A Proposal Method for Using Open AI and chatgpt to develop the research methods in Bisha University

Safaa Sayed Mahmoud[*1], Hussein Moselhy Syaed Ahmed[2]
Business Administration[1], Business Administration[2]
College of Business, University of Bisha, Bisha 67845, Saudi Arabia[1]
College of Business, University of Bisha, Bisha 67845, Saudi Arabia[2]

ARTICLE INFO	ABSTRACT
	Incorporating AI in academic research methods has been a topic of interest in the past few years. This paper aims to develop a framework for accommodating OpenAI technologies, especially ChatGPT, in Bisha University's research methodology. AI can improve multiple steps of the research process, including the literature evaluation, the formulation of hypotheses, the data analysis, and the research composition. The subject of this proposal is to look at the potential benefits of using AI to improve research productivity, quality, and interdisciplinarity at Bisha University. This research work will use primary and secondary data collection methods to survey faculty members, researchers, and students, aiming to assess current practices and identify gaps suitable for AI incorporation. In addition, it considers the ethical, technical, and institutional challenges of using AI tools in research in higher learning institutions. This research will provide tangible suggestions for Bisha University to spearhead AI-based research as well as to respond to the issues of AI morality and academic honesty. **Keywords :** AI, OpenAI, ChatGPT, Research Strategies, Bisha University, Academic Research, Integration of AI, Research Productivity, AI and Ethics.

INTRODUCTIONS

Artificial intelligence (AI) in education systems has emerged as an innovative factor that has changed institutional approaches to teaching and learning. ChatGPT stands out from other AI tools due to its versatility and potential to enhance academic processes. Designed for educational purposes, ChatGPT has been used extensively in such colleges, helping students and teachers with tasks ranging from one-on-one learning to complex data processing.

This is because technologies like the ChatGPT, when adopted at Bisha University, are likely to change the way research is conducted and how it can easily be accessed. Some of the unique features of ChatGPT make it possible to support the writing of grant proposals, literature reviews, and research ideas generation. Studies show that ChatGPT can significantly enhance the quality of academic writing and research findings (Qasem, 2023). However, reliance on this technology generates concern about academic integrity, especially owing to increased plagiarism and decreased independence in research.

This proposal aims to explore an organized way of integrating ChatGPT in research approaches at Bisha University to enhance the quality and diversification of scholarly activities. The following are the advantages that Bisha University can access while simultaneously avoiding the vices associated with using AI through training programs and ethical rules. Most of the problems related to the use of AI can be avoided by training the staff and coming up with ethical rules that may be hard to violate. The use of AI language models, including ChatGPTseekseks, optimizes research productivity and also fosters a deeper engagement of students and professors with their work. (Al-Sofi, 2024)

This proposal will outline a comprehensive plan for using OpenAI and ChatGPT to develop novel approaches to research that align with the university's mission while addressing AI's strengths and weaknesses.

LITERATURE REVIEW
Overview of AI in Academic Research.

Artificial intelligence (AI) has changed the landscape of academic study since its inception in the mid-twentieth century. AI systems have traditionally been trained on logical thinking and problem-solving tasks, particularly mathematical, computer science, and engineering. Pioneers like John McCarthy introduced fundamental notions such as expert systems and symbolic AI, which aimed to duplicate human decision-making decision-making processes (McCarthy, 1960). Though these early computers were full of inventive ideas, the computational restrictions of the time limited them to the point that each task had to be programmed by hand on a huge amount of manual programming.

With the introduction of machine learning in the 1980s and 1990s, the landscape began to shift, as AI systems could learn from data rather than rely on pre-defined rules. The ability to make this transition allowed larger applications in areas such as biology, where AI was used in genomic research and drug discovery, economics for predictive modeling, and social sciences for analyzing complicated information (Mitchell, 1997). In the early 2000s, neural networks and later deep learning techniques emerged, which increased AI capabilities to solve complex problems such as image recognition, natural language processing (NLP), and predictive analytics (LeCun, Bengio, & Hinton, 2015).

Artificial intelligence is a fundamental instrument of academic research today, offering new ways to process data and stimulate a deeper understanding. Researchers can use AI to efficiently make sense of huge datasets, uncovering patterns and connections that may otherwise be hidden through traditional analysis methods.
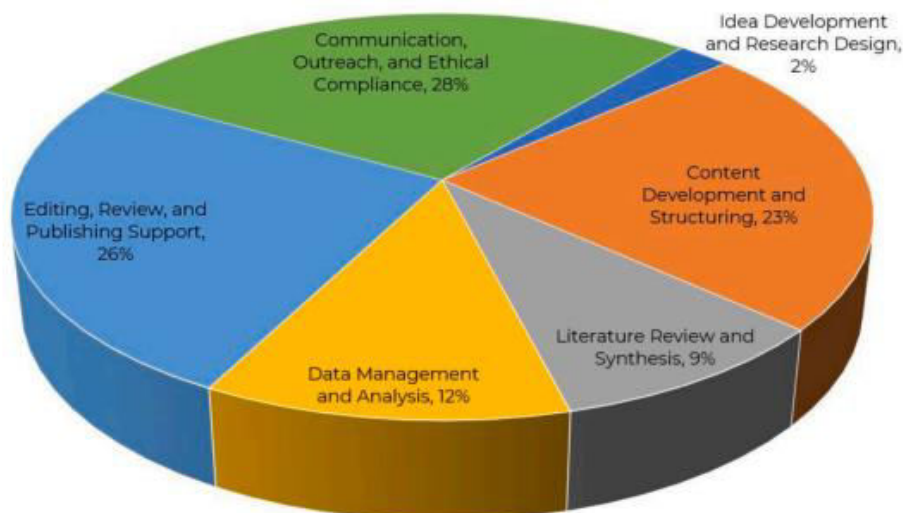

Fig 1: AI potential contribution to academic domains.
Mohamed Khalifa, Mona Albadawy,
Source: Using artificial intelligence in academic writing and research: An essential productivity tool, Computer Methods and Programs in Biomedicine Update, Volume 5, 2024, 100145, ISSN 2666-9900, https://doi.org/10.1016/j.cmpbup.2024.100145. https://www.sciencedirect.com/science/article/pii/S2666990024000120

Moreover, AI makes generating new ideas and insights easier, enabling scholars to explore new territory that was previously unknown to them. AI breakthroughs boost research productivity and improve the quality and impact of academic inquiries, making academia a leader in technological progress.

Introducing ChatGPT

OpenAI, a research center, developed GPT-3, a powerful language model. Alongside GPT -3, OpenAI published ChatGPT, a natural language processing chatbot. GPT-3 and ChatGPT have received interest and could revolutionize many language-related jobs. OpenAI and Early Developments OpenAI is a 2015-founded research center that develops AI products for society (OpenAI, 2022). Foundational contributor Elon Musk and Microsoft Corporation, who committed $1 billion for exclusive access to OpenAI's technologies, have supported the lab (Brockman et al., 2016).

Therefore, the lab has made rapid progress in developing its AI technology. DALL-E and ChatGPT are among OpenAI's most popular machine-learning products (Devlin et al., 2018). DALL-E, a machine-learning technology that generates images from user inputs, was widely available before ChatGPT (Marcus et al., 2022). Artificial Neural Networks with multimodal neurons understand and create new images. These neurons are so tolerant of concept expressions that they allow for great variety (Goh et al., 2021). ChatGPT achieved impressive user growth milestones since its launch. Within just five days of its release on November 30, 2022, it reached 1 million users. This rapid adoption continued, and by January 2023, ChatGPT had surpassed 100 million users, making it the fastest-growing consumer application in history. In 2024, the number has reached a grand total of over 200 million active users. This rapid growth in the number of chatgpt users outpaced major platforms like TikTok, which took nine months.

Fig 2: OpenAI's success milestone
Source: https://www.similarweb.com/blog/insights/ai-news/chatgpt-25-million/
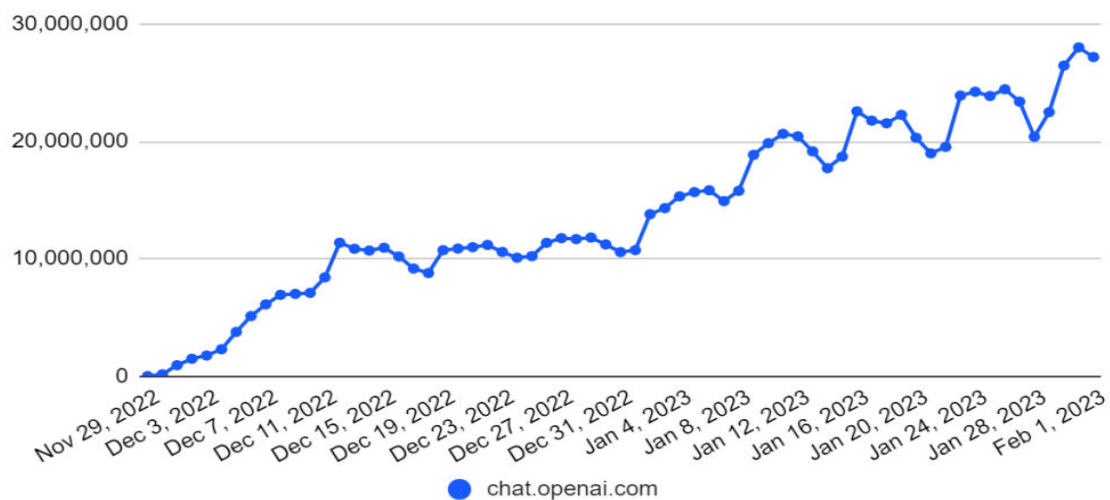
This OpenAI innovation shows how the lab wants to transform the game using clever AI. DALL-E's success stems from its public availability, which let ChatGPT achieve over one million unique users in less than a week (Mollman, 2022). ChatGPT Generative Pre-Trained Transformer, or GPT, is a language model that reads human inputs (like DALL-E) and creates virtually natural human language response text (Dale, 2021). GPT concepts are simple by NLP/ML standards, but OpenAI refines them (Radford et al., 2018). The algorithm is fine-tuned by its creators after pretraining to improve performance on specific tasks (Budzianowski &Vulić, 2019). Figure 3 shows ChatGPT's technical operation based on an initial GPT model, supervised fine-tuned, rewards, and proximal policy optimization modeling. An iterative procedure is needed to create a functional ChatGPT interface.
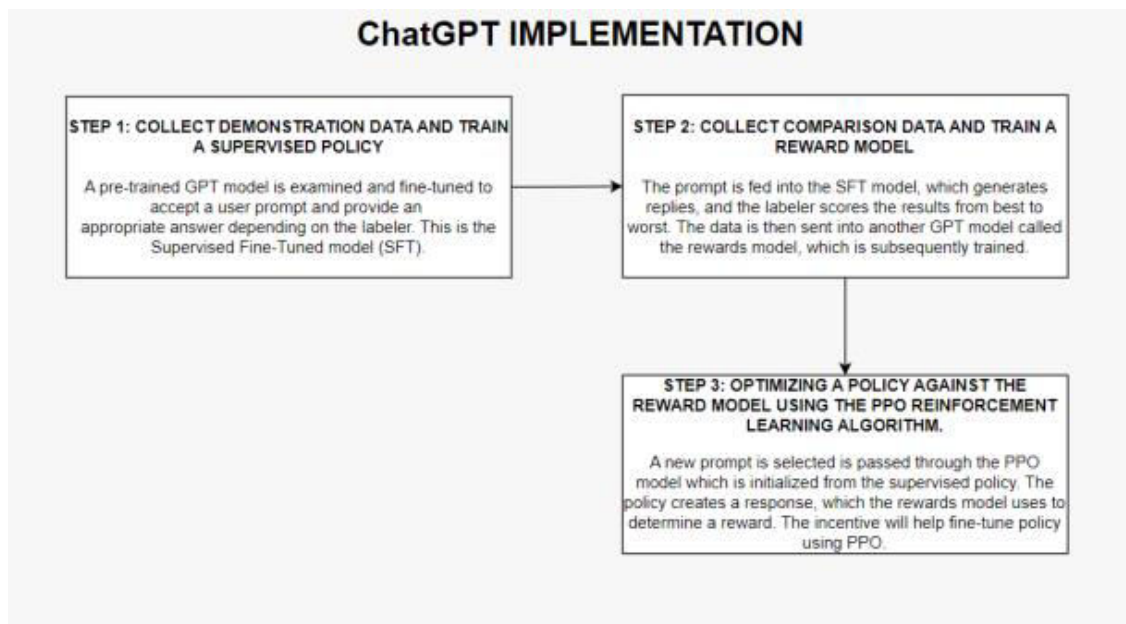
ChatGPT IMPLEMENTATION

STEP 1: COLLECT DEMONSTRATION DATA AND TRAIN A SUPERVISED POLICY

A pre-trained GPT model is examined and fine-tuned to accept a user prompt and provide an appropriate answer depending on the labeler. This is the Supervised Fine-Tuned model (SFT).

STEP 2: COLLECT COMPARISON DATA AND TRAIN A REWARD MODEL

The prompt is fed into the SFT model, which generates replies, and the labeler scores the results from best to worst. The data is then sent into another GPT model called the rewards model, which is subsequently trained.

STEP 3: OPTIMIZING A POLICY AGAINST THE REWARD MODEL USING THE PPO REINFORCEMENT LEARNING ALGORITHM.

A new prompt is selected is passed through the PPO model which is initialized from the supervised policy. The policy creates a response, which the rewards model uses to determine a reward. The incentive will help fine-tune policy using PPO.

Fig 3. ChatGPT technical operations

Source:https://www.researchgate.net/publication/373033785_Using_ChatGPT_in_the_Classroom_Opportunities_Limitations_and_Ethical_Considerations?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6Il9kaXJlY3QiLCJwYWdlIjoiX2RpcmVjdCJ9

Gladstone, Ranjith. (2023). Using ChatGPT in the Classroom: Opportunities, Limitations, and Ethical Considerations. Spicer Adventist University Research Articles Journal. 2. 16-24. 10.56934/sauraj.v2i1.143.

The volume and amount of data utilized to train GPT make it a large language model. GPT is one of the largest language models because its algorithm can access the entire Internet and billions of data sources (Floridi&Chiriatti, 2020). GPT can generate text, answer questions, and translate. It is unusual among language processing tools since it uses deep learning and powerful algorithms to comprehend text context and generate human-like responses. ChatGPT, an OpenAI public tool, uses GPT technology (Kirmani, 2022). It is a sophisticated chatbot that can handle most text requests (Liu et al., 2021). However, ChatGPT can do much more than answer simple inquiries. It can handle more complex queries because of its large data stores and efficient design. ChatGPT can swiftly produce a well-written, multi-paragraph thank you card for a coworker if you don't know what to write. ChatGPT can even write a letter to a coworker about their inefficiency.

This breakthrough could reduce research essay writing time from several hours to a few dozen seconds or make professional writers/researchers obsolete. ChatGPT wrote Appendix 1 for the brief prompt "Write an essay about the value of AI." The article is short but resembles a human response, possibly better than a doctoral student's. Despite ethical considerations (which will be covered later in this study), GPT has several drawbacks. The accuracy of natural language processing models is generally good, but errors in interpreting meaning or creating accurate information can occur, and GPT has had its share of issues (Brown et al., 2020; Strubell, 2019). The GPT model may have trouble interpreting ambiguous, multi-meaning, and compound phrases like "digital immigrant." These algorithms and data repositories require a lot of energy, especially at OpenAI's size (Zhou et al., 2021). OpenAI also made ethical mistakes in creating GPT and the ChatGPT platform, raising questions about their commitment to responsible technology development and maintenance (Perrigo, 2023). GPT may also lead to biases and misinformation because many NLP algorithms do not yet understand falsehood in their data stores and don't resist being pushed to lie or alter reality.

Overview of OpenAI's model history

OpenAI's progression in developing language models reflects significant advancements in artificial intelligence, showcasing a journey marked by innovation and increasing capabilities. The initial model, GPT (Generative Pre-trained Transformer), released in June 2018, was groundbreaking in its architecture. It was built on the transformer model and trained using the BooksCorpus dataset. With 117 million parameters, it was the first to demonstrate the effectiveness of transfer learning in natural language processing (NLP) (Radford et al., 2018). This model highlighted the potential of unsupervised pre-training on large text corpora, paving the way for subsequent models capitalizing on this foundational concept.

In February 2019, OpenAI introduced GPT-2, representing a significant model size and capability leap. Trained on a diverse range of internet text, GPT-2 was released in multiple sizes, ranging from 117 million to 1.5 billion parameters (Radford et al., 2019). It excelled in coherent text generation and showcased a remarkable ability to generalize across various NLP tasks without needing specific training (Brown et al., 2020). However, due to concerns about misuse, particularly its capacity to generate misleading content, OpenAI initially withheld the full release of GPT-2, underscoring the ethical considerations accompanying powerful AI technologies (Solaiman et al., 2019).

The launch of GPT-3 in June 2020 marked a transformative moment in AI, with an architecture that scaled up significantly to 175 billion parameters. Trained on a vast dataset totaling over 570 gigabytes, GPT-3 demonstrated impressive capabilities in zero-shot, one-shot, and few-shot learning (Brown et al., 2020). This model became renowned for its proficiency across a wide range of language tasks, leading to its integration into numerous applications such as chatbots and content generation tools. OpenAI's release of an API for GPT-3 allowed developers to harness its capabilities, further embedding advanced language understanding into various software solutions (OpenAI, 2020).

In August 2021, OpenAI unveiled Codex, a model based on GPT-3 but specifically fine-tuned for programming tasks. Codex was trained on natural language and a large corpus of publicly available code from platforms like GitHub, enabling it to generate and understand code effectively (Chen et al., 2021). This model powered GitHub Copilot, an AI-driven code completion tool that significantly enhanced developer productivity by offering autocomplete suggestions and bug detection.

The introduction of GPT-3.5 in March 2022 focused on refining performance, particularly in instruction-following and reasoning tasks. This version became integral to OpenAI'sChatGPT product, which gained immense popularity for generating human-like conversational responses (OpenAI, 2022). GPT-3.5 improved the model's consistency and capability in handling complex dialogues, laying the groundwork for future iterations.

OpenAI's latest major release, GPT-4, arrived in March 2023 and introduced multimodal capabilities, allowing the model to process text and images as inputs (OpenAI, 2023). This enhanced version was trained on a mix of publicly available and licensed datasets, improving performance in reasoning and nuanced instruction interpretation. With different versions available, including GPT-4-turbo, this model expanded the possibilities for applications requiring an intricate understanding of textual and visual information.

The release of GPT-4-turbo in November 2023 optimized the performance of GPT-4, making it faster and more cost-effective for developers. This version, available through OpenAI's API and integrated into the ChatGPT product, caters to a wider range of real-time applications, enhancing the scalability and accessibility of advanced language models for businesses and developers alike (OpenAI, 2023).

Throughout OpenAI's model evolution, several key themes emerge. The consistent scaling of model sizes has been a pivotal strategy where larger models generally correlate with improved performance and broader capabilities (Kaplan et al., 2020). Regular fine-tuning for specific tasks, as seen with Codex and GPT-3.5, has enhanced the models' specialization in programming and conversational abilities (Chen et al., 2021). Implementing multimodal capabilities with GPT-4 significantly improved handling complex data types. At the same time, the increasing integration of these models into real-world applications highlights their practical utility and impact across various domains. As OpenAI continues to innovate, the trajectory of its language models suggests a promising future for AI-driven technologies.

Table 1: Breakdown of OpenAI's model history

Model Name	Release Date	Parameters
GPT-1	2018	117 million
GPT-2	2019	1.5 billion
GPT-3	2020	175 billion
InstructGPT	2022	1.3 billion
GPT-3.5	2022	200 billion
ChatGPT	2022	200 billion
GPT-4	2023	8x 220 billion
Code Interpreter	2023	-

GPT-4o	2024	-

Introducing GPT-4.0
GPT-4o: The Next Evolution in AI Intelligence
GPT-4o is recognized as the latest flagship model, providing advanced intelligence comparable to GPT-4 but with enhanced speed and improved capabilities across text, voice, and visual interactions (Built In, 2024). The design elevates user experience by streamlining image understanding and discussion tasks.

Key Features of GPT-4
1. Multimodal Capabilities
One of the standout features of GPT-4 is its multimodal nature, allowing it to process both text and image inputs (Built In, 2024). This capability significantly broadens the model's functionality. For instance, it can generate detailed descriptions of images, which enhances user engagement and comprehension. Users can interact with visual content by asking questions related to the images, promoting deeper and more meaningful interactions. Furthermore, GPT-4 can understand and generate content concerning visual data such as charts and diagrams, making it useful across various domains like education, business, and research (OpenAI, 2023). This distinguishes GPT-4 from its predecessors, such as GPT-3 and GPT-3.5, which were restricted to text-only interactions.

2. Improved Accuracy and Reasoning
GPT-4 exhibits notable advancements in accuracy and reasoning capabilities (TechTarget, 2024). This improvement is particularly evident in its ability to perform complex reasoning tasks, demonstrating enhanced logical deduction and multi-step problem-solving skills. The model has a nuanced understanding of instructions, allowing it to generate contextually relevant responses more effectively. Additionally, GPT-4 shows greater creativity and coherence, especially in longer texts and storytelling tasks, making it adept at a wide range of content generation scenarios. These enhancements position GPT-4 as a more powerful tool for users seeking detailed and creative outputs.

3. Larger Context Window
Another significant upgrade in GPT-4 is its context window, which is considerably larger than that of GPT-3.5 (OpenAI, 2023). The standard version supports 8,192 tokens (approximately 6,000 words), with some versions extending this capacity to 32,768 tokens (around 25,000 words). This expansion allows GPT-4 to handle more complex conversations and process longer documents without losing contextual coherence. Such a feature is particularly beneficial for applications requiring in-depth discussions or analyses, enabling users to explore topics comprehensively.

4. Improved Instruction Following
GPT-4 excels in its ability to follow complex instructions, surpassing the capabilities of GPT-3.5 (TechTarget, 2024). This improvement is particularly advantageous for applications that demand detailed guidance. For example, it can generate precise technical documents, craft rich and informative content, and follow intricate step-by-step processes for various tasks. This enhanced instruction-following ability makes GPT-4 a reliable tool for professionals in fields such as technical writing, content creation, and project management.

5. Fine-Tuning for Specific Tasks
OpenAI's continuous efforts to fine-tune GPT-4 for specific applications have greatly improved its performance across various domains (Built In, 2024). The model has shown proficiency in code generation, similar to OpenAI's Codex, which powers tools like GitHub Copilot. It has also enhanced its capabilities in mathematical problem-solving, legal document drafting, and medical diagnostics. Furthermore, GPT-4 excels in creative content creation, producing stories, poems, and other artistic outputs with greater skill and finesse.

Performance Benchmarks
Extensive testing of GPT-4 has highlighted its impressive capabilities across various standardized benchmarks (OpenAI, 2023). For example, the model's performance on simulated human exams, including the Uniform Bar Exam, LSAT, SAT, and AP exams, has been exceptional, often scoring within the top 10% of test-takers. This demonstrates GPT-4's proficiency in understanding and reasoning about complex academic subjects. Moreover, compared to GPT-3.5, GPT-4 exhibits a superior grasp of human preferences and conversational cues (TechTarget, 2024), leading to interactions that align more closely with user expectations. This advancement enhances user satisfaction and reflects the model's potential in real-world applications.

Enhanced Image Understanding
Superior performance in image analysis is achieved with GPT-4o, setting a new standard for existing models (The Guardian, 2024). For instance, the capability to photograph a menu written in a foreign language and receive translations, gain insights into the cultural significance of dishes, and obtain

personalized recommendations is now available. Future iterations are expected to include real-time voice interactions and video conversations, enabling discussions about live events—such as inquiring about game rules while watching a sports match.

Expanding Access to Advanced Tools

The mission to make sophisticated AI tools accessible to a global audience is emphasized. With over 100 million weekly users of ChatGPT, the commitment to integrating more intelligence and advanced features for all users is clear (DataCamp, 2024). New functionalities available to GPT-4o users will include:

- Access to GPT-4-level intelligence
- Responses generated from both the model and live web data
- Data analysis and chart creation capabilities
- Interaction with photos taken by users
- File uploads for summarization and analysis
- Exploration of GPTs and the GPT Store
- Enhanced user experience through Memory features

A seamless transition back to GPT-3.5 will occur when usage limits are reached, ensuring uninterrupted conversations.

The introduction of GPT-4o signifies a substantial advancement in AI capabilities, with improvements in user experience through increased efficiency and functionality. The goal of making these advanced tools widely available aligns with the desire to empower users globally to harness the full potential of AI in daily activities.

Applications of GPT-4

Fig 4. Potential ChatGPT applications
Source: https://www.sciencedirect.com/org/science/article/pii/S1526149223001649
PanelHong Zhang 1, Haijian Shao 2, CME, Computer Modeling in Engineering and Science, Tech Science Press, Vol. 138, Issue 3, 15 December 2023, psges 2061-2102

The versatility of GPT-4 positions it as a powerful tool capable of transforming various industries through its diverse applications. This model's advanced features enable it to excel in multiple domains, making it an essential resource for enhancing efficiency and creativity. Below are some key areas where GPT-4 is making a significant impact.

1. Natural Language Understanding and Generation

GPT-4 is a foundational technology for chatbots and virtual assistants, such as ChatGPT, which are increasingly integrated into customer service and support systems (SCMP, 2024). By leveraging their natural language understanding capabilities, these systems can engage users in meaningful conversations, addressing inquiries with contextually appropriate responses. Beyond simple interactions, GPT-4 can generate creative content, including blog posts, short stories, and dialogues, catering to various creative industries. Furthermore, the model excels in document summarization and report generation, streamlining the process of distilling complex information into concise formats. This capability is particularly valuable in professional settings where time efficiency is crucial. The ability to answer user inquiries accurately also enhances the user experience, as GPT-4 can provide relevant information quickly, reducing the time spent searching for answers.

2. Programming and Code Assistance

In programming, GPT-4 has demonstrated remarkable code generation and debugging capabilities (Amity Solutions, 2023). It supports multiple programming languages, making it a versatile resource for developers. Through its integration with tools like GitHub Copilot, GPT-4 can assist with real-time code completion and suggestions, significantly improving developer productivity. This functionality allows programmers to focus on higher-level problem-solving while the model handles repetitive coding tasks, accelerating the development process and reducing the likelihood of errors. By providing context-aware suggestions, GPT-4 assists novice and experienced programmers navigate complex coding challenges.

3. Education

In educational settings, GPT-4 can play a transformative role by assisting in tutoring and providing explanations of complex concepts (OpenAI, 2023). Its ability to interact with multimodal inputs allows it to interpret diagrams, charts, and graphs, enhancing students' learning experience. This multimodal interaction fosters a deeper understanding of subjects, particularly in STEM fields where visual aids are often essential. Moreover, GPT-4 can solve mathematical problems, offering step-by-step explanations that help students grasp difficult concepts.

4. Legal and Medical Applications

GPT-4 is making strides in the legal sector by assisting with document drafting, contract reviews, and legal research (Built In, 2024). Its ability to quickly analyze large volumes of text allows legal professionals to streamline their workflows. In the medical field, GPT-4's capabilities extend to supporting healthcare professionals by answering medical questions and summarizing patient data.

5. Image Analysis

One of the standout features of GPT-4 is its ability to analyze images (DataCamp, 2024). By describing images and responding to queries based on visual content, GPT-4 enhances workflows that involve visual interpretation. This capability allows professionals to leverage AI in previously limited ways.

The application of tools such as OpenAI and ChatGPT in research contexts allows for the analysis of large datasets, facilitating the identification of significant patterns. This capability aids in clinical diagnostics and drug development. The potential for streamlining processes and enhancing educational outcomes in medical fields underscores the value of these technologies as invaluable resources for research and practical applications.

In conclusion, the applications of GPT-4 span a wide array of fields, demonstrating its versatility and effectiveness as a tool for enhancing productivity and creativity (SCMP, 2024). As organizations increasingly integrate GPT-4 into their workflows, the transformative potential of this technology is expected to expand even further.

Notable AI Tools for Image and Content Generation

1. MiniGPT-4

minigpt-4.github.io
MiniGPT-4 is a cutting-edge vision-language model that synergizes a visual encoder and a language model. It excels in generating intricate image descriptions, transforming handwritten notes into websites, and crafting creative outputs like poems or problem-solving narratives based on images.

2. D-ID

[d-id.com](https://www.d-id.com/)
D-ID specializes in animating still images, allowing them to speak and move. This tool is ideal for creating lifelike avatars from static images, with subscription plans starting at $5 per month and a free trial available.

3. Creaitor.ai

[creaitor.ai](https://www.creaitor.ai/?ref=aiwebtools)
Creaitor.ai empowers users to swiftly generate high-quality AI-driven content, including images. It's especially useful for marketers and content creators looking to optimize their creative workflows.

4. EPageStore.AI
[epagestore.ai](https://epagestore.ai/?ref=HHIDP9MRBRAIX5D)
EPageStore.AI features an AI image generation tool along with a comprehensive suite of content creation tools, designed to enhance productivity and streamline the content development process.

5. Jasper AI
[jasper.ai](https://www.jasper.ai/?utm_source=partner&fpr=aiwebtools)
Jasper AI allows users to craft personalized image content that aligns with their brand. It's part of an all-encompassing AI content creation suite, perfect for businesses and creatives alike.

6. GoCharlie AI
[gocharlie.ai](https://gocharlie.ai/?fpr=aiwebtools)
GoCharlie is a powerful platform for AI-driven content creation, featuring tools to generate images for social media, advertisements, and more. It's tailored for businesses seeking to quickly produce branded content.

7. Fireflies AI
[fireflies.ai](https://fireflies.ai/?gr_pk=Or2o&gr_uid=lqX7)
While primarily a meeting transcription service, Fireflies also offers capabilities to analyze voice recordings and create detailed, image-like representations of audio data.

8. Magical
[getmagical.com](https://www.getmagical.com/)
 Magical boosts productivity by providing AI tools for content and image generation across various applications, including blog posts, social media, and presentations.

Literature Review, Data Analysis and Hypothesis Generation using AI Tools
Academic research has recently seen the popularity of AI tools, such as OpenAI'sChatGPT, for literature reviews, data analysis, and hypothesis creation. Chen et al. (2020) suggest that these technologies can scan large amounts of literature, summarize major findings, and identify trends, saving researchers a lot of time and effort. In addition, AI can generate research ideas and hypotheses by connecting different data points or identifying gaps in the current literature (Bhatia, 2021).

In terms of data analysis, AI has completely changed how academics handle qualitative and quantitative data. Machine learning algorithms can discover patterns, trends, and correlations in large datasets, which are more complex and accurate interpretations (Jordan & Mitchell, 2015). In addition, AI techniques such as ChatGPT can assist with qualitative data analysis by categorizing responses, identifying themes, and summarizing open-ended survey questions (Yu et al., 2022). AI is invaluable throughout the entire research process, from the initial concept to the final analysis.

Universities Integrating AI into Research: Case Studies and Examples
Universities worldwide are adopting artificial intelligence (AI) to improve research, streamline processes and increase student outcomes. For example, University of Oklahoma uses AI to look into unstructured information, like student application essays, as a component of its retention analysis. This approach allows the university to link insights to actionable strategies to increase student support and success. For instance, Georgia State University has an AI chatbot called 'Pounce,' which helps students with things like admissions, financial aid, and class registration. Timely reminders have significantly reduced summer melt rates by more than 20%, and this proactive strategy is successful (Al-Sofi, 2024).

AI is being used at Harvard University to navigate challenges in college and career pathways, improving instruction and engagement for students. At the same time, Stanford University has built QuizBot. This AI-powered chatbot helps students review their coursework through natural language interactions and has seen a 20 percent improvement in retention rates for its users. Kent State University uses ALEKS, an AI program, to personalize its developmental math program, which adjusts the difficulty of math problems according to each student's understanding(Al-Sofi, 2024).

Arizona State University has set up virtual reality (VR) labs for biology students, who can simulate experiments like drawing blood and analyzing samples. Using technology for an innovative approach to experiential learning strengthens the opportunities. In a different example, New York University uses an AI system to manage library resources efficiently: the digital librarian helps users find and track checkouts. The University of California, Berkeley uses an AI-based chatbot that allows both current and prospective students to ask questions and get quick info throughout the admissions process (Global Admission, 2023).

Also, Ivy Tech Community College has created an algorithm that monitors students' online behavior patterns and can identify those at risk of failing. Approximately 3,000 students have been helped

through this proactive intervention strategy to improve their academic performance. Finally, Deakin University uses a chatbot called Genie to provide prospective students with information about programs and campus resources, making the student experience more personalized (Al-Sofi, 2024).

Through these case studies, we have gained insights into the variety of ways in which AI can be used at different universities, from increasing the effectiveness of research methodologies to improving student engagement to streamlining administrative processes. The higher education landscape is set to undergo a large transformation as institutions explore new ways to use AI.

ChatGPT User Growth

In April 2024, the site reached its highest traffic, attracting nearly 2 billion visits per month, ranking it among the most visited websites globally. However, recent data indicates that ChatGPT now receives just over 120 million monthly visits, showing a significant decline from its peak.

Table 2: ChatGPT monthly progression over time

Month	Number of Visits	Change Over Previous Month	Change Over Previous Month (%)
November 2022	152.7 million	-	-
December 2022	266 million	↑ 113.3 million	↑ 74.2%
January 2023	616 million	↑ 350 million	↑ 131.58%
February 2023	1 billion	↑ 384 million	↑ 62.34%
March 2023	1.6 billion	↑ 600 million	↑ 60%
April 2023	1.8 billion	↑ 200 million	↑ 12.5%
May 2023	1.8 billion	-	-
June 2023	1.6 billion	↓ 200 million	↓ 12.5%
July 2023	1.5 billion	↓ 100 million	↓ 6.25%
August 2023	1.4 billion	↓ 100 million	↓ 6.67%
September 2023	1.5 billion	↑ 100 million	↑ 7.14%
October 2023	1.7 billion	↑ 200 million	↑ 13.33%
November 2023	1.7 billion	-	-
December 2023	1.6 billion	↓ 100 million	↓ 5.88%
January 2024	1.6 billion	-	-
February 2024	1.6 billion	-	-
March 2024	1.8 billion	↑ 200 million	↑ 12.5%
April 2024	1.8 billion	-	-
May 2024	637 million	↓ 1.2 billion	↓ 64.6%
June 2024	260 million	↓ 377 million	↓ 59.2%
July 2024	126.4 million	↓ 133.6 million	↓ 51.4%
August 2024	121.3 million	↓ 4.1 million	↓ 4.06%

Discussion on AI in Academic Fields: STEM, Humanities, Social Sciences

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In many of these domains, AI helps accelerate and deepen research so social scientists can examine more data and study more complex issues. This can be achieved in the following ways explained in the table below;

Table 3: ChatGPT's applications

	Ways	Explanations
1.	Automated literature review	ChatGPT has been detailed to assist the method of writing audits by automating the extraction and summarisation of important data from a vast cluster of scientific articles and publications.
2	Structured-outline generation	ChatGPTcan serve as a helpful tool for generating structured outlines to guide the flow of scientific writing
3	Drafting and editing assistance	According to the report, ChatGPT can act as an intelligent assistant during the drafting and editing stages of medical-scientific documents. The tool offers suggestions to improve sentence structure, improve clarity, and follow academic writing conventions.
4	Language enhancement and adaptation	ChatGPT helps tailor the language and tone of your writing to suit your target audience. ChatGPT can be used to write scientific papers in a variety of languages, including English, Spanish, and Chinese.
5	Citation and reference management	Selected references demonstrate ChatGPT's ability to assist researchers in creating correct citations and bibliographies based on commonly accepted citation styles (e.g. APA and MLA).
6	Collaborative writing and peer review	ChatGPTcan enhance collaboration by acting as a facilitator tool in brainstorming, idea sharing, and design review.
7	Table and figure creation	ChatGPT has been shown to be able to aid researchers in developing tables and figures by offering suggestions on formatting, data visualisation techniques and labelling

3. STEM: Science, Technology, Engineering, Mathematics: STEM fields, being essentially data-driven, may have been the fields that most widely use AI. In many fields, AI is fast becoming a necessary tool for data analysis, simulation, and predictive modeling.

a. Genomics and Precision Medicine: Artificial intelligence tools have transformed genomic data analysis. Machine learning algorithms help researchers find disease genetic markers, predict patient response to therapies, and develop personalized medicine approaches. For instance, AI has been employed to recognize genetic variations associated with diseases like cancer, diabetes, and Alzheimer's, enabling earlier detection and better-targeted treatments (Jones et al., 2021). AI is also helping to fast-track drug discovery by predicting how various compounds would interact with biological systems, thereby cutting the time and money required to produce new drugs.

b. Physics and Engineering Simulations: In physics, artificial intelligence is commonly used to simulate the interactions of very complicated particles and analyze experimental data from such huge projects as the Large Hadron Collider. These tests collect massive amounts of data, which machine learning algorithms can process to find subtle trends and anomalies that may result in game-changing breakthroughs (Taylor, 2021). Artificial intelligence is used in engineering to develop the design and

functionality of complex systems such as self-driving cars, smart cities, and renewable energy grids. By using AI-powered simulations, engineers can test the design in virtual environments without the costly need to create physical prototypes.

c. Environmental Science and Climate Modelling: Climate science has used artificial intelligence to simulate climate change and predict the consequences of global warming. Jones et al. (2021) apply machine learning techniques to improve climate models by studying environmental data such as temperature, ocean currents, and atmospheric CO_2 levels. They are important for projecting future climatic scenarios and influencing policy decisions to mitigate climate change's impacts.

d. Robotics and Automation: Intelligent Systems are created with the help of artificial intelligence (AI) to make intelligent systems that can perform complex tasks independently. That includes factory robots that help streamline production lines to self-driving drones used for environmental monitoring and disaster assistance. These systems can learn and adapt from their surroundings, improving their performance over time, thanks to AI algorithms (Siciliano & Khatib, 2016).

While AI is a data analysis tool in STEM domains, it is far more, it is actively shaping our future research and development. AI speeds up scientific discovery and technological innovation by automating complex computations, executing sophisticated simulations, and allowing real-time data interpretation. AI's impact on academic research is truly revolutionary in all disciplines. It introduces new means to interact with huge amounts of cultural data and new ways to understand literature and artwork in the humanities. AI in the social sciences enables real-time monitoring of societal trends, public opinion, and economic developments. AI also enhances data analysis, predictive modeling, and the development of cutting-edge innovation in STEM. As AI tools continue to develop, their influence on academic research will grow, accelerating discovery, improving analysis, and finding new ways to tackle complex problems.

Overall, AI has transformed research in the humanities, social sciences, and STEM sectors. Although the uses of AI are disparate across different sectors, the common thread is that AI enables academics to process and analyze data in ways never before thought possible, making academic study more efficient and expansive.

Advantages of AI in Research Methods

1. Higher Productivity and Efficiency: AI's most well-known advantage in research is that it can increase productivity and efficiency. AI solutions can automate laborious tasks like data collection, literature review, and analysis, allowing academics to concentrate on interpretation and creation. For example, ChatGPT can quickly summarize large amounts of academic publications so that academics can filter through applicable literature (Chen et al., 2020). This automation frees up time on mundane activities so you can think critically about things and test your hypotheses.

2. Data Analysis and Interpretation: AI has now changed how academics can analyze data by allowing more sophisticated algorithms for pattern identification, trend analysis, and predictive modeling. For example, machine learning algorithms can discover complicated relationships in large datasets that humans struggle to identify (Jordan & Mitchell, 2015). AI systems like ChatGPT can support qualitative research by sorting and categorizing data, making it easier to extract useful information from interviews or open-ended survey questions (Yu et al., 2022).

3. Improved Access to Complex Datasets: Artificial intelligence techniques greatly increase researchers' access to and the ability to work with massive and complex datasets. Many AI platforms are more successful at handling big data than traditional analytical methods by allowing academics to evaluate large-scale datasets from genomics, climate science, and economics. For instance, AI has been used to make genomic data evaluations more effective, leading to faster discoveries in personalized medicine (Jones et al., 2021). Databases for AI make these databases more accessible for larger and deeper study questions.

Challenges and Ethical Considerations

1. Bias in AI-Generated Content: The use of AI in academic research faces one of the major challenges: the possible bias of AI-generated content. The AI we talk about in this article — and AI models like ChatGPT — are trained on large datasets that themselves may contain inherent biases, which can then come out in the AI's output. For example, AI tools can reinforce stereotypes or give biased interpretations of data, impacting the objectivity and credibility of research results (Smith, 2023). These potential biases are something researchers must be aware of and consider when mitigating them: it's always about using diverse training datasets, for instance, and critically evaluating AI outputs, among other steps. This should not make you go out of your way not to cite sources. Issues of Academic Integrity and Originality are simply the academic equivalent of plagiarism.

Therefore, using AI in academic research can breach academic integrity and originality. AI text-generating tools help you write but can raise questions about who wrote what and if it was plagiarized. ChatGPT, like other AI tools, should be used by researchers in the context of their work being held to

the same academic standards as any other work. AI should be a supplementary tool rather than a replacement for original thought and analysis (Jones & Martinez, 2021). For academic integrity, it is necessary to have clear guidelines around how AI tools should be cited and used ethically in research.

2. Concerns regarding data privacy and security: Using sensitive or personal information in large datasets that AI relies on has evoked data privacy and security concerns. For example, in healthcare, AI systems deal with patients' data, avoiding noncompliance with regulations on privacy such as GDPR or HIPAA (Ahmed et al., 2020). The regulation of AI in academia must be strictly implemented to ensure universities are aware of any AI tool used in research and need to ensure it abides by these regulations and guarantee robust security mechanisms are in place to prevent the leaking or misuse of the sensitive data in question.

METHODOLOGY

This study will use a mixed-methods approach, combining qualitative and quantitative data collecting and analysis tools under the proposed methodology. This decision seeks to evaluate the viability, efficiency, and difficulties of including OpenAI and ChatGPT in research approaches at Bisha University.

1. Method of Research

The study will use a mixed-methods approach, including elements of qualitative and quantitative research. In-depth interviews and focus groups with academics and staff will be part of the qualitative component to investigate present research methods and pinpoint areas where artificial intelligence technologies like OpenAI and ChatGPT could be very beneficial. On the other hand, the quantitative component will consist of polls and pilot studies meant to compile quantifiable information on how well artificial intelligence tools improve research accuracy, efficiency, and innovation. This all-encompassing architecture guarantees the triangulation of data and consistent results by allowing a strong knowledge of the possible advantages and difficulties related to the incorporation of artificial intelligence into research approaches.

2. Participants

Three primary categories of individuals will be part of the research. Faculty members and researchers will make up the first group and offer comments on including artificial intelligence tools as well as analysis of current research methods. Graduate and postgraduate students engaged in research activities such as thesis or dissertation work, will be part of the second group and assist in evaluating how artificial intelligence technologies could support different stages of the research process, from literature reviews to data analysis and report writing. Finally, technical experts from the IT division of Bisha University and outside artificial intelligence consultants who can provide technical viability of including OpenAI tools into the university's research infrastructure will be consulted under IT and AI specialists.

3. Methods of Data Collection

Phase 1: requirements Assessments seek to pinpoint present problems with research methods and gauge their fit for artificial intelligence inclusion. Ten to fifteen faculty members, researchers, and students will be semi-structured interview subjects in this phase to learn about their present approaches and opinions of artificial intelligence tools. Two to three focus groups will also involve researchers from different fields to talk about the possible use of AI technologies in their domains. While addressing issues on integration, an online poll will measure present technology utilization in research opinions of AI tools and point up areas where artificial intelligence could help.

Phase 2: Under supervised pilot investigations, OpenAI and ChatGPT will be integrated under test. Five to ten research projects spanning several departments will be selected; each project will have an experimental group using artificial intelligence tools for particular tasks and a control group employing conventional techniques. Literary evaluations, data analysis, hypothesis development, and report writing will all be part of research activities funded by AI. Data collecting will center on measures including user comments on usability, accuracy of AI-generated outputs, time taken to finish activities, and quality of hypotheses.

Phase 3: Evaluation will evaluate research applications of OpenAI and ChatGPT's efficiency and difficulties. Using qualitative data from focus groups and interviews, theme analysis will be done to find commonalities about artificial intelligence integration—including advantages and drawbacks. Descriptive and inferential statistics will be used for quantitative data to evaluate conventional and AI-enhanced research strategies.

Phase 4: Framework Development will result in a thorough framework combining OpenAI and ChatGPT into Bisha University's research methodology. This framework will lay out an integration plan, suggest training and capacity-building initiatives, create ethical rules, and suggest required technological infrastructure enhancements to help the integration of AI tools.

4. Data Analysis Procedures

Thematic analysis of qualitative data can help to find recurrent trends and themes concerning the integration of artificial intelligence tools. Organizing topics and coding replies could be helped by tools such as NVivo. Descriptive statistics will summarize survey results for quantitative data analysis; inferential statistics will evaluate the effectiveness of AI-supported and conventional research approaches, thereby measuring metrics including time efficiency and task completion accuracy.

Ethical Considerations

Ethical concerns are essential in this research:

All participants must submit informed consent before participation to show that they understand the study's intent and rights.The ethical use of AI-generated content will have clear criteria, authorship transparency, and originality (Turnitin, 2024). We will inform participants how using AI tools in their study will not compromise academic integrity.By addressing these ethical concerns, the study aims to create a responsible environment for using AI tools and to ensure participants' rights and academic standards.

This methodology outlines a comprehensive approach to exploring how OpenAI and ChatGPT can be integrated into research methods at Bisha University. By employing a mixed-methods approach, conducting pilot studies, and prioritizing ethical considerations, the study aims to yield valuable insights into the potential of AI to enhance research productivity, accuracy, and innovation. The final framework will serve as a practical guide for implementing AI tools in the university's research practices, ensuring that the integration process is both effective and responsible. Through this initiative, Bisha University has the opportunity to lead in academic research innovation, adapting to the evolving landscape of higher education.

Framework proposed for implementing integration strategies.

To successfully implement ChatGPT into Bisha University's existing research frameworks, the following strategic actions will be taken:

1. Assessment of present Research Practices: The faculty and students will thoroughly evaluate their present research procedures. They will also determine specific areas for possible improvements in research using AI technologies, thus ensuring that the integration process is oriented to the university's requirements (Lynch, 2023).

2. Pilot Programs: Several departments will launch pilot programs to test ChatGPT in use cases for research activities. In this case, ChatGPT is used to perform literature reviews, data analysis, and research proposal writing so stakeholders can determine its effectiveness and usability (Euronews, 2024).

3. Feedback Mechanisms: These will be feedback loops, allowing participants to communicate with ChatGPT about their experiences and issues. This critical feedback will be used to modify and improve the integration process continuously (Costa et al., 2017).

4. Scalability Planning: The results of pilot programs will be used to create a roadmap to extend ChatGPT's use across more departments and research efforts. This strategy will address timescales, resource allocation, and potential hurdles to implementation (Turnitin, 2024).

Training Programs

To maximize the efficient usage of AI tools like ChatGPT among staff and students, a series of training seminars will be organized:

1. Workshops For Faculty: The workshop objective is to give professors the basic ability to use ChatGPT in their research methodology.Workshops will cover practical applications in academic writing, data analysis, and ethical considerations for using AI.The format that will be implemented is Hands-on exercises and case studies of successful AI integration in research (Bicknell et al., 2023).

2. Student Training Sessions: The objective is to train students to use ChatGPT for research projects. The best ways to perform literature reviews, develop hypotheses, and analyze results will be thoroughly discussed. García et al. (2007) suggest that online tutorials and in-person workshops are the best combination for various learning styles.

3. Ongoing Support and Resources: An online resource hub will allow faculty and students to access instructional films, frequently asked questions, and user guides. This center will provide ongoing assistance to help users become more comfortable with AI tools (Bilal, 2024).

4. Evaluation of Training efficacy: Workshop efficacy will be assessed using pre- and post-training assessments, and areas for improvement will be recommended. Participant feedback is vital for improving future training sessions (McKinsey Global Institute, 2016).

Bisha University can develop a strong framework for using ChatGPT by implementing these integration tactics and training programs, which will improve research capacities while also addressing ethical concerns.

Potential Advantages of the Proposed Method

1. **Increased Research Productivity:** Incorporating AI technologies like ChatGPT into research procedures at Bisha University is expected to greatly enhance research productivity. With the help of AI systems, we can now automate the task of summarizing articles and extracting key insights that researchers need to do literature reviews with more efficiency. For instance, tools like Semantic Scholar and Elicit can quickly run through entire libraries of scholarly publications, summarizing short and important discoveries and saving researchers (AI Center, 2023; Euronews, 2024). Additionally, AI systems can process massive databases quickly to identify trends and connections that would otherwise take much longer to detect through human endeavor (Punch Newspapers, 2024). ChatGPT can generate reports and academic papers by generating outlines, suggesting content formats, and polishing the wording. This ability not only enhances the writing speed but also preserves high standards of clarity and coherence in academic writing (Bilal, 2024). Automating monotonous jobs like citation formatting and proofreading lets researchers focus on higher-level analytical work (Discuss.io, 2024).

2. **Improved research quality:**This proposed strategy is also expected to enhance the quality of research outcomes. We can achieve deeper data analysis with AI tools, as AI tools provide advanced statistical approaches and visualizations that help researchers better interpret hard datasets. With this feature, one can better understand the research findings (Gretel, 2023). AI can also develop new ideas based on current literature and data trends that scholars might not need attention to leading to increased creativity in hypothesis generation. Incorporating this creative input could lead to new directions for research and the overall impact of Bisha University's studies through such input.

3. **Collaborative and Interdisciplinary Research:** Collaboration across disciplines is a huge facilitator of AI. AI tools can break down discipline barriers by providing a shared platform for data analysis and interpretation. By bringing together knowledge from multiple sources, researchers from many professions can work more effectively (McKinsey Global Institute, 2016). The collaborative environment fosters creativity and transdisciplinary projects that address some of the most complex societal issues.

4. **Global Competitiveness:** Finally, integrating AI-driven research approaches places Bisha University at the forefront of academic innovation.Bisha University would front the use of AI-driven research methodologies. Introducing advanced AI tools like ChatGPT will help Bisha University build its reputation as a forward-thinking university aiming to advance academic achievement using technology. Such a strategic posture not only brings in the best teachers and students but also enables the potential for collaboration with industry leaders and academic groups worldwide (Discuss.io, 2024). The strategy of including OpenAI and ChatGPT in Bisha University research methods can stimulate productivity, research quality, collaboration, and global competitiveness.

Challenges and Recommendations

1. **Technical Barriers:** Bisha University's use of AI technologies such as ChatGPT faces various technological challenges that must be addressed. Access to advanced AI technologies can be restricted due to budget restrictions or a lack of technological infrastructure. For successful integration, it is critical that these tools be consistently accessible to instructors and students (Punch Newspapers, 2024). This means not just software but the hardware necessary to run AI applications.The worry is that not all researchers can access the same AI tools, exacerbating the gap between those who can and those who can't use new technologies. Therefore, to tackle this, Bisha University should provide resources and training programs for disadvantaged groups to have equal access to AI capabilities (Euronews, 2024).

2. **Ethical and Legal Considerations**: The use of AI in research creates significant ethical and legal concerns. There must be clear criteria for when AI-generated content should be used in academic research. Bilal (2024) also includes creating standards for correct citation and credit of AI contributions to avoid plagiarism. These criteria have to be trained by both academics and students in institutions.Protecting Against AI's Potential Biases in Study Findings: Biases in training data can be reproduced in AI systems, leading to biased study results. According to Akinola (2024), in order to avoid bias in AI-generated writing, Bisha academics must first meticulously analyze the findings for bias and include diverse views in their research. Such biases can be identified and mitigated with regular algorithm audits (NCBI, 2022).

3. **Institutional Support:** To implement AI-driven research efforts, strong institutional support is necessary.The Importance of Administrative Support for AI-Driven Research Initiatives is necessary. Institutional leaders must ensure the use of AI technologies by making available the requisite resources, financing, and infrastructure. The McKinsey Global Institute (2016) points out that this assistance can be used to develop pilot initiatives that show how AI can boost research productivity.Bisha University should develop internal regulations for AI ethical use in research. These policies should cover data privacy, algorithmic transparency, and accountability (Frontiers in Surgery,

2022). The institution can create a structure in which AI technologies can be used responsibly and successfully.Bisha University can successfully integrate OpenAI and ChatGPT into its research methodology by addressing these problems with tailored recommendations that promote ethical standards and equal access.

Conclusion

Summary of Findings

Incorporating OpenAI and ChatGPT into Bisha University methodology has shown key benefits to improving productivity and quality. The potential of AI systems is to relieve researchers from the burden of their jobs by simplifying the literature review, helping with hypothesis development, and improving the quality of data collection and analysis. What is more, ChatGPT can help with writing and editing research articles, thus resulting in better deliverables. In addition, these AI tools facilitate a shared platform for researchers participating in different research domains to collaborate on creative research activities. In general, the results show that the deliberate and strategic application of AI technology could make a remarkable difference in the research environment at Bisha University.

Future Research Directions

In the future, a couple of avenues for research can be taken to understand better how AI can be used in academic settings. Disciplinary specificity is one important area and looks at how AI tools can be specialized to answer the unique needs of different disciplines, say, humanities versus STEM fields. The second important direction is to study the long-term impact on academic research quality by examining how the incorporation of AI influences the citation rates and publication impact indicators over time. Furthermore, examining the ethical considerations of employing AI in research is also important in matters involving bias, transparency, and academic integrity. As AI technology progresses in educational settings, these topics are excellent opportunities for further exploration.

Final Recommendation

To achieve the full potential of AI tools such as OpenAI and ChatGPT, Bisha University should employ such technologies in a systemic, ethical, and effective manner. First and foremost, because of this, they need to define the ethical boundaries in which AI can be used in research, which should be clearly spelled out in detailed protocols that uphold academic integrity. On the other hand, organizing training workshops for both faculty and students can help them learn more about AI technologies and how they can be applied in research best practices. In addition, institutional support is necessary to make AI technologies work within the context of research methodologies. Support from the administration can help in the effort to integrate these tools.

Following these recommendations, Bisha University can become a leader in AI-powered academic research and help promote a culture of innovation, collaboration, and ethical standards. Finally, adopting AI technologies signals a win-win opportunity for Bisha University to improve its research capacity and make a mark on the growing world of higher education. By thoughtfully executing and continuously discovering, the university can utilize AI to advance research outcomes and maintain its academic leadership position in a more digitalized society.

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