LEARNING MADE EASY

Marketing with AI

for dummies®

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Revolutionize marketing with AI from the ground up

Propel personalization with dynamic content and targeting

Enhance performance through AI automation

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Marketing with AI

by Shiv Singh

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Published by: **John Wiley & Sons, Inc.,** 111 River Street, Hoboken, NJ 07030-5774, www.wiley.com

Published simultaneously in Canada

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Library of Congress Control Number: 2024944407

ISBN 978-1-394-23719-7 (pbk); ISBN 978-1-394-23721-0 (ePDF); ISBN 978-1-394-23720-3 (epub)

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Introduction

Technology can revolutionize our lives in unimaginable ways. Many people don't remember life before e-mail, the World Wide Web, mobile phones, and video streaming. Work routines often rely heavily on laptops, wireless Internet, and search engines. The transformations driven by artificial intelligence (AI) fall into this same category of technological shifts but, arguably, will be more dramatic than any of the other shifts that came before.

When ChatGPT 3.0 launched in November 2022, AI moved to the forefront of everyday technology use. ChatGPT quickly became one of the fastest-growing apps in history, marking a pivotal shift in the use of AI in everyday life.

Every marketing sub-function — annual planning, strategy, research, campaign development, ad production, media planning, analytics, CRM — stands poised for a transformation with the advent of AI. Marketers will copilot every activity with AI, leading to more insightful, creative, personalized, and impactful marketing than ever before.

About This Book

Discussing technological transformations in broad terms can feel abstract. In this book, you can find out how AI's impact on everyday lives is becoming increasingly tangible and personal, and what that means for your work in marketing.

Marketing with AI For Dummies breaks down the implications of using AI for marketing into digestible pieces, making the subject accessible to any marketer. It provides definitions, frameworks, concepts, case studies, and practical guidance to translate AI's vast potential into actionable strategies for your business.

And although the world of AI is changing rapidly, the pace at which it gets incorporated into the marketing ecosystem is slower, meaning that the core concepts, strategies, frameworks, and practical guidance are more timeless than you may initially think.

Here are some conventions that I use throughout this book and what they mean:

- *Italicized* words or phrases are terms that I define for you in the surrounding text.
- Web addresses appear in `monofont`. If you're reading a digital version of this book on a device connected to the Internet, note that you can click the web address to visit that website, like this: `www.dummies.com`.
- In several chapters, I point out what I consider to be best marketing practices with the words ***Best Marketing Practice*** in bold and italics.

To make the content of *Marketing with AI For Dummies* more accessible, I divided it into six parts:

- **Part 1: Getting Started with AI and Marketing.** This part lays the historical and contextual foundation for AI. It also traces the evolution of AI from its mythological roots to modern-day applications, covering significant milestones such as the development of the Turing test, machine learning, and generative AI.
- **Part 2: Exploring Fundamental AI Structures and Concepts.** In this part, I identify some of the best use cases for AI in marketing, evaluate various tools, and introduce some of the risks you may face when integrating AI into your workflow.
- **Part 3: Using AI to Know Customers Better.** This part discusses AI's ability to deliver personalized experiences to customers, tailoring content and advertisements to individual consumers, and enhancing customer engagement. You can examine AI-driven technologies, such as chatbots, and how they can contribute to enhanced customer satisfaction.
- **Part 4: Transforming Brand Content and Campaign Development.** This part explores the role of AI in generating creative content. It discusses how to prompt the AI tools to create content effectively and identifies which tools can help you produce high-quality content efficiently and at scale. You can read about AI's impact on advertising, including how to run effective A/B testing with the latest AI technologies, develop stronger SEO programs, and localize content using AI.
- **Part 5: Targeting Growth Marketing and Customer Focus with AI.** This part covers AI's integration into growth marketing, focusing on optimizing campaigns, improving customer experiences, and enhancing operational efficiency. It also emphasizes the importance of ethical guidelines, responsible use, and strategic integration into business operations. Additionally, the part addresses ethical, legal, and privacy concerns, providing principles for responsible AI use in marketing.

» **Part 6: The Part of Tens.** In this part, you can find a list of ten things to avoid in AI marketing and ten developments that I predict are coming for the marketing world while it begins using AI more commonly.

Foolish Assumptions

Whether you're a chief marketing officer at a Fortune 500 company, a junior marketer in a small business, an agency executive working with marketers, or wearing several hats (including the marketing hat) in your business, this book is for you. The only real assumptions I make about you are that you're interested in AI and how it can be used in marketing, and some best practices for doing so.

Icons Used in This Book

Throughout this book, icons in the margins highlight certain types of valuable information that call out for your attention. Here are the icons that you may encounter and a brief description of each.

TIP

The Tip icon marks tips and shortcuts that you can use to make working with AI in your marketing efforts easier.

REMEMBER

Remember icons mark the information that's especially important to know. To siphon off the most important information in each chapter, just skim through these icons.

TECHNICAL STUFF

The Technical Stuff icon marks information of a highly technical nature that you can normally skip over unless you want to get some nonessential info on the subject.

WARNING

The Warning icon tells you to watch out! It marks important information that may save you headaches, including issues such as ethical missteps to avoid or common mistakes in execution that you can steer clear of.

Beyond the Book

In addition to all the AI-marketing information and guidance that you can find in this book itself, you get access to even more help and information online at Dummies.com. Check out this book's online Cheat Sheet by going to www.dummies.com/ and searching for "Marketing with AI For Dummies Cheat Sheet."

Where to Go from Here

The chapters in this book cover all the critical facets of marketing with AI. Each part builds on the previous one, providing a comprehensive road map for navigating the AI-driven transformation of the marketing landscape. However, you don't have to read the book from cover to cover. You can dip into chapters that address different AI-related questions that you have while you incorporate AI into your marketing efforts. Check out the Table of Contents to identify the subjects most important to you, and dive in!

1

Getting Started with Marketing with AI

IN THIS PART . . .

Trace AI's evolution from myth to modern business tool.

Discover how businesses have applied AI in marketing, customer service, legal, and other functions.

Consider frameworks for integrating AI into your marketing efforts.

IN THIS CHAPTER

- Tracking AI from conception to fruition
- Watching machines fool people and beat the experts
- Seeing advanced AI capabilities in everyday life

Chapter 1
A Brief History of AI

To fully grasp the role of artificial intelligence (AI) in business, I begin by helping you trace its fascinating history. This background exploration not only illuminates AI's vast advancements, but also highlights its utility in business and marketing.

The earliest conceptions of artificial intelligence date back to Greek mythology, where Talos — an 8-foot-tall giant constructed of bronze — stood guard over the island of Crete to protect it from pirates and other invaders. Talos would throw boulders at ships and patrol the island each day. As the legend goes, Talos was eventually defeated when a plug near his foot was removed, allowing the *ichor* (blood of the gods) to flow out from the single vein in his body.

From that point forward, tales of automated entities flourished in mythology, captivating the minds of scientists, mathematicians, and inventors. Modern science and technology have realized some of these mythological concepts through recent advancements. In this chapter, I introduce you to those advancements, including the Turing test, machine learning, expert systems, and generative AI.

Early Technological Advances

Scientists trace the dawn of automation back to the 17th century and the invention of the *pascaline*, a mechanical calculator. Constructed by French inventor Blaise Pascal between 1642 and 1644, this groundbreaking device featured a *controlled* *carry mechanism* that facilitated the arithmetic operations of addition and subtraction by effectively carrying the 1 to the next column. This calculator worked especially efficiently when dealing with large numbers. Following in Pascal's footsteps, Wilhelm Leibniz, a German mathematician, invented a calculator in 1694 that expanded upon the concept of the pascaline by enabling all four basic arithmetic operations — addition, subtraction, multiplication, and division (not just addition and subtraction). These devices first offered a glimpse into the potential for mechanical reasoning.

Fast-forward to the early 1800s, and you encounter the Jacquard system, developed by Joseph-Marie Jacquard of France, which used interchangeable punched cards to dictate the weaving of cloth and the design of intricate patterns. These punched cards laid the groundwork for future developments in computing. Near the mid-1800s, British inventor Charles Babbage unveiled the first computational device known as the *analytical engine*. Employing punch cards, this machine could perform a variety of calculations involving multiple variables, and it featured a reset function when it completed its task. Importantly, it also incorporated temporary data storage for more advanced computations — a feature crucial for any artificial intelligence (AI) system.

By the late 1880s, the development of the tabulating machine — designed by American inventor Herman Hollerith specifically to process data for the 1890 U.S. Census — helped the development of AI reach another milestone. This electro-mechanical device utilized punched cards to store and aggregate data, effectively enhancing the analytical engine's storage capabilities through the inclusion of an accumulator. Remarkably, modified iterations of the tabulating machine remained operational until as recently as the 1980s.

Alan Turing and Machine Intelligence

Many people regard Alan Turing, a British mathematician, logician, and computer scientist, as the founding father of theoretical computer science, and he paved the way for further AI breakthroughs. During World War II, he served at Bletchley Park, the United Kingdom's codebreaking establishment; and he played a pivotal role in decrypting messages encoded by the German *Enigma machine* (a code-generating device). Scholars and historians credit his work at Bletchley Park with both shortening the war and saving millions of lives.

Turing's key innovation at Bletchley was the development of the *Bombe,* a machine that significantly accelerated the code-breaking process used to decode messages from the Enigma machine. The Enigma used a series of rotating disks to transform plain text messages into encrypted cipher text. The complexity of this encryption device and the coded messages it generated came in part from the fact that Enigma users changed the machine's settings daily. The United Kingdom and all the Allies found cracking the code within the 24-hour window — before the settings were altered again — exceedingly difficult. The Bombe automated the process of identifying Enigma settings, sorting through various potential combinations far more rapidly than any human could. This automation enabled the British to regularly decode German communications.

REMEMBER

Although the details of this code-breaking device remained classified for many years, the Bombe stands as one of the earliest examples of technology outperforming humans in tasks that traditionally required human intelligence, executing them more efficiently and accurately.

The Turing Test in 1950

Soon after World War II, in a paper published in 1950 titled "Computing Machinery and Intelligence," Turing introduced the idea of defining a standard by which we can call a machine intelligent. He designed the experiment (now called the *Turing test*) to answer the question, "Can machines think?" The fundamental premise of the experiment said that if a computer can participate in a dialogue with a human in such a way that an observer can't tell which participant is human and which is computer, then you can consider that computer intelligent.

Turing's test proposed that a human evaluator assess dialogues between a human and a machine that was designed to generate human-like responses. The evaluator knows that one of the participants is a machine, but not which one. To eliminate any bias from vocal cues, Turing proposed that the test giver limit the interactions to a text-only medium. If the evaluator found it challenging to distinguish between the machine and the human participant, the machine passed the test. The evaluation didn't focus on the correctness of the machine's answers, but on how indistinguishable its responses were from a human's. In fact, the test's criteria didn't make any reference to the accuracy of the answers.

The Turing test: 1960s and beyond

In 1966, well after Alan Turing's death, German-American scientist Joseph Weizenbaum created ELIZA, the first program that some say appeared to pass the Turing test. Many sources refute that it could pass the Turing test, but it was technically capable of making some humans believe that they were talking to human operators. The program worked by studying a user's typed comments for keywords and then executing a rule that transformed the user's comments, resulting in the program returning a new sentence. In effect, the ELIZA, like many programs since then, mimicked an understanding of the world without actually possessing any real-world knowledge.

Taking this development a step further, in 1972, Kenneth Colby, an American psychiatrist, created PARRY, which he described as ELIZA with attitude. Experienced psychiatrists tested PARRY in the early 1970s by using a variation of the Turing test. They analyzed text from real patients and from computers running PARRY. The psychiatrists correctly identified the patients only 52 percent of the time, a statistic consistent with random guessing.

REMEMBER

Even to this day, the Turing test gives the world a concise, easily understandable method of assessing whether a piece of technology has intelligence or not. By limiting the test to text-based interactions that require natural language query (conversational English), anyone could easily understand the nature of the test when Turing first introduced it. And by separating out the accuracy of the response from the question of identification, it focused the test on evaluating what truly makes humans more human.

TIP

Computers have advanced by leaps and bounds since the time that Alan Turing first proposed the Turing test. But consider this timeline regarding the ongoing development of intelligent technology:

- **As recently as 2021,** chatbots that much of the world had access to struggled to pass the Turing test consistently. Services such as Siri from Apple, Alexa from Amazon, and Google's Assistant could speak to us in natural language but would quickly get stumped with some of the most basic of questions. For example, the question "Describe yourself using only colors and shapes?" may prompt the answer "Okay, I found this on the web for describing colors and shapes. . . ."
- **As of 2023,** major chat interfaces from the likes of OpenAI, Google, and others, can pass the Turing test. This quick change shows how technological advancements in the field of AI happen in fits and starts, with so much having changed dramatically in just 24 months.

The Dartmouth Conference of 1956

The academic community often considers the Dartmouth Conference of 1956 as the birth of artificial intelligence (AI) as a distinct field of research. Held during the summer of that year at Dartmouth College in Hanover, New Hampshire, the conference brought together luminaries from various disciplines — computer science, cognitive psychology, mathematics, and engineering — under one roof for an extended period of six to eight weeks. Organized by computer scientists John McCarthy, Marvin Minsky, and Nathaniel Rochester, and mathematician Claude Shannon, the conference aimed to explore "every aspect of learning or any other feature of intelligence," as stated in the original proposal for the conference.

The Dartmouth Conference of 1956 was groundbreaking for several reasons. It was more than just a summer gathering of intellectuals; it was a seminal event that shaped the trajectory of AI as we know it today. It provided the name, the initial community, the research directions, and the momentum that have fueled decades of innovation in AI.

Specifically, the conference

- **Coined the term *artificial intelligence* (AI):** The conference gave a name to a field that had been, up until that point, loosely defined and interdisciplinary across mathematics, computer science, engineering, and related fields. John McCarthy, one of the organizers, was credited with introducing the term, which helped in shaping the future direction of research by providing a focal point around which scholars could rally.
- **Served as a catalyst for future research:** It set the research agenda for decades to come. During the conference, participants engaged in deep discussions, brainstorming sessions, and even early-stage experiments on foundational topics in the AI field. The participants aimed to discover whether they could program machines to simulate aspects of human intelligence, with research topics such as
  - Problem-solving
  - Symbolic reasoning
  - Neural networks
  - Language understanding
  - Learning machines

  They designed programs to play chess, prove mathematical theorems, and generate rather simplistic sentences.
- **Provided a collaborative platform for interdisciplinary research:** Researchers who may not have otherwise crossed paths now engaged in meaningful dialogues, forging relationships that would lead to significant collaborations in the years and decades to come. This interdisciplinary nature was crucial for tackling the complex problem of simulating human

intelligence, which requires insights from various fields such as psychology, neuroscience, linguistics, operations research, economics, and more.

- **Attracted critical funding and attention to the developing field of AI:** The visibility and credibility gained from this event led to increased investment in AI research from both governmental and private sectors. This financial backing was essential for the development of labs, academic programs, and research projects that propelled the field forward.

Machine Learning and Expert Systems Emerge

Following the Dartmouth Conference (see the preceding section), two key subfields emerged that became the cornerstones of artificial intelligence — machine learning and expert systems. The *expert systems* were rule-based methods that drew upon predefined sets of instructions established by human beings. *Machine learning* (initially referred to as *self-teaching computers*) represented a radical shift in approach that aimed to build systems that learned from data, rather than by following scripted rules.

Meeting machine learning

Arthur Samuel, an American pioneer in the field of computer gaming and artificial intelligence, officially coined the term *machine learning* in 1959. Unlike traditional computing methods that relied on explicit instructions for every operation, machine learning focused on developing algorithms capable of producing results from existing data. These algorithms use statistical techniques to identify patterns, make decisions, or predict future outcomes based on those patterns.

In the 1960s, the Raytheon Company made a significant contribution to the field by developing an early learning machine system that could analyze various types of data, including sonar signals, electrocardiograms, and speech patterns. The machine used a form of *reinforcement learning*, a subset of machine learning in which the algorithm identifies optimal actions through trial and error. In essence, the system was rewarded for correct decisions and punished for incorrect ones. Humans operated and fine-tuned the system, and those humans pushed a goof button to flag and correct any errors. These corrections enabled the machine to adapt and improve its performance over time.

Critical standout features of machine learning include the following:

- **Adaptability:** Instead of relying on humans to manually code solutions to problems, machine learning enables computers to come up with their own solutions by examining large sets of data. This freedom has led to groundbreaking applications across various sectors. For example, machine learning algorithms power large language models and computer vision systems that enable computers to identify and understand objects and people in images and videos.

  These systems can

  - Generate human-like text.
  - Recognize thousands of objects and filter spam e-mails with incredible accuracy.
  - Transcribe and translate human speech in real time.

  I discuss each of these topics in detail in subsequent chapters (Chapters 4 and 5, for example).

- **Efficient and scalable solutions:** Because developing specific algorithms for each recognition, filtering, or generating task would be both costly and time-consuming, machine learning offers a far more efficient and *scalable solution* (which means that the solution can perform tasks on huge data sets without having a corresponding increase in costs). The data-driven approach to finding solutions has revolutionized the way technologists approach and solve problems, and it has automated complex tasks (such as reviewing social media content for hate speech) that computer scientists once considered beyond the reach of computers.

REMEMBER

Because machine learning continues to evolve, experts expect its impact and relevance across various fields to continue to grow. See Chapter 2 for examples of the effects on areas of business.

Examining expert systems

In the late 1960s, many researchers focused on capturing *domain-specific knowledge*, which laid the foundation for *expert systems*, meaning technology systems or computers that played the role of experts in a specific domain such as drug discovery. Those expert systems were the precursors to modern-day AI systems that now exist. By the 1970s, researchers created some of the first expert systems, including DENDRAL (designed for chemical mass spectrometry) and MYCIN (aimed at diagnosing bacterial infections). These expert systems captured knowledge and reasoning capabilities from human experts to offer advice as diverse as simple medical diagnoses and exploration strategies for mineral mining.

The systems worked well in narrow subject domains, but the cost and difficulty of maintaining and scaling their rule-based knowledge effectively limited their usefulness. Research and development of expert systems went something like this:

- **In the late 1970s,** a thawing of the AI Winter (see the following section) supported the broader adoption of expert systems in various industries, including healthcare, finance, and manufacturing. During this period, computer scientists developed specific tools to help expand their expert systems while those systems' usefulness grew exponentially.
- **By the 1990s,** the limitations of expert systems became very evident, particularly their inability to learn from their processing experiences or strengthen their performance without external programming. This shortcoming led to a decline in the development of stand-alone expert systems, and computer scientists began to integrate them into larger, more complex computer systems.
- **More recently,** ideas at the heart of expert systems have seen a resurgence of sorts, although they often appear in hybrid forms that incorporate machine learning (see the preceding section) and other data-driven techniques. Although not many corporations create and use stand-alone expert systems (after their limitations on explicit knowledge and brittleness became more apparent), the core concepts of capturing and applying human expertise in computational models remains integral to AI. And broader AI solutions incorporate expert systems as a complement to other advanced methods (such as machine learning and natural language processing, or NLP; see the section "More AI Developments in the 1980s" later in the chapter for more).

REMEMBER

The introduction of expert systems was an important moment in the history of artificial intelligence. Expert systems development pioneered knowledge engineering techniques that computer scientists still use to train AI systems today. But most AI tools now depend more on machine learning (which is much more scalable, or easily expanded), rather than explicitly programmed rules that require human involvement.

An AI Winter Sets In

After the hype of artificial intelligence in the 1960s and early 1970s, the limitations of early AI became clear, leading to a period of reduced funding and interest, which was coined the *AI winter.* The Lighthill report, compiled for the British Science Research council and originally published in 1973, helped bring about this AI winter. The report criticized the lack of practical applications and questioned the potential of AI research. These criticisms led to reduced government funding in several countries, including the United Kingdom.

But even during this period of reduced funding, research continued that advanced core technical capabilities such as probabilistic reasoning, neural networks, and intelligent agents. Even in this period of reduced optimism, diligent computer scientists still drove key advancements before machine learning unlocked its next era of rapid progress in the 1980s.

TIP

The lessons of the AI winter of the 1970s have continued to inform the ethics debate around realistic versus overhyped claims in the AI world. This debate matters more than ever while differing opinions on the promise and perils of AI collide around the world.

The Stanford Cart: From the '60s to the '80s

You can't have a conversation about the history of artificial intelligence (AI) without discussing the story of the Stanford Cart, a remote controlled four-wheeled cart first developed in the 1960s that later came equipped with a camera and onboard computer for vision and control. This seminal project in the history of AI and robotics was one of the earliest attempts to create a self-driving vehicle. The cart, which was developed over a 20-year period, served as a platform for research into computer vision, path planning, and autonomous navigation.

The evolution of the Stanford Cart project not only mirrored the evolution of AI and robotics over its 20-year time span, but it also shaped the trajectory of AI and robotics, as well. The project remains a testament to the enduring impact of focused research and iterative development in the field of AI.

The stages of the Stanford Cart's evolution include

- **Remote control:** In the 1960s, the first version of the cart simply allowed for remote control capabilities. Starting the cart's development this way made perfect sense because the cart served as a research platform for investigating the problem of controlling a Moon rover remotely from Earth.
- **Self-navigation:** The early 1970s saw the cart get a camera and an onboard computer, which allowed it to navigate an obstacle course by taking photographs and then computing the best path forward based on those images. Later in the 1970s, more advanced computer vision algorithms allowed the cart to navigate complex environments more quickly while the image processing capabilities accelerated as well.

- **Real-time complex navigation:** By the 1980s, the cart could follow roads and avoid obstacles in real time, largely due to improvements in both hardware and software, especially in broad increases of computer processing power. This capability marked a significant milestone in the development of autonomous vehicles, which entered commercial production decades later. Increased processing power allowed for faster and more complex computations, while advanced algorithms enabled the cart to make split-second decisions.

REMEMBER

As one of the first practical applications of AI in robotics, the Stanford Cart demonstrated how computers could interact with the real world. The computer components that allowed visual input and analysis demonstrated the potential benefits of sophisticated image recognition and scene interpretation. And today's robotics and autonomous systems for path planning and obstacle avoidance use various algorithmic techniques that the Stanford Cart first introduced.

More AI Developments in the 1980s

Arguably, the 1980s stand as a critical decade in the development of artificial intelligence, characterized by groundbreaking advancements in various subfields, especially in machine learning, neural networks, and natural language processing. This period saw foundational advancements that set the stage for the AI technologies of today.

This decade's significant developments include

- **Backpropagation:** The introduction and popularization of the backpropagation algorithm for training neural networks. Before backpropagation, training complex neural networks took a lot of computational power and was less effective. The *backpropagation algorithm* streamlined the training process by efficiently calculating the error between predicted and actual outcomes, and then distributing this error back through the network to adjust the *internal weights* (which effectively transform the input data within the network's hidden layers). This innovation facilitated the training of multi-layer neural networks and paved the way for more complex architectures and applications.
- **Deep learning:** A subfield of machine learning that uses neural networks that have three or more layers. Researchers such as Geoffrey Hinton, Yann LeCun, and Yoshua Bengio (operating at various universities) were instrumental during this period because they laid the groundwork for this subfield. These layered neural networks found use in a range of applications, from image and voice recognition to natural language understanding, which would later fuel innovations in automating various business processes.