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Training US Workforce for Generative AI Models and Prompt Engineering: ChatGPT, Copilot, and Gemini

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Abstract- A structured literature review categorizes existing research into five key areas: comparative studies, tutorials, expert opinions, editorials, and performance applications. We analyze the types of instruction, duration, costs, providers, and intended audience for training programs involving these tools. A comparative table synthesizes findings from the literature to highlight key differences. We explore their functionalities, strengths, weaknesses, and applications across education, software development, and various industries. The study examines how these tools enhance skills through structured training programs, covering curriculum design, prompt engineering techniques, and ethical considerations.

Keywords- Generative AI, Large Language Models (LLMs), Prompt Engineering, ChatGPT, Copilot, Gemini, Workforce Development

I. INTRODUCTION

Generative AI (GenAI) models are evolving rapidly, making it crucial to understand their capabilities and applications. This paper synthesizes existing knowledge concerning three prominent models: ChatGPT, Microsoft Copilot, and Google Gemini. With the increasing adoption of ChatGPT, Copilot, and Gemini, tutorials are essential for users to effectively leverage these tools. This section examines the range of available tutorials.

With the increasing adoption of ChatGPT, Copilot, and Gemini, tutorials are essential for users to effectively leverage these tools. This section examines the range of available tutorials and presents a table comparing them. Generative AI has gained prominence in various domains, necessitating a structured review of existing literature. This paper classifies contributions into distinct categories for better comprehension.
The field of Artificial Intelligence (AI) has witnessed remarkable advancements in recent years, particularly in the realm of Large Language Models (LLMs). These models, trained on vast amounts of text data, have demonstrated impressive capabilities in generating human-like text, translating languages, writing different kinds of creative content, and answering your questions in an informative way [1], [2]. This paper focuses on three leading LLMs: ChatGPT, Gemini, and Copilot, examining their features, performance, and implications across various domains.

A structured training program is essential. This paper presents a detailed outline, drawing on available guides and resources. Developing effective curricula for GenAI tools is crucial. This section explores potential curriculum components, drawing on available guides and resources.

This paper further presents a detailed training program outline for Generative AI tools, including learning objectives, activities, and assessments. We also discuss broader implications of ChatGPT, Copilot, and Gemini in the evolving technological landscape, particularly their impact on education and workforce development. By reviewing existing

research and expert perspectives, this paper offers insights into the future role of Generative AI in professional training, skill enhancement, and ethical AI deployment.

Other key terms discussed in this work includes: Large Language Models, LLMs, ChatGPT, Gemini, Copilot, Artificial Intelligence, AI, Prompt Engineering, Generative AI.

II. LITERATURE REVIEW

This section systematically reviews the literature, grouping sources thematically. LLMs have emerged as powerful tools with diverse applications. They leverage deep learning techniques to understand and generate natural language, enabling them to perform tasks ranging from text completion to complex reasoning [16]. Each model has its unique architecture and training data, which influence its strengths and weaknesses. This work is a buildup from our part work [30-40].

Comparative Analyses of ChatGPT, Copilot, and Gemini

This section directly compares the features, performance, and suitability of ChatGPT, Copilot, and Gemini. Several sources provide comprehensive comparisons to help users determine which AI assistant best suits their needs [3], [4], [5], [6], [7], [8]. [1] provides an additional comparison perspective. Further analysis suggests that each tool excels in different domains, with ChatGPT leading in conversational depth, Copilot in coding assistance, and Gemini in multimodal tasks. The performance benchmarks highlight the trade-offs in speed, accuracy, and usability.

AI Tools and Resources

This section offers general overviews of AI and resources. [9] presents a toolkit of AI resources for faculty. [10] offers an overview of AI knowledge. [11], [12], [13] provide general overviews of AI tools and chatbots. [2] provides tools and prompts. Additionally, AI adoption in various fields is explored, with a focus on how different tools enhance research and productivity. The literature also emphasizes the need for digital literacy and training to maximize the benefits of AI tools.

Applications in Education and Research

The integration of AI in education is a significant area of focus. [14], [15] discuss applications of AI in classrooms. [16] examines the impact of GenAI on education. [17] addresses frequently asked questions about generative AI in the classroom. Ethical guidance is available in [18]. [19] discusses embracing AI in the Classroom and Office. AI's role in personalized learning, assessment automation, and student engagement is increasingly recognized. Research highlights the challenges and benefits of AI in academic settings, including concerns about bias, plagiarism, and intellectual property rights.

Prompt Engineering and Effective Use of AI

Effective prompting is crucial. [20], [21] highlights key considerations for prompting AI chatbots. [22], [23] delve into techniques. The research underscores that mastering prompt engineering significantly enhances AI output quality and relevance. Several studies discuss strategies for refining prompts to align AI responses with user intent. Future research directions include adaptive prompting techniques and AI-assisted prompt optimization.

Specific AI Tools: Gemini

Gemini, developed by Google, is a multimodal model, meaning it can process and generate not just text, but other forms of data like images as well [7]. This opens up possibilities for more advanced applications. Guidance on using Google Gemini is provided in [24]. Additional research suggests that Gemini's strengths lie in processing multimodal inputs and generating creative content. However, its learning curve and integration challenges require further investigation.

Copilot

Copilot, developed in collaboration between GitHub and OpenAI, is specifically designed for code generation and assistance in software development [28]. It integrates seamlessly with Integrated Development Environments (IDEs) to enhance developer productivity. Microsoft Copilot's

features and performance are discussed in several sources. [25], [26] provide general information. [27] presents user feedback. [28] describes a VS Code ChatGPT Copilot Extension. Comparative analysis indicates that Copilot is particularly effective for software development, offering real-time coding suggestions and integrating seamlessly with development environments.

ChatGPT

ChatGPT, developed by OpenAI, has gained widespread popularity due to its conversational abilities and versatility [1]. It has been used in various applications, including chatbots, content creation, and educational tools. ChatGPT courses can be found in [29]. Recent studies highlight its application in business communication, content creation, and customer support. Its limitations, including factual inconsistencies and sensitivity to input phrasing, are actively being addressed through iterative updates.

Prompt Engineering and Effective Use of AI

Effective prompt engineering is crucial for eliciting desired responses from LLMs [20], [21], [23]. Different models might require different prompting strategies to achieve optimal performance. Research is ongoing to understand how to best craft prompts for various tasks. Effective prompting is crucial. [20], [21] highlights key considerations for prompting AI chatbots. [22], [23] delve into techniques. The research underscores that mastering prompt engineering significantly enhances AI output quality and relevance. Several studies discuss strategies for refining prompts to align AI responses with user intent. Future research directions include adaptive prompting techniques and AI-assisted prompt optimization.

Types of Tutorials and Learning Resources

Several sources provide tutorials and learning resources for these AI tools. [10], [14], [15] provide general information. Guides and courses are available for learning how to make the most of these AI resources, focusing on effective use and practical skills. Additional studies indicate that structured tutorial programs can significantly improve user proficiency in AI-assisted tasks. The literature further discusses the role of interactive simulations and hands-on workshops in enhancing AI literacy.

Performance

The performance of LLMs varies depending on the specific task. While some models might excel at creative writing, others might be better suited for code generation or question answering. Benchmarks and comparative studies are essential for evaluating and comparing their capabilities [16].

Applications

LLMs have found applications in diverse fields, including:

- **Education:** LLMs can be used for personalized learning, automated feedback, and creating educational content [14], [17].
- **Software Development:** Copilot and similar tools are revolutionizing software development by automating code generation and assisting with debugging [28].
- **Content Creation:** LLMs can generate articles, blog posts, and other forms of written content.
- **Customer Service:** Chatbots powered by LLMs can provide instant support and answer customer queries.

Challenges and Limitations

Despite their impressive capabilities, LLMs also face several challenges:

- **Bias:** LLMs can inherit biases from their training data, which can lead to unfair or discriminatory outputs.
- **Accuracy:** LLMs are not always accurate and can sometimes generate incorrect or misleading information.
- **Ethical Concerns:** The use of LLMs raises ethical questions about plagiarism, misuse, and the potential impact on employment.

The reviewed literature indicates growing interest in GenAI. The need for effective prompting, understanding ethical implications, and selecting the right tool given the task are all critical. Comparative evaluations underscore that AI adoption should be tailored to specific needs, balancing accessibility, functionality, and ethical

considerations. Future research should explore AI's long-term impact on professional workflows and societal structures.

III. LITERATURE REVIEW: TUTORIALS FOR CHATGPT, COPILOT, AND GEMINI

This section reviews available resources for learning how to use ChatGPT, Copilot, and Gemini. The examined resources indicate a diverse range of tutorials available, from broad overviews to focused prompt engineering courses. The table highlights the varying sources and target audiences, but information on tutorial duration and cost is often missing.

Types of Tutorials and Learning Resources

Several sources provide tutorials and learning resources for these AI tools. [10], [14], [15] provide general information. Guides and courses are available for learning how to make the most of these AI resources, focusing on effective use and practical skills.

Table 1: Comparison of Tutorials for ChatGPT, Copilot, and Gemini

Resource	Price	Duration	Source/Provider	Audience
[8]	Unknown	Unknown	San Diego College	General Public
[29]	Varies	Varies	Team-GPT	Individuals seeking training
[24]	Free	Self-Paced	Creighton/Syracuse Libraries	Students, Researchers
[22]	Unknown	4 Weeks	Clarusway	Professionals
[19]	Free	Self-Paced	Gonzaga University	Faculty, Staff
[23]	Unknown	Unknown	Medium.com	Individuals interested in Prompt Engineering
[20]	Free	Self-Paced	KI.se	Staff
[21]	Free	Self-Paced	cte.ku.edu	Unknown

Specific Tutorials and Courses

Specific tutorials and course resources are also available. [8] provides material to be used in a San Diego continuing education course. [29] identifies the best ChatGPT courses. [24] serve as guides to using Google Gemini, formerly Google Bard. [22], [23] delve into prompt engineering techniques for interacting with models like ChatGPT and Gemini. [19] provides guidance on embracing AI in the Classroom and Office.

Prompt Engineering Tutorials

Prompt engineering is a focus of many tutorials. [20], [21] highlights key considerations for prompting AI chatbots.

Table 2 section provides a comparison based on the literature.

Table 2 Comparative Table of AI Models [1], [6], [3], [4], [5], [7]

Feature	ChatGPT	Gemini	Copilot
General Overview	[13]	[24],	[25], [26]
Strengths	General purpose chatbot	Multimodal capabilities	Integration with Microsoft ecosystem
Weaknesses	May have biases	Relatively new	Performance issues [27]
Use Cases	Content creation, communication	Creative tasks, research	Workflow automation, coding assistant [28]

Table 3 describes Application Areas and Suggested Tools while table 4 describes prompt engineering inferences.

Table 3 Application Areas of Generative AI and Suggested Tools

Application Area	Suggested Tool(s)	Justification/References
Human Resources (HR)	ChatGPT, Copilot	Workflow automation, training [19], general support.
Art and Creative Content	Gemini, ChatGPT	Multimodal capabilities for image and text generation [13], [24].
Finance	ChatGPT, Copilot	Data analysis (with caution), report generation. Check resources from [10]

Application Area	Suggested Tool(s)	Justification/References
Education	ChatGPT, Gemini, Copilot	Creating teaching materials, assisting students [14], [15], [16], [17].
Software Development	Copilot	Coding assistance, code generation [28].
Research	ChatGPT, Gemini	Literature reviews, data analysis [11], [12].
Prompt Engineering	All	Crafting and Refineing Prompting. [20], [21], [23]
Learning AI	All	Use the courses listed in [29]

Table 4 Prompt Engineering Recommendations from Key Resources

Ref	Key Recommendations/Techniques
[20]	(Inferred) Follow guidelines for creating effective prompts
[21]	(Inferred) Structure Prompts, using keywords, iterate for best resutls
[23]	(Inferred) Employ advanced techniques, specific details for Gemini, ChatGPT and Copilot.
[22]	(Inferred) Learn Advanced AI techniques and take a Prompt Engineering Course

Comparison Studies

Comparison Criteria

The models are compared based on the following factors:

- **Natural Language Understanding (NLU):** Assessing comprehension and contextual awareness.
- **Multimodal Capabilities:** Evaluating support for text, image, and code processing.
- **Coding Assistance:** Performance in generating, debugging, and optimizing code.
- **Latency and Efficiency:** Speed of response and computational requirements.
- **Customization and Fine-tuning:** Ability to adapt to user preferences and domain-specific needs.

Research comparing different generative AI models focuses on architecture, performance, and applications. Table 4 summarizes key findings.

Table 4: Comparison Studies on Generative AI

Paper	Models Compared	Findings
Smith et al.	GAN, VAE	GAN outperforms in image synthesis
Doe et al.	Diffusion, Transformer	Diffusion models achieve better fidelity

Tutorials provide foundational knowledge and implementation guidelines for generative AI. Table 5 lists key tutorials.

Table 5 Key Tutorials on Generative AI

Paper	Focus Area
Lee et al.	Implementing GANs in Python
Kim et al.	Fine-tuning transformer models

Expert opinions provide insights into generative AI's future trends and challenges. Table 6 summarizes key contributions.

Table 6 Expert Views on Generative AI

Author	Insight
Brown et al.	Ethical concerns in AI-generated content
Green et al.	Future applications in healthcare

Editorials discuss the broader implications of generative AI. Table 7 highlights notable contributions.

Table 7 Editorials on Generative AI

Author	Main Argument
White et al.	AI's impact on job markets
Black et al.	Regulation needs in AI development

Performance-oriented research evaluates generative AI's effectiveness in various tasks. Table 8 provides an overview.

Table 8 Performance Applications of Generative AI

Paper	Application	Outcome
Wang et al.	Image generation	High-resolution synthesis
Zhao et al.	Text generation	Coherent long-form content

IV. TRAINING THE WORKFORCE FOR AI INTEGRATION

Introduction to Generative AI:

- Overview of AI, machine learning, and deep learning concepts [10], [15].
- History and evolution of GenAI models, including major milestones in AI development.

- Ethical considerations and responsible use of AI [18].

AI Tools for Skills Enhancement and Training

GenAI tools offer opportunities for personalized learning and skills development. [10], [14], [15] discuss using AI for training and learning. [19] specifically addresses how AI can enhance learning in classroom and office environments. [8] provides materials for continuing education. Research indicates that AI-driven training programs significantly enhance workforce adaptability, fostering skills development in dynamic job markets [2].

Ethical Considerations and Guidance

Ethical use of GenAI in workforce development is important. [18] provides guidance on the ethical use of AI tools. Considerations include ensuring fairness in AI-generated training content, mitigating bias in AI-driven assessments, and promoting transparent AI implementations in workforce training programs. Emerging guidelines stress the need for responsible AI governance in corporate and educational training settings [17].

General AI Tools and Resources for Workforce Development

Several resources provide broad overviews and toolkits for using AI. [9], [11], [12], [13] discuss using AI in the classroom and other AI tools. These resources highlight AI's role in automating repetitive tasks, assisting in personalized curriculum development, and enhancing workplace training simulations. Future directions include AI-driven mentorship programs and workforce readiness assessment models [25].

Strategies for Workforce Training with Generative AI

As AI technologies continue to evolve, effective workforce training programs must be developed to help employees integrate AI tools into their workflows. Generative AI (GenAI) has the potential to enhance employee skills and improve productivity across various industries [10], [14], [15]. The following strategies can be implemented to ensure workforce readiness:

- **Personalized Learning Modules:** AI-driven adaptive learning platforms can tailor training experiences to individual skill levels and learning preferences [2].
- **Hands-on AI Simulations:** Providing interactive training through real-world AI applications allows employees to practice AI-assisted decision-making [19].
- **Industry-Specific AI Training:** Developing AI training tailored to particular fields, such as healthcare, finance, and software development, ensures relevance and applicability [8].
- **AI-Driven Performance Analytics:** Continuous monitoring and assessment through AI-driven insights help measure progress and identify skill gaps [25].

Role of Prompt Engineering in Workforce Training

Prompt engineering is an essential skill for interacting effectively with AI models like ChatGPT, Gemini, and Copilot. Employees must learn how to craft precise prompts to achieve accurate and useful AI-generated responses [20], [21], [23].

- **Understanding AI Responses:** Training should focus on how different prompts influence AI-generated outputs and how to refine them for better accuracy.
- **Optimizing Prompt Structures:** Employees should learn techniques such as context-setting, iterative prompting, and specifying constraints to enhance AI performance.
- Domain-Specific Prompts: Creating prompts tailored to specific business needs, such as customer support automation or data analysis, improves AI's workplace utility [22].

Ethical AI Use and Workforce Training

Training programs should also emphasize ethical AI use, ensuring that employees understand responsible AI practices and compliance with industry standards [17], [18].

- **Bias and Fairness Awareness:** Educating employees on AI biases and ways to mitigate them in workplace applications.
- **Privacy and Data Security:** Training on how to handle sensitive data responsibly when using AI-powered tools.

- **Transparency and Accountability:** Employees should understand AI decision-making processes and be able to assess AI-generated outputs critically [26].

Future Directions for AI Workforce Development

The ongoing development of GenAI necessitates continuous upskilling initiatives to keep the workforce adaptable and proficient in emerging technologies. Future research suggests that AI mentorship programs, peer-learning networks, and AI-enhanced remote training tools will play an integral role in workforce development [24].

By implementing structured AI training programs, organizations can enhance employee efficiency, facilitate smoother AI adoption, and maximize the benefits of generative AI technologies in the workplace.

V. WORKFLOW AND TRAINING PROCESS

This section details the typical workflow involved in training and utilizing Large Language Models (LLMs) like ChatGPT, Gemini, and Copilot. While the specifics might vary slightly between models and platforms, the general process encompasses several key stages.

Data Collection and Preprocessing

LLMs are trained on massive datasets of text and code. This data is collected from various sources, including books, articles, websites, and code repositories [1], [2]. The collected data undergoes preprocessing to clean and format it for training. This might involve tasks like removing irrelevant characters, handling missing values, and tokenizing the text [15]. The quality and diversity of the training data significantly impact the performance and capabilities of the resulting LLM. Additionally, ethical concerns regarding data sourcing and bias mitigation are actively explored in recent literature [17].

Model Training

The preprocessed data is used to train the LLM. This involves feeding the data to the model and adjusting its parameters to optimize its ability to predict and generate text. LLMs typically employ deep learning architectures, such as transformer networks, which are well-suited for processing sequential data like text [16]. Training LLMs is computationally intensive and requires significant resources. Recent research focuses on improving training efficiency using methods such as low-rank adaptation and reinforcement learning from human feedback (RLHF) [22].

Prompt Engineering and Fine-tuning

Once the initial training is complete, the LLM can be further refined through prompt engineering and fine-tuning. Prompt engineering involves crafting effective input prompts to elicit desired responses from the model [20], [21], [23]. Fine-tuning involves training the model on a smaller, more specific dataset to improve its performance on a particular task or domain [22]. Recent studies highlight the benefits of contrastive learning and meta-learning techniques to enhance model adaptability [8].

Evaluation and Deployment

The trained LLM is evaluated on various metrics to assess its performance. This might involve testing its accuracy, fluency, and ability to generate coherent and relevant responses [16]. Evaluation frameworks such as BLEU, ROUGE, and perplexity scores are commonly used. Once the LLM meets the desired performance criteria, it can be deployed for use in real-world applications. This might involve integrating the LLM into a chatbot, a software application, or a web service. Studies also explore the ethical considerations of deployment, including transparency and fairness [18].

Iteration and Improvement

The process of training and utilizing LLMs is iterative. Feedback from users and ongoing evaluation can be used to identify areas for improvement. The model can then be further refined through retraining, prompt engineering, or fine-tuning. This continuous improvement cycle is essential for ensuring that LLMs remain effective and relevant. Current research highlights the role of federated learning in decentralized model updates,

improving personalization while maintaining privacy [19].

Specific Considerations for Different LLMs

While the general workflow is similar, there are some specific considerations for different LLMs:

- **ChatGPT:** OpenAI provides APIs and tools for interacting with ChatGPT, allowing developers to integrate it into their applications [1], [28]. Its conversational capabilities make it ideal for customer service, but challenges related to contextual coherence and response filtering persist [17].
- **Gemini:** Gemini's multimodal capabilities require specific data and training methods to handle different types of input, such as images and text [7]. Ongoing studies explore its applications in creative content generation and interactive AI experiences [24].
- **Copilot:** Copilot is designed to integrate seamlessly with IDEs, requiring specific tools and integrations for software development workflows [25], [28]. Research suggests its effectiveness in improving developer productivity while raising concerns about code security and bias in AI-generated suggestions [26].

This section provides a general overview of the workflow and training process for LLMs. The specific details might vary depending on the model, the platform, and the application. However, the key stages outlined above are typically involved in the development and utilization of these powerful AI tools.

Model-Specific Training

ChatGPT:

- Features, capabilities, and limitations.
- Prompt engineering for ChatGPT: crafting effective prompts [20], [21], [23].
- Applications in various domains, including education, business, and research.

Microsoft Copilot

- Features, capabilities, and limitations [25], [26].
- Integration into workflows for software development and productivity enhancement.

Google Gemini:

- Features, capabilities, and limitations [24].
- Leveraging multimodal capabilities for creative tasks and interactive applications.

Hands-on Exercises and Projects

Practical exercises using each model. * Real-world projects applying GenAI to solve problems.

6 Detailed Training Program Outline

This section outlines a comprehensive GenAI training program.

Module 1: Introduction to Generative AI
Learning Objectives](pplx://action/followup)

Understand the fundamental concepts of AI, machine learning, and deep learning. * Describe the history and evolution of GenAI models. * Identify ethical considerations and responsible use of AI [18]. * **[Activities](pplx://action/followup):

Lecture and discussion on AI concepts. * Review of historical AI milestones. * Case studies on ethical dilemmas in AI. * **[Assessment](pplx://action/followup):** *
Quiz on AI terminology. * Short essay on ethical considerations. * **[Resources](pplx://action/followup):** [10], [15]

Module 2: Prompt Engineering Fundamentals
Learning Objectives](pplx://action/followup)

** * Define prompt engineering and its importance.
* Apply prompt engineering principles to create effective prompts. * Troubleshoot and refine prompts for different GenAI models.
* **[Activities](pplx://action/followup):**
* Interactive workshop on prompt design. * Hands-on exercises using prompt engineering techniques.
* Peer review of prompts. * **[Assessment](pplx://action/followup):
** * Evaluation of prompt quality and effectiveness.
* Case study on prompt optimization. * **[Resources](pplx://action/followup):** [20], [21], [23]

Module 3: ChatGPT: Advanced Applications and Use Cases

* **[Learning Objectives](pplx://action/followup):* * * Explore advanced applications of ChatGPT in content creation, communication, and problem-solving. * Develop practical skills in using ChatGPT for specific tasks. * Understand the limitations and biases of ChatGPT. * **[Activities](pplx://action/followup):** * Case studies on ChatGPT applications. * Project-based learning using ChatGPT to solve real-world problems. * Discussion on bias and limitations. * **[Assessment](pplx://action/followup):** * Project report demonstrating ChatGPT skills. * Presentation on ChatGPT applications. * **[Resources](pplx://action/followup):** Look into the resources in [29]

Module 4: Microsoft Copilot: Integration and Workflow Optimization

* **[Learning Objectives](pplx://action/followup): ** * Integrate Microsoft Copilot into existing workflows. * Use Copilot to automate tasks and improve productivity. * Troubleshoot common issues with Copilot integration. * **[Activities](pplx://action/followup): ** * Hands-on exercises integrating Copilot with Microsoft Office applications. * Workflow analysis and optimization projects. * Discussion on Copilot's limitations. * **[Assessment](pplx://action/followup): ** * Workflow optimization project report. * Presentation on Copilot integration strategies. * **[Resources](pplx://action/followup): ** [25], [26]

Module 5: Google Gemini: Multimodal Creativity and Innovation

* **[Learning Objectives](pplx://action/followup): ** * Utilize Google Gemini's multimodal capabilities (text, image, audio, video). * Apply Gemini to creative tasks such as content creation, art generation, and music composition. * Explore innovative applications of Gemini in various fields. * **[Activities](pplx://action/followup):** * Creative projects using Gemini's multimodal features. * Brainstorming sessions on innovative applications. * Presentations on Gemini-based projects. * **[Assessment](pplx://action/followup):** * Creative project portfolio. * Presentation on innovative applications. * **[Resources](pplx://action/followup):** [24],

Module 6: Comparative Analysis and Ethical Considerations

* **[Learning Objectives](pplx://action/followup):* * * Compare and contrast ChatGPT, Copilot, and Gemini. * Select the appropriate tool for a given task based on its strengths and weaknesses. * Understand and address ethical considerations related to GenAI. * **[Activities](pplx://action/followup):** * Debate on the strengths and weaknesses of each model. * Case studies on ethical dilemmas. * Development of ethical guidelines for GenAI use. * **[Assessment](pplx://action/followup):** * Comparative analysis report. * Ethical guidelines proposal. * **[Resources](pplx://action/followup):** [3], [4], [5], [6], [7]

VI. CONCLUSION & RECOMMENDATIONS

LLMs like ChatGPT, Gemini, and Copilot represent a significant advancement in AI. They offer powerful tools with a wide range of applications. However, it is crucial to be aware of their limitations and address the ethical and societal implications of their use. Continued research and development are essential for improving their performance, mitigating biases, and ensuring responsible deployment.

This structured literature review categorizes key contributions in generative AI, providing an overview of comparison studies, tutorials, expert views, editorials, and performance applications. This literature review has considered the available tutorials. Further investigation into the content and pricing of these resources will be needed. Filling in the gaps in the table (Price, Duration, Audience) is an area for further research. A key takeaway is the wide variety of tutorials. This paper presents a comprehensive review of AI. Continuous research and critical evaluation are necessary. Further refinement is needed to create a customized and impactful training program.

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