AI really make your life better—or will it negatively impact your life and livelihood? Again, it all depends on what you do and how AI develops.

AI Can Spread Misinformation

AI is just a tool. It does what users ask it to do. If someone prompts an AI system to produce a picture of a giraffe flying a helicopter, AI will do it. The initiators of that prompt can then use that image in whatever way they want.

Thus, we come to a real-world issue concerning the use of AI content: mischievous or malicious individuals can use AI to create blatant falsehoods, either in words or visuals, and then spread those falsehoods over social media and other channels. AI-generated text, images, and videos can be particularly convincing, especially as AI models continue to improve. If someone wants to convince people that a giraffe can fly a helicopter, a photorealistic image of that scenario can be very persuasive.

Realistic but false text, images, audio, and videos are called *deepfakes*. In the past, people have used image editing programs such as Adobe Photoshop to manually manipulate images and create deepfakes. Today, AI image generators can do the job better and faster with just a few simple prompts.

Say, for example, you wanted to conduct a smear campaign against a neighbor you don't particularly like. You can feed an AI image generator a picture of your neighbor and prompt it to create a photorealistic image of that neighbor burning trash on their lawn. You could then take this very real-looking picture to your neighborhood association and try to get your neighbor in trouble.

In this same fashion, celebrity deepfakes are popular. Take a popular actress, tell the AI image generator to create a picture of said actress sans clothing, and—voilà!—you have a ready-made pornographic image ready for distribution on the Internet.

This sort of AI-powered manipulation can also be used for political and propaganda purposes. We've already seen deepfake photos purporting to show people doing things they didn't really do, deepfake videos purporting to show events that didn't really happen, and deepfake phone calls impersonating politicians saying things they didn't really say. AI can make these deepfakes extremely convincing—so convincing that voters could be swayed to change their vote from one candidate to another.

NOTE AI-created deepfakes make it difficult for people to determine what's real and what's not. To learn how to spot faked AI content, read ahead to the "How to Spot AI in the Wild" section later in this chapter.

In addition, AI can be used to spread false information over social media. Most social media platforms use AI algorithms to decide what shows up in users' feeds.

Manipulate that algorithm just a bit, and you can fill peoples' feeds with political falsehoods and biased viewpoints. That could be dangerous for any functioning democracy.

Even though the Federal Communications Commission (FCC) recently outlawed AI-generated political robocalls and major tech companies signed an accord to prevent AI from being used to disrupt elections, AI-powered misinformation remains a major short-term and long-term threat to elections in the United States and abroad. FBI Director Christopher Wray recently warned about foreign adversaries using AI technology to influence U.S. elections, saying that AI makes it "easier for both more and less-sophisticated foreign adversaries to engage in malign influence."

If nothing else, the threat of AI-generated deepfakes could cause people to question even legitimate stories and images. If you can't tell what's real and what's fake, what can you believe?

AI Can Be Biased

AI results are based on the data fed into large language models. The more data, the better the results.

Equally important to the *quantity* of data available is the *quality* of that data. In AI, as in most things, it's a garbage in, garbage out type of situation. Bad data will result in unreliable AI models.

Because AI relies on the data it's fed, biased data can be a significant problem. Remember, most AI models get data by scraping content from the Internet. Unfortunately, there's a lot of flawed or biased content on the Internet, and those characteristics can be absorbed into an AI model.

Bias can infiltrate AI systems in a number of ways. AI can ingest training data that reflects historical or social prejudices. It can include training data that includes biased human decisions and use data that either over- or underrepresents specific groups, thus reinforcing existing biases. It can even treat opinions or obvious jokes in the training data the same as it does hard facts.

In addition, AI can exhibit the biases of the people who develop its algorithms. As AI researcher Olga Russakovsky notes, "AI researchers are primarily people who are male, who come from certain racial demographics, who grew up in high socioeconomic areas, primarily people without disabilities." That creates a very specific worldview that is, to some extent, exhibited in AI output.

For all these reasons, AI content today often exhibits the same biases that exist in our society at large. Without conscious upfront programming, AI is likely to perpetuate those biases in the decisions it makes.

Consider, as an example, a company's use of AI to vet job candidates. If an AI model reflects a society's bias against specific ethnic or racial groups, a company will continue to hire fewer people from those groups.

Similarly, AI-powered speech recognition software can fail to understand certain accents and dialects because the generally white male researchers don't speak that way. This can cause problems for an AI chatbot trying to understand or respond to questions from customers of certain backgrounds.

As another example, consider AI-generated images. Given the gender and race bias present in today's AI systems, if you ask an AI tool to create an image of a businessperson, what are the odds that it will show a white male and not, perhaps, a female of color? (Pretty good; see Figure 2.1, the result of a single such prompt with DeepAI's AI Image Generator.)

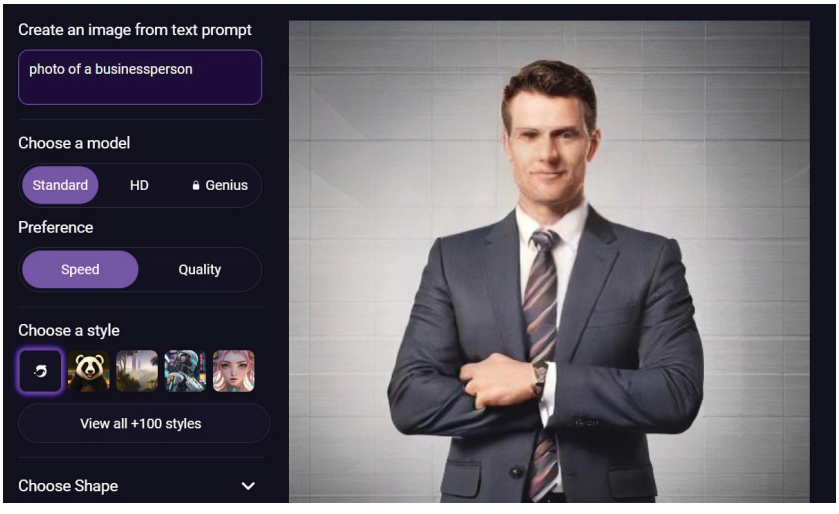

FIGURE 2.1

The stereotypical image generated by the prompt, ***photo of a businessperson****. (Image generated by DeepAI's AI Image Generator.)*

AI models can also reinforce society's historical age bias, especially in employment. This is particularly concerning given the use of AI-powered recruitment systems; if the algorithms used by these systems are biased toward younger candidates, older job candidates may be unfairly excluded from consideration for some jobs.

Guarding against all forms of bias is essential in creating trustworthy AI content. Otherwise, AI will increasingly exhibit those biases, both good and bad, that exist in our society today.

AI Can Invade Your Privacy

Here's a major concern of AI critics today: AI is a major threat to our personal privacy, and they will only grow.

Think back to Chapter 1, "Artificial Intelligence: What It Is and How It Works." Do you remember where and how AI models get all the data they use to train and learn?

The answer is that AI gets its data from you and me and everyone around us. Most of the data that's been fed into AI large language models has been scraped off the public Internet. That means not only website content but also social media posts, online messages, and other communications between unsuspecting individuals.

That's right, your friendly neighborhood AI model is based at least in part on your own thoughts and words, as well as those of your friends and neighbors. And the models have obtained your information without asking you permission. If it's out there on the Internet, the thinking goes, it's free for the taking. It might be different if the content is behind a paywall or on a private site that requires registration or permission. But anything that's out there publicly, the AI companies say, is there for the taking.

That includes content that isn't actually on the Internet but has been supplied online—conversations you've had with chatbots, chats you've had with friends and family, and questions you've asked on support sites.

To be fair, AI large language models don't target your individual data per se; instead, they incorporate it and data from millions of other people into their models. It's not using your data against you to do harm, as a scammer would, but it's still using your data without your permission.

NOTE Separate from the ingestion of large amounts of personal data for generative AI, predictive AI often uses your individual data to make personal recommendations. That's a different issue, and one to which you probably consented (via terms of service) when you signed up for a given streaming service or online store.

Despite numerous data privacy laws on the books, few if any such regulations explicitly protect your data privacy from AI. Some regulations have been

proposed, but neither the United States nor the EU have enacted laws that cover AI's use of personal data. That leaves your data out there for the taking by any AI large language model that wants to use it.

That's not a good thing.

AI Will Replace Some Jobs

With every new technological age comes some degree of change and displacement. The industrial age eliminated many formerly manual factory jobs. The automotive age displaced workers in the horse and buggy industry. The rise of the Internet resulted in job losses in traditional media and communications companies. This sort of change is inevitable.

Don't be surprised, then, if the biggest near-term impact of artificial intelligence technology is a significant loss of jobs. Companies large and small are looking to AI to help them improve their productivity, which means replacing expensive human workers with cheaper, less-demanding, more efficient AI systems. For these companies, "improved productivity" means fewer employees, which means layoffs—sometimes for even the most seasoned workers.

Now, many employers will couch this scenario as letting AI take over repetitive jobs so they can "repurpose" employees to higher-value tasks. While that is a possible scenario, it's equally possible and perhaps more probable that many employees displaced by AI either won't have the necessary skills for those higher-value jobs or that those jobs won't exist at all. While the impact of AI will differ from company to company (and industry to industry), it's likely to have a net negative impact on the human workforce.

What industries will be most impacted by the AI revolution? AI is likely to have an effect across the board, but in particular, anticipate job losses in the following sectors:

- Agriculture, with AI-powered robots automating many manual tasks, such as planting and harvesting, especially on larger farms
- Finance and banking, with AI automating both customer-facing and back-office jobs
- Healthcare, with AI assisting or replacing many scheduling and back-office functions
- Legal services, with AI taking over contract generation and management
- Manufacturing, with AI-powered robots replacing factory workers

- News media, with newspapers and websites using AI to generate articles and posts
- Transportation, with self-driving vehicles eliminating human drivers to transform the trucking and rideshare industries

How big will this AI-powered job disruption be? Goldman Sachs estimates that generative AI could eventually replace up to 300 million jobs worldwide, with many occupations experiencing a 25 to 50 percent job loss. This would be a huge disruption to the job market—and to the way of life for hundreds of millions of workers.

Unlike the industrial revolution, which primarily impacted manual or blue-collar workers, the AI revolution is likely to also affect higher-paid white collar workers. That will be a major difference from previous technology-based changes and a big concern for skilled workers everywhere.

It's not all doom and gloom, however. On the plus side, Goldman Sachs predicts that artists, computer system analysts, HR managers, legal professionals, mental health professionals, surgeons, teachers, writers, and those in leadership roles are less likely to be replaced by AI because of the need for human judgment and creativity in those roles. In addition, there is already a huge demand for jobs programming and training AI systems.

Will your job be one of those lost to AI? Perhaps, and even if not, many of your coworkers will be impacted. Prepare to be disrupted.

NOTE I take issue with Goldman Sachs' prediction that AI will not affect writers. I used to write blog posts for a number of websites, up to a dozen or so posts a month. In recent months, that work has dwindled to next to nothing. It seems that many of the companies for which I used to write wanted lower-cost content and AI filled the bill. Instead of paying for my expert writing, they opted to go with AI's free content, which is apparently good enough for their purposes. My side writing income has pretty much evaporated, and AI is to blame. (Thank you, AI!)

AI Will Make Mistakes

AI constantly makes mistakes—or in AI parlance, hallucinates. We all must verify its output. If we try to rely too much on AI, especially for mission-critical tasks, we will be disappointed when things go wrong, which they will. Witness AI-powered self-driving cars that get into accidents because of faulty or less-intelligent AI systems, or AI image generators that give people six fingers and a missing ear.

Today's AI systems will make mistakes. Putting all our trust in said systems, at least at this point in time, is ill advised. If you rely completely on AI and AI isn't perfect, the decisions you make based on that AI may be flawed. Likewise, if you're using AI to manage operations or systems, you may experience system interruptions if AI gets some of the data wrong.

AI will get better and more reliable, but it's not there yet, wishful thinking aside.

AI Uses Significant Resources

AI is a resource- and power-hungry technology. Today's increasingly larger AI models require vast amounts of power, both in terms of electricity and computing power. AI models need many fast and powerful CPUs and GPUs, vast amounts of data storage capacity, fast and reliable Internet connections, and lots and lots of electricity to run it all.

Unfortunately, none of these items are cheap or limitless. AI is an expensive technology, which is why so many large models are the provenance of today's large tech titans, such as Amazon and Microsoft, that have the financial and other means to pull it off.

Looking just at AI's electricity needs, one expert calculated that by 2027, the AI sector will consume between 85 and 135 terawatt hours per year. To put that in perspective, that's about half a percent of all global electricity consumption. That's massive—and increasing daily.

At some point there may not be enough available resources to power all the AI systems currently being developed. What do AI companies do if there's a chip shortage or a lack of storage or not enough electricity to go around? Or, equally likely, if the costs of these resources rise to unaffordable levels? The ability of the AI industry to grow may be constrained by resource availability and pricing.

In addition, all the resources that power AI have a major impact on the environment. The energy usage alone contributes significantly to fossil fuel usage and the resulting climate change. AI is not in the least bit environmentally friendly.

NOTE These are just the known risks of today's AI. Experts have additional reservations about AI's future impact, which you can read more about in Chapter 13, "The Future of AI."

WHO IS LEGALLY RESPONSIBLE FOR AI?

Here's an interesting question. In the event of harm caused by AI—a self-driving car that runs amok and kills a pedestrian, for example—who is legally responsible? Is it even possible to hold AI systems responsible for their actions?

This is a complex question where the answer is far from clear. Do we hold responsible the company that developed the AI model? Or the company that sold that particular AI? Or the one that used it in their application (such as the automotive manufacturer that built and sold the self-driving car)? Or do we hold the AI's programmer responsible? Or is it the fault of the individual using that AI?

Establishing the legal liabilities of AI systems is imperative but challenging. When something goes wrong with such a system, some person or some entity needs to be held responsible—doesn't it? Can we hold a computer algorithm legally responsible for its actions? Who pays the price when something goes wrong?

Legal experts have been wrangling about this one for some time now with no apparent conclusions. While I have no idea how this one will shake out, I do predict that a lot of legal hours will be billed over this issue.

How to Spot AI in the Wild

I talked earlier in this chapter about how AI can be and is being used today to write text, create images, and more. Unfortunately, that means that AI can be used to write stories that spread lies and propaganda or create images that represent scenes that never took place. The AI-generated content looks so real and reads so naturally that it's difficult to tell it from the real thing.

How, then, can you keep from being fooled by fake content? How can you identify AI in the wild?

How to Identify AI-Written Text

Many, many companies are using AI to create content for their blogs, social media feeds, and websites. AI content is increasingly popular because it's free or low cost; companies don't have to pay a real human writer to write it.

AI-written content can sometimes be good. It can appear well-written. It can be informative.

On the other hand, AI-written content can sometimes be poorly written; it can read just a little "off." And, worst-case scenario, it can contain incorrect information or even deliberate misinformation.

When examining written content, you find on the web or elsewhere, look for these signs that it may be AI-generated:

- **Incorrect information:** AI systems are often trained on limited data sets that don't contain precise information. In this scenario, AI might "guess" at an answer and guess incorrectly. In addition, misinformation deliberately spreads falsehoods that are often easily identified.
- **Controversial opinions presented as facts:** While human propagandists can also couch falsehoods as facts, AI systems do it better. Malicious actors are using AI to spread misinformation, so if you see something especially controversial, question its authorship.
- **Outdated information:** AI systems are often trained on data sets that contain older information. References in a given article that are several years old could signal that it may be AI-generated from information that isn't current.
- **Repetitive words and phrases:** Many AI models have a limited vocabulary and continually reuse those words and phrases they know.
- **Tone of voice:** AI writing tends to be drier and, dare I say, more robotic. Humans tend to write more conversationally and informally.

All that said, today's most advanced AI models can write text that is difficult to distinguish from human-written text. Because of these advancements, it's becoming more and more difficult to determine which text is written by a human and which by AI. If you can't tell the difference between AI and human text, you're not alone.

Then how can you identify text that was generated by AI? The best piece of advice is to trust your instincts. If a piece of information doesn't seem right, you should look for another source—ideally one you can trust. Always go with a trusted source over a random article from an unknown website.

NOTE Some companies, including OpenAI, are working on embedding watermarks in their AI-generated text, typically in the form of specific word patterns. This will help experts better identify text that was written by AI systems.

AI TEXT DETECTORS

Want to find out if a given article or piece of text is AI-generated? Several websites offer AI text detection functionality. They examine various features of a piece of text and determine, with a fair amount of accuracy, whether that text was generated by a human being or an AI engine. The most popular of these AI text detectors include

- AI Text Classified (https://freeaitextclassifier.com)
- Copyleaks (https://copyleaks.com/ai-content-detector)
- QuillBot (https://quillbot.com/ai-content-detector)
- Scribbr (www.scribbr.com/ai-detector)
- ZeroGPT (www.zerogpt.com)

As I explain later in this chapter, many educators are using these tools to help detect AI-generated homework and papers from their less-than-completely-honest students. You can use them the same way.

How to Identify AI-Generated Photos and Images

AI-generated images are often more dangerous than AI-generated text. It's the old adage of a picture being worth a thousand words; we tend to believe things we can see with our own eyes—even if those images are manipulated.

Some individuals create AI-generated images for their own amusement. Some create AI-generated images for profit. And some malicious actors create AI-generated images to try to fool people like you and me.

Fake AI-generated images can be used to try to influence public opinion. They can be used to try to influence voters in an election. They can be used just to confuse people and stir up trouble.

Whatever the goal, we collectively need to be aware of these fake images and do our best to identify and avoid them. Given the highly realistic quality of some of these images, however, that can be difficult.

How, then, can you tell an AI-generated image from a real one? Here are some tips:

- **Too many—or not enough—fingers:** For some reason, today's AI image generators have problems with human hands. Some AI generated images show people with four fingers, some with six, and some, like the one in Figure 2.2, with some bizarre arrangement of fingers that bear no resemblance to real-

ity. Always check the hands and fingers (and other limbs) in a photo; if something's obviously not right, it's probably AI generated.

FIGURE 2.2

A not-very-human looking human hand generated by AI. (Image generated by Microsoft Image Creator from the prompt "human hands.")

- **Unnatural body proportions and parts:** Similar to the hands and fingers thing, AI doesn't always get body proportions right. Ears might be slightly misplaced, larger, or smaller than they should be. Faces might be oddly asymmetrical. Legs and arms might be thicker or thinner than is physically possible. If it doesn't look right, it's probably been poorly constructed or manipulated.
- **Bad hair:** I'm not talking about messy hair or a bad part. AI often has trouble with all the details in human hair. Hair might appear blurred or have unusual changes in texture. It might look wrong on a head, like a bad wig. Even little issues, like looking too thick or too thin, can be a sign of AI manipulation.
- **Overly rendered appearance:** AI will sometimes "over render" the details on a face or other object, making it look unnaturally sharp, especially compared to other elements or the image background. It's not a natural look.
- **Weird or missing details:** AI doesn't always get the details right. You can sometimes find surprising errors when you zoom in to a high-resolution image. Look for things in the background that shouldn't be there, distinct elements blending weirdly into one another, items that don't quite match up, and other

things that don't make sense. AI's generated reality doesn't always reflect our real world.

- **Unusual backgrounds:** AI-generated images sometimes get foreground elements right but do odd things to the background. Look for unusual textures, unnaturally repetitive patterns, or glossy effects. Another telltale sign is a blurry or airbrushed background.
- **Poor architecture, furniture, and accessories:** AI can make little mistakes that really stand out, especially with buildings and rooms. Look for oddly curved walls, sloping ceilings, misaligned steps, and such. A chair might be missing a leg or a coffee table might have too many legs. Consider minor elements in the image, such as coffee mugs, purses, jewelry, and the like; AI often gets the size wrong or has them hanging in mid-air, defying the law of gravity. It's almost as if these details are an afterthought for the AI models.
- **Nonsense text:** Look for any items with text within the image, such as newspapers, books, and posters. More often than not, AI generates nonsense words and letters for these elements, as shown in Figure 2.3.

FIGURE 2.3

Look closely at the newspaper; those aren't real words. Also, the woman has three legs and a very odd-looking left hand. (Image generated by PIXLR AI Image Generator from the prompt "woman reading a newspaper")

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