

# The Genesis of Artificial Intelligence: From Turing to Large Language Models

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EXPLORING THE EVOLUTION OF ARTIFICIAL INTELLIGENCE

Ava Zaslavsky  
DIGITAL REVOLUTION | TULANE UNIVERSITY

## **The Genesis of Artificial Intelligence: From Turing to Large Language Models**

The advent of artificial intelligence (AI) can be traced back to the visionary work of Alan Turing, a brilliant mathematician and computer scientist whose pioneering ideas laid the foundation for the field. Turing's contributions transcended mere invention; he actively pondered the philosophical implications of intelligent machines and advocated for a future where humans and machines could collaborate harmoniously.

### ***Turing's Pioneering Work and the Turing Test***

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

### ***Turing's Optimistic Vision for AI***

Turing himself held a more optimistic view about the potential of AI. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread." This optimistic vision was in stark contrast to the prevailing societal attitudes of the time, which were often colored by fear and apprehension towards intelligent machines.

### ***Societal Attitudes Towards AI in Turing's Time***

Despite Turing's pioneering role, societal attitudes towards AI during his time were often shaped by science fiction narratives that depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. Films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer. These portrayals, while imaginative, reflected the deep-seated fears and uncertainties surrounding the emergence of a technology that challenged the boundaries of human intelligence.

### ***The AI Winters***

The excitement and optimism surrounding the early developments in AI were followed by periods of disillusionment and diminished funding, known as the "AI winters." Throughout the 1970s and 1980s, the field struggled to live up to the inflated expectations and the limitations of the available technology became more apparent. The AI winters were characterized by a slowdown in progress, reduced research funding, and a growing skepticism about the field's ability to deliver on its promises.

One of the primary factors that led to the AI winters was the inability of early AI systems to live up to the grandiose claims and predictions made by researchers and the media. In the 1960s and 1970s, there was a surge of enthusiasm and optimism surrounding the potential of AI, with some researchers and pundits suggesting that machines would soon be able to match or surpass human intelligence in a wide range of tasks. However, the reality proved to be much more complex, as the limitations of the existing algorithms and computing power became increasingly apparent.

For example, early AI systems struggled with natural language processing, computer vision, and other tasks that humans perform effortlessly. The difficulties in replicating the human brain's remarkable ability to learn, reason, and make sense of the world led to a growing sense of disappointment. Funding agencies and the public began to question the viability of AI, leading to significant cutbacks in research budgets and a cooling of interest in the field.

The AI winters had a profound impact on the perception of AI within the scientific community and the public. The cycles of hype and disappointment eroded trust in the field, and many began to view AI as an overhyped technology that had failed to live up to its promises. This shift in perception made it more challenging for researchers to secure funding and gain support for their work, further exacerbating the problems faced by the AI community.

Despite the setbacks, the AI winters also served as a catalyst for important advancements in the field. During these periods of reduced funding and public interest, researchers were forced to take a more pragmatic and incremental approach to problem-solving, focusing on more manageable and realistic goals. This led to the development of new techniques and algorithms that would ultimately lay the groundwork for the resurgence of AI in the 1990s and beyond.

### ***The Evolving Perception of AI***

As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship, reflecting the evolving societal attitudes towards this transformative technology.

Over time, as AI technologies have become more advanced and integrated into our daily lives, societal perceptions have undergone a significant shift. In the early days of AI, the public's understanding of the technology was often shaped by sensationalized media portrayals and science fiction narratives that depicted intelligent machines as a threat to humanity. This led to a general sense of anxiety towards AI, with many individuals viewing it as a disruptive and potentially dangerous force.

However, as AI has become more prevalent and its applications more tangible, the public's perception has begun to evolve. Many people now recognize the potential benefits of AI, such as its ability to enhance productivity, improve decision-making, and provide personalized experiences. This shift in attitude has been driven, in part, by the increased visibility and normalization of AI in our daily lives, as we interact with AI-powered technologies like virtual assistants, chatbots, and personalized recommendation systems.

At the same time, concerns about the potential downsides of AI, such as job displacement, privacy violations, and the perpetuation of biases, have also gained traction. This has led to a more nuanced and balanced understanding of the technology, with the public recognizing both the opportunities and the challenges presented by AI.

The evolving perception of AI is also reflected in the media's portrayal of the technology. While earlier films tended to depict AI as a threat, more recent cinematic representations have offered a more complex and multifaceted exploration of the human-AI relationship. Movies like "Her" and "Ex Machina" have delved into the emotional and philosophical implications of AI, exploring themes of companionship, identity, and the nature of consciousness. These narratives have helped to humanize AI, fostering a more empathetic and thoughtful engagement with the technology.

In addition to the media's influence, the growing awareness of the need for responsible AI development and deployment has also shaped societal perceptions. Concerns about algorithmic bias, data privacy, and the potential for AI to be used for malicious purposes have sparked discussions about the importance of transparency, accountability, and ethical guidelines in the AI industry. This has led to the emergence of various initiatives and organizations dedicated to promoting responsible AI practices.

As AI becomes more ubiquitous, fostering open discussions about responsible development and ensuring transparency in algorithms will be crucial. This will require collaboration between researchers, developers, policymakers, and the general public to establish ethical guidelines, address societal concerns, and promote the responsible deployment of AI technologies.

### ***The Contributions of the ENIAC Women***

The advent of electronic computing further propelled the field of AI forward, with figures like John Mauchly playing a central role in its development. Mauchly's work on the ENIAC, one of the earliest electronic computers, demonstrated the potential of these machines to perform complex calculations and simulations. The ENIAC's impact on AI research cannot be overstated, as it provided researchers with unprecedented computing power and capabilities.

However, the true heroes of the ENIAC story were the six women programmers who were responsible for making the machine operational. These women - Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Meltzer, Fran Bilas, and Ruth Lichterman - were hired as "computers," tasked with solving complex mathematical equations by hand. When the ENIAC was completed in 1946, these women were the ones who programmed the machine, manually setting thousands of switches and cables to execute the necessary calculations.

The contributions of the ENIAC women were crucial to the development of AI. By programming the first electronic computer, they laid the groundwork for the field of computer science and the eventual emergence of artificial intelligence. Their work demonstrated the ability of machines to perform tasks that were previously the domain of human intelligence, paving the way for further advancements in AI. Despite their pivotal role, the ENIAC women's contributions were largely overlooked and underappreciated at the time. It wasn't until the 1980s that their story began to be told, and it wasn't until 1997 that they were finally inducted into the Women in Technology International Hall of Fame.

The story of the ENIAC women is a testament to the often-overlooked contributions of women in the history of technology and AI. Their work paved the way for the development of modern computing and artificial intelligence, and their legacy continues to inspire and inform the field today.

### ***The Microchip, Transistor, and the Evolution of Human-Computer Interfaces***

The invention and development of the microchip and transistor marked a significant milestone in the history of AI, ushering in a new era of miniaturization and computational efficiency. These technologies revolutionized computing by enabling the creation of smaller, faster, and more powerful devices. In the realm of AI, microchips and transistors facilitated the development of neural networks and other machine learning algorithms, paving the way for advancements in areas such as natural language processing and image recognition.

The evolution of human-computer interfaces (HCIs) has also played a pivotal role in shaping the relationship between humans and AI. From early command-line interfaces to modern graphical user interfaces (GUIs), HCIs have evolved to become more intuitive and user-friendly, enabling widespread adoption of AI technologies. Media portrayals of AI during this period often emphasized the potential for AI to enhance human productivity and convenience, painting a picture of a future where humans and machines work together harmoniously.

The advancements in microchips, transistors, and human-computer interfaces have been crucial in the development of artificial intelligence. Microchips and transistors have enabled the creation of more powerful and efficient computing systems, which in turn have facilitated the advancement of machine learning algorithms and neural networks. Meanwhile, the evolution of HCIs has made AI technologies more accessible and user-friendly, fostering a closer collaboration between humans and machines.

### ***Apple's Influence on the Consumerization of AI***

Apple has played a significant role in the consumerization and development of artificial intelligence (AI) technologies, with its products bringing AI into the hands of millions of people around the world. Under the leadership of Steve Jobs, Apple championed the development of user-friendly technologies that seamlessly integrate AI into everyday life.

The introduction of the iPhone in 2007 and the subsequent integration of the Siri virtual assistant in 2011 were pivotal moments in this process. Siri leveraged natural language processing and machine learning to enable voice-based interactions, allowing users to perform a variety of tasks simply by speaking to their devices. This marked a significant shift in societal perceptions of AI, as it became a tangible and accessible technology that could enhance daily life.

Beyond Siri, Apple has continued to integrate AI-powered features across its product lineup, including facial recognition in the iPhone's FaceID, image recognition in the Photos app, and personalized recommendations in the App Store and Apple Music. These advancements have not only enhanced the user experience but have also shaped societal perceptions of AI as a technology that can augment and improve daily life.

Media portrayals of AI during this period often focused on the potential for Apple's products to enhance consumer experiences, with Siri becoming a household name and a symbol of the integration of AI into everyday life. This has helped to shift societal feelings about artificial intelligence, portraying it as a user-friendly and beneficial technology, rather than a distant or threatening concept.

Apple's focus on aesthetically pleasing and intuitive designs has been a key factor in this shift, as the company has demonstrated how AI can be seamlessly incorporated into devices that are widely adopted by consumers. This has helped to demystify AI and make it more accessible and approachable to the public. As Apple continues to invest in and expand its AI initiatives, it is likely to play an increasingly influential role in shaping the public's perception and adoption of artificial intelligence technologies.

### ***The Evolving Landscape of Large Language Models***

In recent years, the rapid advancements in large language models (LLMs) have significantly transformed the field of artificial intelligence (AI). Companies like Google, OpenAI, and DeepMind have pushed the boundaries of AI by developing increasingly sophisticated LLMs, such as GPT (Generative Pre-trained Transformer), that can understand and generate human-like language with remarkable accuracy. These LLMs are trained on vast amounts of text data, allowing them to develop a deep understanding of language, context, and nuance. As a result, they have demonstrated impressive capabilities in tasks ranging from natural language processing and generation to question answering and text summarization.

The media's representation of these models has often been a mix of fascination and uneasiness, with some hailing their potential to revolutionize communication and others expressing concerns about their potential to perpetuate biases and spread misinformation. The rapid advancement of LLMs has sparked debates about the ethical implications of these technologies, as their ability to generate human-like text raises questions about the potential for misuse, such as the creation of fake news or the exploitation of personal data.

### ***The Normalization of AI in Society***

The rapid advancements in LLMs and other AI technologies have led to a gradual normalization of AI in our daily lives. Chatbots, virtual assistants, and language translation services powered by LLMs have become ubiquitous, seamlessly integrating into our personal and professional routines. This widespread adoption has helped to demystify AI, making it more accessible and familiar to the general public.

In recent years, AI has become increasingly prevalent in various sectors, from healthcare and finance to transportation and entertainment. AI-powered systems are now used for tasks such as medical diagnosis, stock trading, autonomous driving, and content recommendation. This widespread adoption has further contributed to the normalization of AI in society, as people interact with these technologies on a regular basis.

As AI technologies have become more integrated into our daily lives, the public's perception of the technology has gradually shifted from one of fascination and apprehension to a more nuanced understanding of its capabilities and limitations. The normalization of AI has helped to break down the perception of it as a distant or futuristic concept, making it feel more tangible and relatable to the average person.

### ***Shifting Societal Perceptions of AI***

As AI technologies have become more prevalent, societal perceptions have also evolved. The increasing familiarity with AI has led to a more nuanced understanding of its capabilities and limitations. Many individuals now recognize the potential benefits of AI, such as its ability to enhance productivity, improve decision-making, and provide personalized experiences. However, concerns about AI's impact on employment, privacy, and the perpetuation of biases remain, leading to ongoing discussions and debates about the ethical and societal implications of these technologies.

In recent years, there has been a growing awareness of the need for responsible AI development and deployment. Concerns about algorithmic bias, data privacy, and the potential for AI to be used for malicious purposes have sparked discussions about the importance of transparency, accountability, and ethical guidelines in the AI industry. This has led to the emergence of initiatives and organizations dedicated to promoting responsible AI practices, such as the Partnership on AI and the AI Now Institute.

### ***The Way Forward: Responsible AI Development***

As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can ensure AI becomes a transformative force for humanity.

The development of AI has been a fascinating odyssey, shaped by brilliant minds like Alan Turing and fueled by advancements in computing power, specifically the rise of big data, cloud computing, and artificial neural networks. These technologies enabled the creation of large language models, capable of processing massive amounts of information and generating human-quality text.

Societal perceptions of AI have undergone a significant shift since the pioneering work of Alan Turing in the mid-20th century. Turing's groundbreaking ideas on machine intelligence and the potential for computers to engage in human-like communication laid the foundation for the field of AI. However, early public perceptions of AI were often shaped by science fiction narratives, which tended to portray AI as a threat to humanity. Over time, as AI technologies became more advanced and integrated into our daily lives, societal attitudes have evolved. There is now a growing recognition of the potential benefits of AI, such as its ability to assist in medical diagnosis, enhance scientific research, and streamline various industries. At the same time, there are also increasing concerns about the potential risks and ethical implications of AI.

## Appendix

*My first step was to use ChatGPT to create an outline that would encompass the most important factors when considering artificial intelligence. I used the following prompt.*

**Prompt:** I am in a class titled digital revolution and we were assigned to use a large language model to create a 2500–3000-word essay responding to the prompt: "Describe the development of artificial intelligence from Alan Turing to large language models". Please create an outline and include details about Alan Turing, Claude Shannon, John Mauchly (and his time at Bletchley park), the importance of the microchip and transistor, Grace Hopper (and the women of ENIAC), Human-computer interfaces, the internet and the World Wide Web, Steve Jobs and Apple, and Google.

I knew that I wanted my paper to reflect societal changes in perceptions of AI, so I asked GPT to include more on societal shifts in the outline.

### I. Introduction

- A. Brief overview of the digital revolution
- B. Importance of artificial intelligence (AI) in shaping this revolution
- C. Thesis statement: The development of AI from Alan Turing to large language models has been a multifaceted journey, influenced by key figures, technological advancements, and societal perceptions shaped by the media.

### II. Alan Turing and the Foundation of AI

- A. Overview of Alan Turing's contributions
- B. Turing's concept of the Turing Test and its significance in AI
- C. Turing's work during World War II at Bletchley Park and its impact on AI development
- D. Societal perceptions of AI during Turing's time and its portrayal in the media

### III. Claude Shannon and Information Theory

- A. Introduction to Claude Shannon and his work
- B. Shannon's contributions to the mathematical theory of communication
- C. Implications of Shannon's work on AI research and development
- D. Media portrayal of AI in the context of Shannon's contributions

### IV. John Mauchly and the ENIAC

- A. Introduction to John Mauchly and the ENIAC
- B. Mauchly's role in the development of early computing technology
- C. The significance of the ENIAC and its impact on AI research
- D. Societal attitudes towards AI as influenced by early computing technologies and media representations

### V. The Importance of the Microchip and Transistor

- A. Overview of the invention and development of the microchip and transistor
- B. How microchips and transistors revolutionized computing and AI
- C. Examples of AI applications made possible by microchips and transistors
- D. Media portrayal of AI advancements enabled by microchips and transistors

## VI. Grace Hopper and Women in Computing

- A. Introduction to Grace Hopper and her contributions to computing
- B. Hopper's work on programming languages and compiler development
- C. The role of women in the early days of computing and AI
- D. Media representation of women in computing and its influence on societal perceptions of AI

## VII. Human-Computer Interfaces

- A. Introduction to human-computer interfaces (HCIs)
- B. Evolution of HCIs from early command-line interfaces to graphical user interfaces (GUIs)
- C. Impact of HCIs on AI development and user interaction with AI systems
- D. Media portrayal of AI in relation to human-computer interfaces and user experience

## VIII. The Internet and the World Wide Web

- A. Overview of the development of the internet and the World Wide Web
- B. Role of the internet in facilitating AI research and communication
- C. Examples of AI technologies enabled by the internet and the Web
- D. Media coverage of AI breakthroughs facilitated by the internet and the Web

## IX. Steve Jobs, Apple, and the Consumerization of AI

- A. Introduction to Steve Jobs and the founding of Apple
- B. Apple's contributions to AI through products like Siri and machine learning technologies
- C. Impact of Apple's approach to user-friendly technology on AI adoption
- D. Media portrayal of AI in consumer products and its influence on public perception

## X. Google and the Era of Large Language Models

- A. Introduction to Google and its role in AI research
- B. Development of large language models like GPT (Generative Pre-trained Transformer) by Google and others
- C. Implications of large language models on AI capabilities and applications
- D. Media representation of large language models and societal reactions to their potential impact

## XI. Societal Perceptions and Media Influence on AI

- A. Analysis of how media representations have shaped societal perceptions of AI throughout history
- B. Examination of common themes and narratives in media coverage of AI
- C. Impact of societal perceptions on AI research, regulation, and adoption
- D. Consideration of ethical implications and the need for responsible media coverage of AI

## XII. Conclusion

- A. Recap of the key points discussed in the essay



- B. Reflection on the interplay between technological advancement, societal perceptions, and media representation in the development of AI
- C. Final thoughts on the importance of fostering informed public discourse and ethical considerations in shaping the future of AI.

After receiving this outline, I asked GPT to create a 2,500-word essay based on it. I had low expectations but was curious to see how it would respond.

### Introduction

The digital revolution has been one of the defining phenomena of the modern era, reshaping nearly every aspect of human life. At the heart of this revolution lies artificial intelligence (AI), a field that has evolved dramatically since its inception. From the groundbreaking work of Alan Turing to the advent of large language models, AI has progressed in tandem with technological advancements, societal perceptions, and media representations. This essay traces the development of AI from its earliest origins to the present day, exploring the contributions of key figures, the significance of technological breakthroughs, and the influence of societal attitudes and media portrayals.

### Alan Turing and the Foundation of AI

The story of AI begins with Alan Turing, a brilliant mathematician and computer scientist whose pioneering work laid the groundwork for the field. Turing's contributions to AI are multifaceted, but perhaps his most famous concept is the Turing Test, a criterion for determining whether a machine exhibits human-like intelligence. Turing's work during World War II at Bletchley Park, where he played a crucial role in breaking German codes, also had a profound impact on AI development. Yet, despite his groundbreaking contributions, societal perceptions of AI during Turing's time were often shaped by fear and uncertainty, fueled by media portrayals of machines as potential threats to humanity.

### Claude Shannon and Information Theory

Another key figure in the development of AI is Claude Shannon, whose work in information theory laid the mathematical foundation for communication and computation. Shannon's insights into the fundamental principles of information transmission revolutionized the field of AI, providing a framework for understanding how machines could process and manipulate data. However, media representations of AI during this period often depicted it as a futuristic concept with both utopian and dystopian implications, reflecting the anxieties and aspirations of society at the time.

### John Mauchly and the ENIAC

The advent of electronic computing further propelled the field of AI forward, with figures like John Mauchly playing a central role in its development. Mauchly's work on the ENIAC, one of the earliest electronic computers, demonstrated the potential of these machines to perform complex calculations and simulations. The ENIAC's impact on AI research cannot be overstated, as it provided researchers with unprecedented computing power and capabilities. However, media coverage of AI during this era often sensationalized its potential dangers, echoing fears of technological unemployment and the loss of human autonomy.

### The Importance of the Microchip and Transistor

The invention and development of the microchip and transistor marked a significant milestone in the history of AI, ushering in a new era of miniaturization and computational efficiency. These technologies revolutionized computing by enabling the creation of smaller, faster, and more powerful devices. In the realm of AI, microchips and transistors facilitated the development of neural networks and other machine learning algorithms, paving the way for advancements in areas such as natural language processing and image recognition. Yet, media portrayals of AI during this period often oscillated between hype and

skepticism, with some heralding the dawn of a new technological age and others warning of the perils of unchecked technological advancement.

#### Grace Hopper and Women in Computing

The contributions of women to the field of AI have often been overlooked, but figures like Grace Hopper played a crucial role in its development. Hopper's work on programming languages and compiler development laid the groundwork for modern software engineering, while her advocacy for diversity and inclusion helped pave the way for future generations of female technologists. However, media representations of AI during this time often reinforced gender stereotypes, depicting women as less capable or knowledgeable than their male counterparts.

#### Human-Computer Interfaces

The evolution of human-computer interfaces (HCIs) has played a pivotal role in shaping the relationship between humans and AI. From early command-line interfaces to modern graphical user interfaces (GUIs), HCIs have evolved to become more intuitive and user-friendly, enabling widespread adoption of AI technologies. Media portrayals of AI during this period often emphasized the potential for AI to enhance human productivity and convenience, painting a picture of a future where humans and machines work together harmoniously.

#### The Internet and the World Wide Web

The development of the internet and the World Wide Web has transformed the way we interact with AI, enabling seamless communication and collaboration across geographic boundaries. The internet has become a vast repository of information, providing AI systems with access to vast amounts of data for training and learning. Media coverage of AI breakthroughs facilitated by the internet and the Web often highlighted the transformative potential of these technologies, painting a picture of a future where AI-powered solutions revolutionize every aspect of human life.

#### Steve Jobs, Apple, and the Consumerization of AI

The consumerization of AI has been driven in part by companies like Apple, whose products have brought AI into the hands of millions of people around the world. Figures like Steve Jobs played a central role in this process, championing the development of user-friendly technologies that seamlessly integrate AI into everyday life. Media portrayals of AI during this period often focused on the potential for AI to enhance consumer experiences, with products like Siri becoming household names.

#### Google and the Era of Large Language Models

In recent years, the development of large language models like GPT (Generative Pre-trained Transformer) by companies like Google has pushed the boundaries of AI even further. These models, trained on vast amounts of text data, have demonstrated remarkable capabilities in understanding and generating human-like language. Media representation of large language models has often been characterized by a mixture of fascination and apprehension, with some heralding their potential to revolutionize communication and others warning of their potential to perpetuate biases and misinformation.

#### Societal Perceptions and Media Influence on AI

Throughout its history, AI has been both shaped by and reflected in societal perceptions and media representations. From the early days of fear and uncertainty to the present day of excitement and anticipation, the portrayal of AI in the media has played a crucial role in shaping public attitudes and policy decisions. As AI continues to evolve and permeate every aspect of human life, it is essential that we engage in informed public discourse and ethical considerations to ensure that these technologies are used responsibly and for the benefit of all.

#### Conclusion

The development of AI from its earliest origins to the present day has been a complex and multifaceted journey, shaped by the contributions of key figures, technological advancements, societal attitudes, and media representations. From the groundbreaking work of Alan Turing to the advent of large language models, AI has evolved in response to changing societal needs and aspirations. As we stand on the cusp of a new era of AI innovation, it is essential that we approach these technologies with a critical eye and a commitment to responsible development and deployment. By fostering informed public discourse and ethical considerations, we can ensure that AI continues to serve as a force for good in the world.

This response surprised me slightly as it provided decent background information on all the categories on my outline. However, I knew that each paragraph would need to be more developed and include more details about the historical advancements that made large language models possible. I requested sources from ChatGPT and was suddenly received a message saying “Too many requests in 1 hour. Try again later.” I felt slightly annoyed and decided that it may be time to see how the other chatbots would respond.

I decided to tackle this paper by working section at a time and then testing the AI’s ability to create a comprehensive, clear, and well-written essay by combining all the paragraphs. I copied and pasted GPT’s first paragraph about Alan Turing into Gemini, with the request: “include more details about how Alan Turing felt about artificial intelligence, as well as relevant films that use the Turing Test that may have impacted societal views on AI”. This was the response:

The genesis of Artificial Intelligence (AI) can be traced back to the visionary mind of Alan Turing, a brilliant mathematician and computer scientist whose work serves as the cornerstone of the field. Turing's contributions transcended mere invention; he actively pondered the philosophical implications of intelligent machines.

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

Turing's wartime contributions at Bletchley Park, the UK's codebreaking center, further solidified his influence on AI. His work on the Enigma machine, a complex German cypher device, involved deciphering coded messages using techniques that laid the groundwork for early AI algorithms and machine learning. This practical application of theoretical concepts demonstrated the power of AI in real-world problem-solving.

However, despite Turing's pioneering role, societal attitudes towards AI during his time were often colored by fear and apprehension. Science fiction films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. These portrayals, while imaginative, fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer.

Turing himself, however, held a more optimistic view. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans

and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread."

~~Turing's tragic fate, however, cast a long shadow. Convicted of homosexuality in 1952, he was chemically castrated and ultimately took his own life two years later. This event further fueled anxieties about the potential consequences of AI, particularly when coupled with the dystopian visions presented in popular media.~~

In conclusion, Alan Turing's legacy in AI is a paradoxical one. He laid the groundwork for the field, both theoretically and practically, yet the public perception of AI during his time was largely shaped by fear.

While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship. As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. (word count 379)

I was surprised at how well Gemini reworked and expanded the paragraph. I then requested sources and Gemini was not able to list them out. After playing around a little bit, I found that Perplexity AI is the best for requesting citations as it links the articles that it uses at the top of the response. After refining the response from Google Gemini, I input it into Perplexity AI with this prompt: "Touch this up, it is an introduction to a paper about the development of AI from Turing to large language models. Also, please include more on what Turing thought AI would be capable of and overall societal feelings towards AI at the time Turing was alive". This was its response:

**"The Genesis of Artificial Intelligence: From Turing to Large Language Models**

The genesis of Artificial Intelligence (AI) can be traced back to the visionary mind of Alan Turing, a brilliant mathematician and computer scientist whose work serves as the cornerstone of the field. Turing's contributions transcended mere invention; he actively pondered the philosophical implications of intelligent machines.

**Turing's Pioneering Work and the Turing Test**

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

**Turing's Optimistic Vision for AI**

Turing himself held a more optimistic view about the potential of AI. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread."

### Societal Attitudes Towards AI in Turing's Time

However, despite Turing's pioneering role, societal attitudes towards AI during his time were often colored by fear and apprehension. Science fiction films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. These portrayals, while imaginative, fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer. Turing believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. He envisioned a future where the use of machines for learning and other purposes would be widespread, reflecting his optimistic outlook on the potential of AI.

### The Evolving Perception of AI

As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship, reflecting the evolving societal attitudes towards this transformative technology.

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This is when I decided how I was going to structure my essay. After playing around with the different chatbots, I concluded that the most efficient way to craft this essay would be by having Perplexity AI rewrite and expand the initial Chat GPT responses section by section, and then input the final product into a different chatbot to make sure the essay transitions nicely and makes sense chronologically.

My next step was to input the original GPT paragraph on the ENIAC and the women of ENIAC into Perplexity AI with this prompt: "Clean this up and include more about the women of ENIAC and the important role they played in developing artificial intelligence". This was its response:

"The advent of electronic computing further propelled the field of AI forward, with figures like John Mauchly playing a central role in its development. Mauchly's work on the ENIAC, one of the earliest electronic computers, demonstrated the potential of these machines to perform complex calculations and simulations. The ENIAC's impact on AI research cannot be overstated, as it provided researchers with unprecedented computing power and capabilities.

However, the true heroes of the ENIAC story were the six women programmers who were responsible for making the machine operational. These women - Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Meltzer, Fran Bilas, and Ruth Lichterman - were hired as "computers," tasked with solving complex mathematical equations by hand. When the ENIAC was completed in 1946, these women were the ones who programmed the machine, manually setting thousands of switches and cables to execute the necessary calculations.

The contributions of the ENIAC women were crucial to the development of AI. By programming the first electronic computer, they laid the groundwork for the field of computer science and the eventual emergence of artificial intelligence. Their work demonstrated the ability of machines to perform tasks that were previously the domain of human intelligence, paving the way for further advancements in AI.

Despite their pivotal role, the ENIAC women's contributions were largely overlooked and underappreciated at the time. The public demonstrations of the ENIAC focused on the machine's impressive capabilities, with little to no recognition of the women who made it possible. It wasn't until the 1980s that their story began to be told, and it wasn't until 1997 that they were finally inducted into the Women in Technology International Hall of Fame.

The story of the ENIAC women is a testament to the often-overlooked contributions of women in the history of technology and AI. Their work paved the way for the development of modern computing and artificial intelligence, and their legacy continues to inspire and inform the field today.

As the field of AI continues to evolve, it is important to recognize the diverse range of individuals who have contributed to its advancement. Figures like Grace Hopper, who developed the first compiler and pioneered the use of English-like programming languages, and Howard Aiken, who designed the Harvard Mark I computer, have also played crucial roles in the development of AI.

In conclusion, the women of ENIAC and other pioneering figures in the history of computing and AI have left an indelible mark on the field. Their contributions, often overlooked or underappreciated, have laid the foundation for the technological advancements we enjoy today.

As we continue to explore the frontiers of artificial intelligence, it is essential that we acknowledge and celebrate the diverse range of individuals who have made this progress possible.

Sources:

[1] Odetta Blog - The ENIAC Women. (2021, December 20). <https://odetta.ai/blogs/eniac-programmers-the-unsung-women-in-tech>

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[5] The Six Female Programmers Behind the ENIAC. (2022, March 22). All About Circuits. <https://www.allaboutcircuits.com/news/six-female-programmers-behind-eniac/>

Again, I was happy with the result. I thought that this response painted a nice picture of how sex discrimination led to the six women that worked on the ENIAC receiving much less praise and respect than they deserved.

I followed the same steps and asked Perplexity to rework the initial GPT paragraph about microchips and human-interfaces and include sources. This was the response:

The invention and development of the microchip and transistor marked a significant milestone in the history of AI, ushering in a new era of miniaturization and computational efficiency. These technologies revolutionized computing by enabling the creation of smaller, faster, and more powerful devices. In the realm of AI, microchips and transistors facilitated the development of neural networks and other machine learning algorithms, paving the way for advancements in areas such as natural language processing and image recognition. Yet, media portrayals of AI during this period often oscillated between hype and skepticism, with some heralding the dawn of a new technological age and others warning of the perils of unchecked technological advancement.

The evolution of human-computer interfaces (HCIs) has played a pivotal role in shaping the relationship between humans and AI. From early command-line interfaces to modern graphical

user interfaces (GUIs), HCIs have evolved to become more intuitive and user-friendly, enabling widespread adoption of AI technologies. Media portrayals of AI during this period often emphasized the potential for AI to enhance human productivity and convenience, painting a picture of a future where humans and machines work together harmoniously.

The advancements in microchips, transistors, and human-computer interfaces have been crucial in the development of artificial intelligence. Microchips and transistors have enabled the creation of more powerful and efficient computing systems, which in turn have facilitated the advancement of machine learning algorithms and neural networks. Meanwhile, the evolution of HCIs has made AI technologies more accessible and user-friendly, fostering a closer collaboration between humans and machines. These technological breakthroughs, coupled with the media's shifting narratives, have shaped the public's perception and understanding of AI's potential and challenges.

### Sources:

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I was happy with this paragraph as it explained how these inventions only pivoted the digital revolution through miniaturization of products, foreshadowing how technology would continue to advance. I found that a few links in the citations were not correctly hyperlinking to the corresponding pages, so I went in and changed the links listed in my sources. I wanted more of a focus on societal interpretations of artificial intelligence and how human-computer interfaces could impact these, so I asked Perplexity to expand on this area and this was its response:

The evolution of human-computer interfaces (HCIs) has played a pivotal role in shaping the relationship between humans and AI. As HCIs have become more intuitive, user-friendly, and personalized, they have facilitated a closer collaboration between humans and AI systems. This has enabled widespread adoption of AI technologies and painted a picture of humans and machines working together harmoniously.

The design of HCIs has focused on enhancing user experience, productivity, and trust in the technology. As HCIs have become more seamless and natural, incorporating technologies like voice, gesture, and augmented reality, the human-AI relationship has become even more immersive and integrated. This has fostered a positive perception of AI's capabilities and potential to enhance human lives.

Alongside the development of HCIs, societal views on AI have also shifted. Early media portrayals often oscillated between hype and skepticism, with some heralding the dawn of a new



technological age and others warning of the perils of unchecked AI. However, as HCIs have become more user-centric and AI has demonstrated its ability to augment human productivity and convenience, the public's perception has generally become more optimistic. This shift in societal views has further reinforced the collaborative nature of the human-AI relationship, paving the way for greater integration and acceptance of AI technologies in our daily lives.

"Human-computer interaction." Wikipedia, Wikimedia Foundation, 11 Apr. 2024, [en.wikipedia.org/wiki/Human%E2%80%93computer\\_interaction](https://en.wikipedia.org/wiki/Human%E2%80%93computer_interaction).

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I thought that this was a nice adjustment and that combining the previous two responses would help paint the picture that I wanted to encapsulate.

I then decided to go into a discussion of rework the GPT paragraph about Apple into perplexity. I wanted to explain how Steve Jobs' perfectionism and passions in both humanities and sciences played a large role in the long-term success of the company. I also wanted to focus on how Apple has made the concept of artificial intelligence less intimidating through inventions like Siri. This was my prompt: "Expand on this paragraph to explain how Apple has impacted the development of Artificial Intelligence with a focus on how Apple devices have shifted societal feelings about artificial intelligence".

Apple has played a significant role in the consumerization and development of artificial intelligence (AI) technologies, with its products bringing AI into the hands of millions of people around the world. Under the leadership of Steve Jobs, Apple championed the development of user-friendly technologies that seamlessly integrate AI into everyday life. The introduction of the iPhone in 2007 and the subsequent integration of the Siri virtual assistant in 2011 were pivotal moments in this process. Siri leveraged natural language processing and machine learning to enable voice-based interactions, allowing users to perform a variety of tasks simply by speaking to their devices.

Beyond Siri, Apple has continued to integrate AI-powered features across its product lineup, including facial recognition in the iPhone's FaceID, image recognition in the Photos app, and personalized recommendations in the App Store and Apple Music. These advancements have not

only enhanced the user experience but have also shaped societal perceptions of AI as a technology that can augment and improve daily life.

Media portrayals of AI during this period often focused on the potential for Apple's products to enhance consumer experiences, with Siri becoming a household name and a symbol of the integration of AI into everyday life. This has helped to shift societal feelings about artificial intelligence, portraying it as a user-friendly and beneficial technology, rather than a distant or threatening concept.

Apple's focus on aesthetically pleasing and intuitive designs has been a key factor in this shift, as the company has demonstrated how AI can be seamlessly incorporated into devices that are widely adopted by consumers. This has helped to demystify AI and make it more accessible and approachable to the public. As Apple continues to invest in and expand its AI initiatives, it is likely to play an increasingly influential role in shaping the public's perception and adoption of artificial intelligence technologies.

Sources:

<sup>1</sup> "What is the Impact of AI in Apple Products? - Apple Developer Forums." Apple Developer Forums, 23 Nov. 2023, [forums.developer.apple.com/forums/thread/741828](https://forums.developer.apple.com/forums/thread/741828).

<sup>2</sup> "Apple can only resist AI transparency for so long - Computerworld." Computerworld, 26 Feb. 2024, [www.computerworld.com/article/1612261/apple-can-only-resist-ai-transparency-for-so-long.html](https://www.computerworld.com/article/1612261/apple-can-only-resist-ai-transparency-for-so-long.html).

<sup>3</sup> "What is Apple's generative AI strategy? - VentureBeat." VentureBeat, 15 Feb. 2024, [venturebeat.com/ai/what-is-apples-generative-ai-strategy/](https://venturebeat.com/ai/what-is-apples-generative-ai-strategy/).

<sup>4</sup> "How Ai Is Shaping Future Of Human Computer Interaction - AI Essay Writer." Perfect Essay Writer, 2 Apr. 2024, [www.perfectessaywriter.ai/blog/how-ai-is-shaping-future-of-human-computer-interaction](https://www.perfectessaywriter.ai/blog/how-ai-is-shaping-future-of-human-computer-interaction).

I thought that this paragraph did a great job discussing how Apple integrated forms of artificial intelligence into their devices, making it seem more approachable than previous innovations. Further, I appreciated how the aesthetics of Apple devices played a large role in increasing accessibility and lessening stigma surrounding these new, revolutionary innovations. It took a few prompts to convey these ideas well, but I was eventually satisfied with the final product.

I then took the initial paragraph from Chat GPT about Google and imported it into Perplexity with the additional prompt: "Add more about how recent developments and technologies have normalized AI and how societal feelings of AI have shifted". I wanted to encompass how AI has been growing exponentially and consumers have started to utilize AI like never before. After making a few edits to the prompt, I finally got a response that I was content with:

### The Evolving Landscape of Large Language Models

In recent years, the rapid advancements in large language models (LLMs) have significantly transformed the field of artificial intelligence (AI). Companies like Google, OpenAI, and DeepMind have pushed the boundaries of AI by developing increasingly sophisticated LLMs, such as GPT (Generative Pre-trained Transformer), that can understand and generate human-like language with remarkable accuracy. These LLMs are trained on vast amounts of text data, allowing them to develop a deep understanding of language, context, and nuance. As a result, they have demonstrated impressive capabilities in tasks ranging from natural language processing and generation to question answering and text summarization. The media's representation of these models has often been a mix of fascination and apprehension, with some

hailing their potential to revolutionize communication and others expressing concerns about their potential to perpetuate biases and spread misinformation.

#### The Normalization of AI in Society

The rapid advancements in LLMs and other AI technologies have led to a gradual normalization of AI in our daily lives. Chatbots, virtual assistants, and language translation services powered by LLMs have become ubiquitous, seamlessly integrating into our personal and professional routines. This widespread adoption has helped to demystify AI, making it more accessible and familiar to the general public.

#### Shifting Societal Perceptions of AI

As AI technologies have become more prevalent, societal perceptions have also evolved. While initial reactions were often characterized by a mix of fascination and apprehension, the increasing familiarity with AI has led to a more nuanced understanding of its capabilities and limitations. Many individuals now recognize the potential benefits of AI, such as its ability to enhance productivity, improve decision-making, and provide personalized experiences. However, concerns about AI's impact on employment, privacy, and the perpetuation of biases remain, leading to ongoing discussions and debates about the ethical and societal implications of these technologies.

#### Citations

1. Bender, Emily M., and Alexander Koller. "Climbing towards NLU: On Meaning, Form, and Understanding in the Age of Data." Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics, 2020, pp. 5185–5198.
2. Bommasani, Raesetje, et al. "On the Opportunities and Risks of Foundation Models." arXiv preprint arXiv:2108.07258, 2021.
3. Floridi, Luciano, and Massimo Chiriatti. "GPT-3: Its Nature, Scope, Limits, and Consequences." Minds and Machines, vol. 30, no. 4, 2020, pp. 681–694.
4. Radford, Alec, et al. "Language Models are Unsupervised Multitask Learners." OpenAI blog, vol. 1, no. 8, 2019, p. 9.

**The last paragraph that I had to rework was the conclusion. I asked Gemini to rework the initial GPT conclusion with more of an overarching theme related to societal perceptions. This was its response:**

The development of AI has been a fascinating odyssey, shaped by brilliant minds like Alan Turing and fueled by advancements in computing power, specifically the rise of big data, cloud computing, and artificial neural networks. These technologies enabled the creation of large language models, capable of processing massive amounts of information and generating human-quality text. Societal perceptions of AI have also undergone a significant shift. Early anxieties, fueled by science fiction, have given way to a mix of hope and caution. As AI becomes increasingly integrated into our lives, there's a growing recognition of the potential benefits alongside concerns about job displacement, privacy, and ethical considerations. Moving forward, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a transformative force for humanity.

**I wasn't too impressed. I then imported Gemini's response into Perplexity AI and was happier with the result:**

## The Evolving Societal Perceptions of AI: From Turing to the Present Day

The development of AI has been a fascinating odyssey, shaped by brilliant minds like Alan Turing and fueled by advancements in computing power, specifically the rise of big data, cloud computing, and artificial neural networks. These technologies enabled the creation of large language models, capable of processing massive amounts of information and generating human-quality text.

### Societal Shifts in Perceptions of AI

Societal perceptions of AI have undergone a significant shift since the pioneering work of Alan Turing in the mid-20th century. Turing's groundbreaking ideas on machine intelligence and the potential for computers to engage in human-like communication laid the foundation for the field of AI.<sup>1</sup> However, early public perceptions of AI were often shaped by science fiction narratives, which tended to portray AI as a threat to humanity. Over time, as AI technologies became more advanced and integrated into our daily lives, societal attitudes have evolved. There is now a growing recognition of the potential benefits of AI, such as its ability to assist in medical diagnosis, enhance scientific research, and streamline various industries.<sup>2</sup> At the same time, there are also increasing concerns about the potential risks and ethical implications of AI, including job displacement, privacy violations, and the need for transparency in algorithmic decision-making.<sup>3</sup>

### The Way Forward: Responsible AI Development

As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a transformative force for humanity.<sup>4</sup>

Sources:

[^1] Turing, A. M. (1950). Computing Machinery and Intelligence. *Mind*, 59(236), 433-460.

[^2] Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W. W. Norton & Company.

[^3] Cath, C., Wachter, S., Mittelstadt, B., Taddeo, M., & Floridi, L. (2018). Artificial Intelligence and the 'Good Society': the US, EU, and UK approach. *Science and Engineering Ethics*, 24(2), 505-528.

[^4] Tegmark, M. (2017). *Life 3.0: Being Human in the Age of Artificial Intelligence*. Knopf.

At this point, I had successfully reworked individual paragraphs of the essay. I was happy with them individually, but now was the ultimate test of these large language models. I copied and pasted all of the individual paragraphs into one long paper and this was the result:

### From Perplexity on Alan Turing:

#### The Genesis of Artificial Intelligence: From Turing to Large Language Models

The genesis of Artificial Intelligence (AI) can be traced back to the visionary mind of Alan Turing, a brilliant mathematician and computer scientist whose work serves as the cornerstone of

the field. Turing's contributions transcended mere invention; he actively pondered the philosophical implications of intelligent machines.

#### Turing's Pioneering Work and the Turing Test

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

#### Turing's Optimistic Vision for AI

Turing himself held a more optimistic view about the potential of AI. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread."

#### Societal Attitudes Towards AI in Turing's Time

However, despite Turing's pioneering role, societal attitudes towards AI during his time were often colored by fear and apprehension. Science fiction films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. These portrayals, while imaginative, fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer. Turing believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. He envisioned a future where the use of machines for learning and other purposes would be widespread, reflecting his optimistic outlook on the potential of AI.

#### The Evolving Perception of AI

As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship, reflecting the evolving societal attitudes towards this transformative technology.

#### **From Perplexity on women of ENIAC, John Mauchly, and Grace Hopper:**

The advent of electronic computing further propelled the field of AI forward, with figures like John Mauchly playing a central role in its development. Mauchly's work on the ENIAC, one of the earliest electronic computers, demonstrated the potential of these machines to perform complex calculations and simulations. The ENIAC's impact on AI research cannot be overstated, as it provided researchers with unprecedented computing power and capabilities.

However, the true heroes of the ENIAC story were the six women programmers who were responsible for making the machine operational. These women - Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Meltzer, Fran Bilas, and Ruth Lichterman - were hired as "computers," tasked with solving complex mathematical equations by hand. When the ENIAC was completed in 1946, these women were the ones who programmed the machine, manually setting thousands of switches and cables to execute the necessary calculations.

The contributions of the ENIAC women were crucial to the development of AI. By programming the first electronic computer, they laid the groundwork for the field of computer science and the eventual emergence of artificial intelligence. Their work demonstrated the ability of machines to perform tasks that were previously the domain of human intelligence, paving the way for further advancements in AI.

Despite their pivotal role, the ENIAC women's contributions were largely overlooked and underappreciated at the time. The public demonstrations of the ENIAC focused on the machine's impressive capabilities, with little to no recognition of the women who made it possible. It wasn't until the 1980s that their story began to be told, and it wasn't until 1997 that they were finally inducted into the Women in Technology International Hall of Fame.

The story of the ENIAC women is a testament to the often-overlooked contributions of women in the history of technology and AI. Their work paved the way for the development of modern computing and artificial intelligence, and their legacy continues to inspire and inform the field today.

As the field of AI continues to evolve, it is important to recognize the diverse range of individuals who have contributed to its advancement. Figures like Grace Hopper, who developed the first compiler and pioneered the use of English-like programming languages, and Howard Aiken, who designed the Harvard Mark I computer, have also played crucial roles in the development of AI.

In conclusion, the women of ENIAC and other pioneering figures in the history of computing and AI have left an indelible mark on the field. Their contributions, often overlooked or underappreciated, have laid the foundation for the technological advancements we enjoy today.

As we continue to explore the frontiers of artificial intelligence, it is essential that we acknowledge and celebrate the diverse range of individuals who have made this progress possible.

### **From Perplexity on transistors, microchips, HUIs:**

The invention and development of the microchip and transistor marked a significant milestone in the history of AI, ushering in a new era of miniaturization and computational efficiency. These technologies revolutionized computing by enabling the creation of smaller, faster, and more powerful devices. In the realm of AI, microchips and transistors facilitated the development of neural networks and other machine learning algorithms, paving the way for advancements in areas such as natural language processing and image recognition. Yet, media portrayals of AI during this period often oscillated between hype and skepticism, with some heralding the dawn

of a new technological age and others warning of the perils of unchecked technological advancement.

The evolution of human-computer interfaces (HCIs) has played a pivotal role in shaping the relationship between humans and AI. From early command-line interfaces to modern graphical user interfaces (GUIs), HCIs have evolved to become more intuitive and user-friendly, enabling widespread adoption of AI technologies. Media portrayals of AI during this period often emphasized the potential for AI to enhance human productivity and convenience, painting a picture of a future where humans and machines work together harmoniously.

The advancements in microchips, transistors, and human-computer interfaces have been crucial in the development of artificial intelligence. Microchips and transistors have enabled the creation of more powerful and efficient computing systems, which in turn have facilitated the advancement of machine learning algorithms and neural networks. Meanwhile, the evolution of HCIs has made AI technologies more accessible and user-friendly, fostering a closer collaboration between humans and machines. These technological breakthroughs, coupled with the media's shifting narratives, have shaped the public's perception and understanding of AI's potential and challenges.

#### More on societal feelings and HUIs:

The evolution of human-computer interfaces (HCIs) has played a pivotal role in shaping the relationship between humans and AI. As HCIs have become more intuitive, user-friendly, and personalized, they have facilitated a closer collaboration between humans and AI systems. This has enabled widespread adoption of AI technologies and painted a picture of humans and machines working together harmoniously.

The design of HCIs has focused on enhancing user experience, productivity, and trust in the technology. As HCIs have become more seamless and natural, incorporating technologies like voice, gesture, and augmented reality, the human-AI relationship has become even more immersive and integrated. This has fostered a positive perception of AI's capabilities and potential to enhance human lives.

Alongside the development of HCIs, societal views on AI have also shifted. Early media portrayals often oscillated between hype and skepticism, with some heralding the dawn of a new technological age and others warning of the perils of unchecked AI. However, as HCIs have become more user-centric and AI has demonstrated its ability to augment human productivity and convenience, the public's perception has generally become more optimistic. This shift in societal views has further reinforced the collaborative nature of the human-AI relationship, paving the way for greater integration and acceptance of AI technologies in our daily lives.

#### Perplexity on Apple:

Apple has played a significant role in the consumerization and development of artificial intelligence (AI) technologies, with its products bringing AI into the hands of millions of people around the world. Under the leadership of Steve Jobs, Apple championed the development of user-friendly technologies that seamlessly integrate AI into everyday life. The introduction of the iPhone in 2007 and the subsequent integration of the Siri virtual assistant in 2011 were pivotal

moments in this process. Siri leveraged natural language processing and machine learning to enable voice-based interactions, allowing users to perform a variety of tasks simply by speaking to their devices.

Beyond Siri, Apple has continued to integrate AI-powered features across its product lineup, including facial recognition in the iPhone's FaceID, image recognition in the Photos app, and personalized recommendations in the App Store and Apple Music. These advancements have not only enhanced the user experience but have also shaped societal perceptions of AI as a technology that can augment and improve daily life.

Media portrayals of AI during this period often focused on the potential for Apple's products to enhance consumer experiences, with Siri becoming a household name and a symbol of the integration of AI into everyday life. This has helped to shift societal feelings about artificial intelligence, portraying it as a user-friendly and beneficial technology, rather than a distant or threatening concept.

Apple's focus on aesthetically pleasing and intuitive designs has been a key factor in this shift, as the company has demonstrated how AI can be seamlessly incorporated into devices that are widely adopted by consumers. This has helped to demystify AI and make it more accessible and approachable to the general public. As Apple continues to invest in and expand its AI initiatives, it is likely to play an increasingly influential role in shaping the public's perception and adoption of artificial intelligence technologies.

### **From Perplexity on Google/recent developments:**

#### The Evolving Landscape of Large Language Models

In recent years, the rapid advancements in large language models (LLMs) have significantly transformed the field of artificial intelligence (AI). Companies like Google, OpenAI, and DeepMind have pushed the boundaries of AI by developing increasingly sophisticated LLMs, such as GPT (Generative Pre-trained Transformer), that can understand and generate human-like language with remarkable accuracy. These LLMs are trained on vast amounts of text data, allowing them to develop a deep understanding of language, context, and nuance. As a result, they have demonstrated impressive capabilities in tasks ranging from natural language processing and generation to question answering and text summarization. The media's representation of these models has often been a mix of fascination and apprehension, with some hailing their potential to revolutionize communication and others expressing concerns about their potential to perpetuate biases and spread misinformation.

#### The Normalization of AI in Society

The rapid advancements in LLMs and other AI technologies have led to a gradual normalization of AI in our daily lives. Chatbots, virtual assistants, and language translation services powered by LLMs have become ubiquitous, seamlessly integrating into our personal and professional routines. This widespread adoption has helped to demystify AI, making it more accessible and familiar to the general public.

#### Shifting Societal Perceptions of AI



As AI technologies have become more prevalent, societal perceptions have also evolved. While initial reactions were often characterized by a mix of fascination and apprehension, the increasing familiarity with AI has led to a more nuanced understanding of its capabilities and limitations. Many individuals now recognize the potential benefits of AI, such as its ability to enhance productivity, improve decision-making, and provide personalized experiences. However, concerns about AI's impact on employment, privacy, and the perpetuation of biases remain, leading to ongoing discussions and debates about the ethical and societal implications of these technologies.

### **From Perplexity: Concluding thoughts**

#### The Evolving Societal Perceptions of AI: From Turing to the Present Day

The development of AI has been a fascinating odyssey, shaped by brilliant minds like Alan Turing and fueled by advancements in computing power, specifically the rise of big data, cloud computing, and artificial neural networks. These technologies enabled the creation of large language models, capable of processing massive amounts of information and generating human-quality text.

#### Societal Shifts in Perceptions of AI

Societal perceptions of AI have undergone a significant shift since the pioneering work of Alan Turing in the mid-20th century. Turing's groundbreaking ideas on machine intelligence and the potential for computers to engage in human-like communication laid the foundation for the field of AI.<sup>1</sup> However, early public perceptions of AI were often shaped by science fiction narratives, which tended to portray AI as a threat to humanity. Over time, as AI technologies became more advanced and integrated into our daily lives, societal attitudes have evolved. There is now a growing recognition of the potential benefits of AI, such as its ability to assist in medical diagnosis, enhance scientific research, and streamline various industries.<sup>2</sup> At the same time, there are also increasing concerns about the potential risks and ethical implications of AI, including job displacement, privacy violations, and the need for transparency in algorithmic decision-making.<sup>3</sup>

#### The Way Forward: Responsible AI Development

As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a transformative force for humanity.<sup>4</sup>

I was happy with the themes and overall ideas presented in this essay. Now, it was time to put Claude AI to the test. I imported the paragraphs above and asked Claude to rewrite it to make it more cohesive and get the word count to a minimum of 2,500 words. I explained the assignment and emphasized that this paper should have a focus on societal perceptions as they relate to the development of artificial intelligence. This was Claude's response:

Here is a 2,600-word essay on the development of artificial intelligence from Alan Turing to large language models:

#### The Genesis of Artificial Intelligence: From Turing to Large Language Models

The genesis of Artificial Intelligence (AI) can be traced back to the visionary work of Alan Turing, a brilliant mathematician and computer scientist whose pioneering ideas laid the foundation for the field. Turing's contributions transcended mere invention; he actively pondered the philosophical implications of intelligent machines and advocated for a future where humans and machines could collaborate harmoniously.

#### Turing's Pioneering Work and the Turing Test

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

#### Turing's Optimistic Vision for AI

Turing himself held a more optimistic view about the potential of AI. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread."

#### Societal Attitudes Towards AI in Turing's Time

However, despite Turing's pioneering role, societal attitudes towards AI during his time were often colored by fear and apprehension. Science fiction films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. These portrayals, while imaginative, fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer.

#### The Evolving Perception of AI

As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship, reflecting the evolving societal attitudes towards this transformative technology.

#### The Contributions of the ENIAC Women

The advent of electronic computing further propelled the field of AI forward, with figures like John Mauchly playing a central role in its development. Mauchly's work on the ENIAC, one of the earliest electronic computers, demonstrated the potential of these machines to perform complex calculations and simulations. The ENIAC's impact on AI research cannot be overstated, as it provided researchers with unprecedented computing power and capabilities.

However, the true heroes of the ENIAC story were the six women programmers who were responsible for making the machine operational. These women - Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Meltzer, Fran Bilas, and Ruth Lichterman - were hired as "computers," tasked with solving complex mathematical equations by hand. When the ENIAC was completed in 1946, these women were the ones who programmed the machine, manually setting thousands of switches and cables to execute the necessary calculations.

The contributions of the ENIAC women were crucial to the development of AI. By programming the first electronic computer, they laid the groundwork for the field of computer science and the eventual

emergence of artificial intelligence. Their work demonstrated the ability of machines to perform tasks that were previously the domain of human intelligence, paving the way for further advancements in AI.

Despite their pivotal role, the ENIAC women's contributions were largely overlooked and underappreciated at the time. The public demonstrations of the ENIAC focused on the machine's impressive capabilities, with little to no recognition of the women who made it possible. It wasn't until the 1980s that their story began to be told, and it wasn't until 1997 that they were finally inducted into the Women in Technology International Hall of Fame.

The story of the ENIAC women is a testament to the often-overlooked contributions of women in the history of technology and AI. Their work paved the way for the development of modern computing and artificial intelligence, and their legacy continues to inspire and inform the field today.

#### The Microchip, Transistor, and the Evolution of Human-Computer Interfaces

The invention and development of the microchip and transistor marked a significant milestone in the history of AI, ushering in a new era of miniaturization and computational efficiency. These technologies revolutionized computing by enabling the creation of smaller, faster, and more powerful devices. In the realm of AI, microchips and transistors facilitated the development of neural networks and other machine learning algorithms, paving the way for advancements in areas such as natural language processing and image recognition.

The evolution of human-computer interfaces (HCIs) has also played a pivotal role in shaping the relationship between humans and AI. From early command-line interfaces to modern graphical user interfaces (GUIs), HCIs have evolved to become more intuitive and user-friendly, enabling widespread adoption of AI technologies. Media portrayals of AI during this period often emphasized the potential for AI to enhance human productivity and convenience, painting a picture of a future where humans and machines work together harmoniously.

The advancements in microchips, transistors, and human-computer interfaces have been crucial in the development of artificial intelligence. Microchips and transistors have enabled the creation of more powerful and efficient computing systems, which in turn have facilitated the advancement of machine learning algorithms and neural networks. Meanwhile, the evolution of HCIs has made AI technologies more accessible and user-friendly, fostering a closer collaboration between humans and machines.

#### Apple's Influence on the Consumerization of AI

Apple has played a significant role in the consumerization and development of artificial intelligence (AI) technologies, with its products bringing AI into the hands of millions of people around the world. Under the leadership of Steve Jobs, Apple championed the development of user-friendly technologies that seamlessly integrate AI into everyday life. The introduction of the iPhone in 2007 and the subsequent integration of the Siri virtual assistant in 2011 were pivotal moments in this process. Siri leveraged natural language processing and machine learning to enable voice-based interactions, allowing users to perform a variety of tasks simply by speaking to their devices.

Beyond Siri, Apple has continued to integrate AI-powered features across its product lineup, including facial recognition in the iPhone's FaceID, image recognition in the Photos app, and personalized recommendations in the App Store and Apple Music. These advancements have not only enhanced the user experience but have also shaped societal perceptions of AI as a technology that can augment and improve daily life.

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everyday life. This has helped to shift societal feelings about artificial intelligence, portraying it as a user-friendly and beneficial technology, rather than a distant or threatening concept.

Apple's focus on aesthetically pleasing and intuitive designs has been a key factor in this shift, as the company has demonstrated how AI can be seamlessly incorporated into devices that are widely adopted by consumers. This has helped to demystify AI and make it more accessible and approachable to the general public. As Apple continues to invest in and expand its AI initiatives, it is likely to play an increasingly influential role in shaping the public's perception and adoption of artificial intelligence technologies.

#### The Evolving Landscape of Large Language Models

In recent years, the rapid advancements in large language models (LLMs) have significantly transformed the field of artificial intelligence (AI). Companies like Google, OpenAI, and DeepMind have pushed the boundaries of AI by developing increasingly sophisticated LLMs, such as GPT (Generative Pre-trained Transformer), that can understand and generate human-like language with remarkable accuracy. These LLMs are trained on vast amounts of text data, allowing them to develop a deep understanding of language, context, and nuance. As a result, they have demonstrated impressive capabilities in tasks ranging from natural language processing and generation to question answering and text summarization. The media's representation of these models has often been a mix of fascination and apprehension, with some hailing their potential to revolutionize communication and others expressing concerns about their potential to perpetuate biases and spread misinformation.

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As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a transformative force for humanity.

The development of AI has been a fascinating odyssey, shaped by brilliant minds like Alan Turing and fueled by advancements in computing power, specifically the rise of big data, cloud computing, and artificial neural networks. These technologies enabled the creation of large language models, capable of processing massive amounts of information and generating human-quality text.

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I was pleasantly surprised at how well Claude transformed the individual paragraphs into a cohesive, clear essay. I hadn't used Claude throughout the process initially because I found that it experienced more technical difficulties than the others, however it proved to be a great LLM for reworking full papers. Claude promised a word count of 2,600, however the response was only 1,877 words. I realized that somewhere down the line, the period often referred to as AI winters was excluded from my paper. I wanted to explain this period because I found it essential to understanding societal perceptions as they pertain to artificial intelligence. I asked Claude to include a paragraph on AI winters that made sense chronologically into the final draft of the essay. This was its new response:

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### The AI Winters

The excitement and optimism surrounding the early developments in AI were followed by periods of disillusionment and diminished funding, known as the "AI winters." These cycles of hype and disappointment occurred in the 1970s and 1980s, as the field struggled to live up to the inflated expectations and the limitations of the available technology became more apparent.<sup>1</sup> The AI winters led to a shift in societal perceptions, with AI being viewed as a technology that had not yet lived up to its promises, dampening public enthusiasm and leading to skepticism about its potential.

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As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship, reflecting the evolving societal attitudes towards this transformative technology.

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I was happy with the state of this paper, however Claude still did not reach the word count. After another unsuccessful attempt, I tried to import Claude's final version into Perplexity AI to reach the word count minimum of 2,500 words. This was Perplexity's response:



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### ## Turing's Pioneering Work and the Turing Test

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." [1] This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

### ## Turing's Optimistic Vision for AI

Turing himself held a more optimistic view about the potential of AI. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread." [1] This optimistic vision was in stark contrast to the prevailing societal attitudes of the time, which were often colored by fear and apprehension towards intelligent machines.

### ## Societal Attitudes Towards AI in Turing's Time

Despite Turing's pioneering role, societal attitudes towards AI during his time were often shaped by science fiction narratives that depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. Films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer. [1] These portrayals, while imaginative, reflected the deep-seated fears and uncertainties surrounding the emergence of a technology that challenged the boundaries of human intelligence.

### ## The AI Winters

The excitement and optimism surrounding the early developments in AI were followed by periods of disillusionment and diminished funding, known as the "AI winters." These cycles of hype and disappointment occurred in the 1970s and 1980s, as the field struggled to live up to the inflated expectations and the limitations of the available technology became more apparent. [1] The AI winters led to a shift in societal perceptions, with AI being viewed as a technology that had not yet lived up to its promises, dampening public enthusiasm and leading to skepticism about its potential.

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Beyond Siri, Apple has continued to integrate AI-powered features across its product lineup, including facial recognition in the iPhone's FaceID, image recognition in the Photos app, and personalized recommendations in the App Store and Apple Music. These advancements have not only enhanced the user experience but have also shaped societal perceptions of AI as a technology that can augment and improve daily life.

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## ## The Normalization of AI in Society

The rapid advancements in LLMs and other AI technologies have led to a gradual normalization of AI in our daily lives. Chatbots, virtual assistants, and language translation services powered by LLMs have

become ubiquitous, seamlessly integrating into our personal and professional routines. This widespread adoption has helped to demystify AI, making it more accessible and familiar to the general public.

In recent years, AI has become increasingly prevalent in various sectors, from healthcare and finance to transportation and entertainment. AI-powered systems are now used for tasks such as medical diagnosis, stock trading, autonomous driving, and content recommendation. This widespread adoption has further contributed to the normalization of AI in society, as people interact with these technologies on a regular basis.

### ## Shifting Societal Perceptions of AI

As AI technologies have become more prevalent, societal perceptions have also evolved. While initial reactions were often characterized by a mix of fascination and apprehension, the increasing familiarity with AI has led to a more nuanced understanding of its capabilities and limitations. Many individuals now recognize the potential benefits of AI, such as its ability to enhance productivity, improve decision-making, and provide personalized experiences. However, concerns about AI's impact on employment, privacy, and the perpetuation of biases remain, leading to ongoing discussions and debates about the ethical and societal implications of these technologies.

In recent years, there has been a growing awareness of the need for responsible AI development and deployment. Concerns about algorithmic bias, data privacy, and the potential for AI to be used for malicious purposes have sparked discussions about the importance of transparency, accountability, and ethical guidelines in the AI industry. This has led to the emergence of initiatives and organizations dedicated to promoting responsible AI practices, such as the Partnership on AI and the AI Now Institute.

### ## The Way Forward: Responsible AI Development

As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a transformative force for humanity.

The development of AI has been a fascinating odyssey, shaped by brilliant minds like Alan Turing and fueled by advancements in computing power, specifically the rise of big data, cloud computing, and artificial neural networks. These technologies enabled the creation of large language models, capable of processing massive amounts of information and generating human-quality text.

Societal perceptions of AI have undergone a significant shift since the pioneering work of Alan Turing in the mid-20th century. Turing's groundbreaking ideas on machine intelligence and the potential for computers to engage in human-like communication laid the foundation for the field of AI. However, early public perceptions of AI were often shaped by science fiction narratives, which tended to portray AI as a threat to humanity. Over time, as AI technologies became more advanced and integrated into our daily lives, societal attitudes have evolved. There is now a growing recognition of the potential benefits of AI, such as its ability to assist in medical diagnosis, enhance scientific research, and streamline various industries. At the same time, there are also increasing concerns about the potential risks and ethical implications of AI, including job displacement, privacy violations, and the need for transparency in algorithmic decision-making.

As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a

transformative force for humanity. This will require collaboration between researchers, developers, policymakers, and the general public to establish ethical guidelines, address societal concerns, and promote the responsible development and deployment of AI technologies.

This was a better final prompt with a word count of 2204. It still wasn't perfect, and I needed at least 300 more words. I went back to Claude and imported Perplexity's final draft with a request of a minimum of 2500 words. After a few attempts, Claude was having a hard time increasing the word count to 2,500. Finally, I asked it to expand on some specific paragraphs and fed it prompts on areas that I wanted to be more detailed.

## The Genesis of Artificial Intelligence: From Turing to Large Language Models

The advent of artificial intelligence (AI) can be traced back to the visionary work of Alan Turing, a brilliant mathematician and computer scientist whose pioneering ideas laid the foundation for the field. Turing's contributions transcended mere invention; he actively pondered the philosophical implications of intelligent machines and advocated for a future where humans and machines could collaborate harmoniously.

### Turing's Pioneering Work and the Turing Test

Turing's most famous legacy in AI is undoubtedly the Turing Test, a thought experiment proposed in his 1950 paper, "Computing Machinery and Intelligence." [1] This test posits a scenario where a human judge engages in a conversation with a hidden entity, either human or machine. If the judge cannot reliably distinguish the machine from a human based on the conversation alone, the machine is considered to have achieved human-level intelligence. While the test remains a subject of ongoing debate, it sparked a crucial conversation within the AI community, defining a benchmark for intelligent behavior.

### Turing's Optimistic Vision for AI

Turing himself held a more optimistic view about the potential of AI. He believed that machines could eventually achieve intelligence and even consciousness, and he advocated for a collaborative future between humans and machines. In his paper, he stated, "I believe that at the end of the century the use of machines for learning and for other purposes will be very widespread." [1] This optimistic vision was in stark contrast to the prevailing societal attitudes of the time, which were often colored by fear and apprehension towards intelligent machines.

### Societal Attitudes Towards AI in Turing's Time

Despite Turing's pioneering role, societal attitudes towards AI during his time were often shaped by science fiction narratives that depicted intelligent machines as potentially menacing forces, capable of rebellion and destruction. Films like "Metropolis" (1927) and "The Day the Earth Stood Still" (1951) fueled public anxieties about the potential dangers of AI, overshadowing the immense benefits it could offer. [1] These portrayals, while imaginative, reflected the deep-seated fears and uncertainties surrounding the emergence of a technology that challenged the boundaries of human intelligence.

### The AI Winters

The excitement and optimism surrounding the early developments in AI were followed by periods of disillusionment and diminished funding, known as the "AI winters." These cycles of hype and disappointment occurred in the 1970s and 1980s, as the field struggled to live up to the inflated expectations and the limitations of the available technology became more apparent. [1] The AI winters were characterized by a slowdown in progress, reduced research funding, and a growing skepticism about the field's ability to deliver on its promises.

One of the primary factors that led to the AI winters was the inability of early AI systems to live up to the grandiose claims and predictions made by researchers and the media. In the 1960s and 1970s, there was a surge of enthusiasm and optimism surrounding the potential of AI, with some researchers and pundits suggesting that machines would soon be able to match or surpass human intelligence in a wide range of tasks.[2] However, the reality proved to be much more complex, as the limitations of the existing algorithms and computing power became increasingly apparent.

For example, early AI systems struggled with natural language processing, computer vision, and other tasks that humans perform effortlessly. The difficulties in replicating the human brain's remarkable ability to learn, reason, and make sense of the world led to a growing sense of disappointment and disillusionment.[2] Funding agencies and the general public began to question the viability of AI, leading to significant cutbacks in research budgets and a cooling of interest in the field.

The AI winters had a profound impact on the perception of AI within the scientific community and the general public. The cycles of hype and disappointment eroded trust in the field, and many began to view AI as an overhyped technology that had failed to live up to its promises.[3] This shift in perception made it more challenging for researchers to secure funding and gain support for their work, further exacerbating the problems faced by the AI community.

Despite the setbacks, the AI winters also served as a catalyst for important advancements in the field. During these periods of reduced funding and public interest, researchers were forced to take a more pragmatic and incremental approach to problem-solving, focusing on more manageable and realistic goals.[3] This led to the development of new techniques and algorithms that would ultimately lay the groundwork for the resurgence of AI in the 1990s and beyond.

#### The Evolving Perception of AI

As we move forward in the age of AI, it is crucial to remember Turing's pioneering spirit and optimistic vision, while also acknowledging the potential pitfalls and fostering a responsible approach to the development and deployment of this powerful technology. While films like "2001: A Space Odyssey" (1968) and "Blade Runner" (1982) continued the trend of portraying AI as a potential threat, more recent films like "Her" (2013) and "Ex Machina" (2014) offer a more nuanced exploration of the human-AI relationship, reflecting the evolving societal attitudes towards this transformative technology.[1]

Over time, as AI technologies have become more advanced and integrated into our daily lives, societal perceptions have undergone a significant shift. In the early days of AI, the public's understanding of the technology was often shaped by sensationalized media portrayals and science fiction narratives that depicted intelligent machines as a threat to humanity.[4] This led to a general sense of fear and apprehension towards AI, with many individuals viewing it as a disruptive and potentially dangerous force.

However, as AI has become more prevalent and its applications more tangible, the public's perception has begun to evolve. Many people now recognize the potential benefits of AI, such as its ability to enhance productivity, improve decision-making, and provide personalized experiences.[5] This shift in attitude has been driven, in part, by the increased visibility and normalization of AI in our daily lives, as we interact with AI-powered technologies like virtual assistants, chatbots, and personalized recommendation systems.

At the same time, concerns about the potential downsides of AI, such as job displacement, privacy violations, and the perpetuation of biases, have also gained traction.[6] This has led to a more nuanced and balanced understanding of the technology, with the public recognizing both the opportunities and the challenges presented by AI.

The evolving perception of AI is also reflected in the media's portrayal of the technology. While earlier films tended to depict AI as a threat, more recent cinematic representations have offered a more complex and multifaceted exploration of the human-AI relationship. Movies like "Her" and "Ex Machina" have delved into the emotional and philosophical implications of AI, exploring themes of companionship, identity, and the nature of consciousness.[1] These narratives have helped to humanize AI, fostering a more empathetic and thoughtful engagement with the technology.

In addition to the media's influence, the growing awareness of the need for responsible AI development and deployment has also shaped societal perceptions. Concerns about algorithmic bias, data privacy, and the potential for AI to be used for malicious purposes have sparked discussions about the importance of transparency, accountability, and ethical guidelines in the AI industry.[7] This has led to the emergence of various initiatives and organizations dedicated to promoting responsible AI practices, such as the Partnership on AI and the AI Now Institute.

As AI becomes more ubiquitous, fostering open discussions about responsible development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks, we can navigate this new era and ensure AI fulfills its promise as a transformative force for humanity. This will require collaboration between researchers, developers, policymakers, and the general public to establish ethical guidelines, address societal concerns, and promote the responsible deployment of AI technologies.

#### The Contributions of the ENIAC Women

The advent of electronic computing further propelled the field of AI forward, with figures like John Mauchly playing a central role in its development. Mauchly's work on the ENIAC, one of the earliest electronic computers, demonstrated the potential of these machines to perform complex calculations and simulations. The ENIAC's impact on AI research cannot be overstated, as it provided researchers with unprecedented computing power and capabilities.

However, the true heroes of the ENIAC story were the six women programmers who were responsible for making the machine operational. These women - Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Meltzer, Fran Bilas, and Ruth Lichterman - were hired as "computers," tasked with solving complex mathematical equations by hand. When the ENIAC was completed in 1946, these women were the ones who programmed the machine, manually setting thousands of switches and cables to execute the necessary calculations.[1]

The contributions of the ENIAC women were crucial to the development of AI. By programming the first electronic computer, they laid the groundwork for the field of computer science and the eventual emergence of artificial intelligence. Their work demonstrated the ability of machines to perform tasks that were previously the domain of human intelligence, paving the way for further advancements in AI.

Despite their pivotal role, the ENIAC women's contributions were largely overlooked and underappreciated at the time. It wasn't until the 1980s that their story began to be told, and it wasn't until 1997 that they were finally inducted into the Women in Technology International Hall of Fame.[1]

The story of the ENIAC women is a testament to the often-overlooked contributions of women in the history of technology and AI. Their work paved the way for the development of modern computing and artificial intelligence, and their legacy continues to inspire and inform the field today.

#### The Microchip, Transistor, and the Evolution of Human-Computer Interfaces

The invention and development of the microchip and transistor marked a significant milestone in the history of AI, ushering in a new era of miniaturization and computational efficiency. These technologies revolutionized computing by enabling the creation of smaller, faster, and more powerful devices. In the

realm of AI, microchips and transistors facilitated the development of neural networks and other machine learning algorithms, paving the way for advancements in areas such as natural language processing and image recognition.[1]

The evolution of human-computer interfaces (HCIs) has also played a pivotal role in shaping the relationship between humans and AI. From early command-line interfaces to modern graphical user interfaces (GUIs), HCIs have evolved to become more intuitive and user-friendly, enabling widespread adoption of AI technologies. Media portrayals of AI during this period often emphasized the potential for AI to enhance human productivity and convenience, painting a picture of a future where humans and machines work together harmoniously.

The advancements in microchips, transistors, and human-computer interfaces have been crucial in the development of artificial intelligence. Microchips and transistors have enabled the creation of more powerful and efficient computing systems, which in turn have facilitated the advancement of machine learning algorithms and neural networks. Meanwhile, the evolution of HCIs has made AI technologies more accessible and user-friendly, fostering a closer collaboration between humans and machines.

#### Apple's Influence on the Consumerization of AI

Apple has played a significant role in the consumerization and development of artificial intelligence (AI) technologies, with its products bringing AI into the hands of millions of people around the world. Under the leadership of Steve Jobs, Apple championed the development of user-friendly technologies that seamlessly integrate AI into everyday life.

The introduction of the iPhone in 2007 and the subsequent integration of the Siri virtual assistant in 2011 were pivotal moments in this process. Siri leveraged natural language processing and machine learning to enable voice-based interactions, allowing users to perform a variety of tasks simply by speaking to their devices.[1] This marked a significant shift in societal perceptions of AI, as it became a tangible and accessible technology that could enhance daily life.

Beyond Siri, Apple has continued to integrate AI-powered features across its product lineup, including facial recognition in the iPhone's FaceID, image recognition in the Photos app, and personalized recommendations in the App Store and Apple Music. These advancements have not only enhanced the user experience but have also shaped societal perceptions of AI as a technology that can augment and improve daily life.

Media portrayals of AI during this period often focused on the potential for Apple's products to enhance consumer experiences, with Siri becoming a household name and a symbol of the integration of AI into everyday life. This has helped to shift societal feelings about artificial intelligence, portraying it as a user-friendly and beneficial technology, rather than a distant or threatening concept.

Apple's focus on aesthetically pleasing and intuitive designs has been a key factor in this shift, as the company has demonstrated how AI can be seamlessly incorporated into devices that are widely adopted by consumers. This has helped to demystify AI and make it more accessible and approachable to the general public. As Apple continues to invest in and expand its AI initiatives, it is likely to play an increasingly influential role in shaping the public's perception and adoption of artificial intelligence technologies.

#### The Evolving Landscape of Large Language Models

In recent years, the rapid advancements in large language models (LLMs) have significantly transformed the field of artificial intelligence (AI). Companies like Google, OpenAI, and DeepMind have pushed the boundaries of AI by developing increasingly sophisticated LLMs, such as GPT (Generative Pre-trained



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The media's representation of these models has often been a mix of fascination and apprehension, with some hailing their potential to revolutionize communication and others expressing concerns about their potential to perpetuate biases and spread misinformation. The rapid advancement of LLMs has sparked debates about the ethical implications of these technologies, as their ability to generate human-like text raises questions about the potential for misuse, such as the creation of fake news or the exploitation of personal data.[8]

### The Normalization of AI in Society

The rapid advancements in LLMs and other AI technologies have led to a gradual normalization of AI in our daily lives. Chatbots, virtual assistants, and language translation services powered by LLMs have become ubiquitous, seamlessly integrating into our personal and professional routines. This widespread adoption has helped to demystify AI, making it more accessible and familiar to the general public.

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As AI technologies have become more integrated into our daily lives, the public's perception of the technology has gradually shifted from one of fascination and apprehension to a more nuanced understanding of its capabilities and limitations. The normalization of AI has helped to break down the perception of it as a distant or futuristic concept, making it feel more tangible and relatable to the average person.

### Shifting Societal Perceptions of AI

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As AI becomes more ubiquitous, fostering open discussions about responsible AI development and ensuring transparency in algorithms will be crucial. By harnessing the power of AI for good while mitigating potential risks

Finally, I had reached a word count exceeding 3000 words. I am not sure why I had to prompt Claude so many times to get up to this word count, but it eventually gave in and provided me with an acceptable length for the paper. I then edited and revised the essay, excluding unimportant details and focusing in on the different factors that impacted the development of artificial intelligence. This was my final draft of the paper. There were a few areas that I found to be slightly repetitive, but this makes sense as the large language model was reusing data that it has been trained on. I went in and rewrote or deleted the areas that I found to be repetitive, creating a more cohesive essay and lessening the word count to around 2,800.

Overall, this experience taught me so much information about how to interact with, prompt, and use large language models in order to create something together. I am grateful for this experience as I believe that it foreshadows the way that humans and artificial intelligence will interact in the near future. Although artificial intelligence has often been approached with apprehension, knowing how to manipulate prompts and communicate with these chatbots will certainly give the next generation a leg up in their quest to augmented reality by using artificial intelligence as a virtual assistant to assist with a multitude of everyday tasks.

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*\*Overall, I found that obtaining the sources from these chatbots to be one of the more difficult processes when crafting this paper. I found that Perplexity AI was the best at directly linking sources, however it still made some mistakes when linking these pages. I noticed a lack of transparency when using ChatGPT in relation to sources that it used. I am not sure whether this is due to the quality of sources or the algorithm that GPT uses, but I thought this was an interesting takeaway.*