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**The Impact of Artificial Intelligence Dependency in Research: Analyzing The
Advantages, Drawbacks And Ethical Concerns
Case Study: Master 2 Degree (Student Of Ibn Khaldon University)**

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Requirements for the Degree of Master in Linguistics**

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Dedication

This work is dedicated to my beloved mother who has been my source of inspiration and emotional support.

To my grandparents for always encouragement, not forgetting each member of my family.

To my loyal friends Nada, Manal, Khaoula and Nesrine who were always supportive. I will always appreciate all they have done.

-Chenaf Ferial-

Dedication

I dedicate this research work to all my family members, especially my parents. Thanks for their kindness, unstoppable praying support and love.

-Derkaoui Mounir-

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Abstract

This study aims to uncover, advantages, and drawbacks of using artificial intelligence in academic research and ethical concerns that are encountered by researchers through the academic journey. This research aims to unveil the use of AI tools among foreign language learning, especially English with the objective to minimize its potential risks and uphold the integrity of scientific research. This investigation captivates the importance of proactive measures to ensure that AI remains a powerful tool in service of human knowledge and progress, and not a replacement of human brain functions and productive roles. To reach this end, we used an online survey and an interview to gather essential data for our research. The findings reveal that both teachers and students use AI tools and have no background knowledge of how to use them ethically, yet AI dependency is what characterizes our sample of teachers and students and this is an alarming academic concern. In this respect, a professional training is needed to ensure the ethical use of AI and boost digital skills respectively.

Key words: Artificial intelligence (AI) , academic research, ethical concerns, AI dependency.

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List of Abbreviation

AI: Artificial Intelligence

NLP: Natural Language Processing

GAI: General Artificial Intelligence

ANNs: Artificial neural networks

SNNs : Simulated neural networks

NIDA: The National Institute on Drug Abuse

NSF: The National Science Foundation

General Introduction

Artificial intelligence (AI), has become a common notion in today's technological world, piquing the curiosity of scholars, policymakers, and the general public. From a theoretical idea to a revolutionary force impacting many aspects of our lives, artificial intelligence (AI) has evolved from science fiction to real-world applications.

The way that artificial intelligence (AI) technologies are being incorporated into different facets of academia has changed the way that research methodologies and practices are conducted in recent years. The research process has been greatly impacted by AI systems' capacity to process enormous volumes of data, extract insightful information, and automate tasks. This has led to both advancements and problems. This dissertation aims to investigate the effects of artificial intelligence (AI) dependence in scholarly research, emphasising its benefits, limitations, and ethical implications.

The introduction of AI technologies has completely changed how scientists carry out their study, evaluate their data, and share their conclusions. From machine learning models to natural language processing algorithms, artificial intelligence (AI) has emerged as a crucial tool for a wide range of academic fields, including the humanities and sciences. AI systems' capacity to manage intricate studies, forecast results, and spot patterns has accelerated research procedures and broadened the range of questions that can be investigated.

This dissertation aims to critically evaluate the implications of AI dependency in academic research. By examining the advantages, drawbacks, and ethical concerns associated with the prevalent use of AI tools, it seeks to provide insights into the evolving dynamics between human researchers and machine intelligence. Through an in-depth analysis of relevant literature, case studies, and expert opinions, this study endeavors to offer a comprehensive understanding of the multifaceted impact of AI on research practices.

To be more precise, these are the following sub-questions discussed in this research:

- What are the specific advantages that AI brings to academic research?
- What are the limitations and drawbacks of relying heavily on AI in research?
- How can researchers mitigate ethical risks and ensure responsible AI use in

academic studies?

The following hypotheses were determined to answer the stated research questions:

- AI improves research efficiency and accuracy compared to traditional methods.
- Overreliance on AI may compromise research quality and hinder human creativity.
- AI raises ethical concerns regarding data privacy and societal implications.

Aims and Objectives of this study:

- To identify and analyze the advantages of AI utilization in academic research.
- To explore the drawbacks of AI dependency in research
- To examine the ethical concerns surrounding the prevalent use of AI in academic studies, including issues related to data privacy, algorithmic transparency, and societal implications.
- To assess the implications of AI dependency on the quality, integrity, and reproducibility of research outcomes.

The Research Design:

The current study is divided up into three main chapters. The first chapter represents an introduction of this study which gives the reader an overview about the rise of artificial intelligence and its development phases and also describes the relationship between artificial intelligence and research. The second chapter is the practical part of this study, which focuses on the analysis of both the questionnaire and the interview. However the third chapter revolves around the discussion of findings and results of the investigation, besides the suggested recommendations and the limitations of the study.

Chapter One:

The Introduction of AI Tolls In Academia

Introduction

If you look back over the past 50 years, you will see how much world has cultivated. With the help of the new technologies, we have made a society that is more evolved than ever before. Artificial Intelligence (AI) is one of the major game difference. It is now an important section of the technology world and will remain to change significantly. Its effect is vast and now touches almost every field such as transportation, money, language translation, healthcare and many more.

This chapter examines the extraordinary arise of artificial intelligence, tracking its origins, surveying its current impact, and noting on its potential for the future.

- ***Definition of artificial intelligence:***

Artificial intelligence (AI) is part of computer science aimed at making machines that actively behave like humans, such as computer and programs. Computers can do complex actions such as crossing through mathematical theories or chess playing wonderfully since the computer developed in the 1940s. However, with all progress in memory and strength, programs cannot completely imitate a person's adaptation or knowledge in multiple areas. However, in some areas such as medical diagnosis and search engines, audio or writing, programs are approaching the level of human experts. (Copeland,2024)

Artificial Intelligence become an all-encompassing synthetic term that includes complex tasks which required in the past human resources.

John McCarthy defined artificial intelligence in his university article and he said:

“It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to

understand human intelligence , but AI does not have to confine itself to methods that are biological observable.

In simple words, we can say that artificial intelligence is the art of making smart machines, especially smart computer programs. Although AI learns from human intelligence, It does not merely imitate it, however rather tries to understand and develop it in technical ways.

According to Nils J. Nilsson (1998):

” Artificial intelligence is that activity devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment”

The goal of giving machines intelligence which he defines as the capacity to function sensibly and intelligently within their surroundings is highlighted in Nelson's (1998) definition of artificial intelligence. This viewpoint emphasises the primary goal of artificial intelligence research and development, which is to build systems that can behave autonomously and adaptively in a way that resembles how people make decisions. Nelson's emphasis on "insight" highlights the value of proactive and predictive capacities in intelligent systems, implying that real AI should be able to anticipate and make plans for future occurrences in addition to interacting with its surroundings. This forward-looking feature is essential for applications like financial forecasts, healthcare diagnostics, and autonomous cars where prompt and preventive responses are critical. Nelson's concept of artificial intelligence generally takes proactive and functional aspects into account, indicating its dual role in mirroring human intelligence and enhancing decision-making processes.

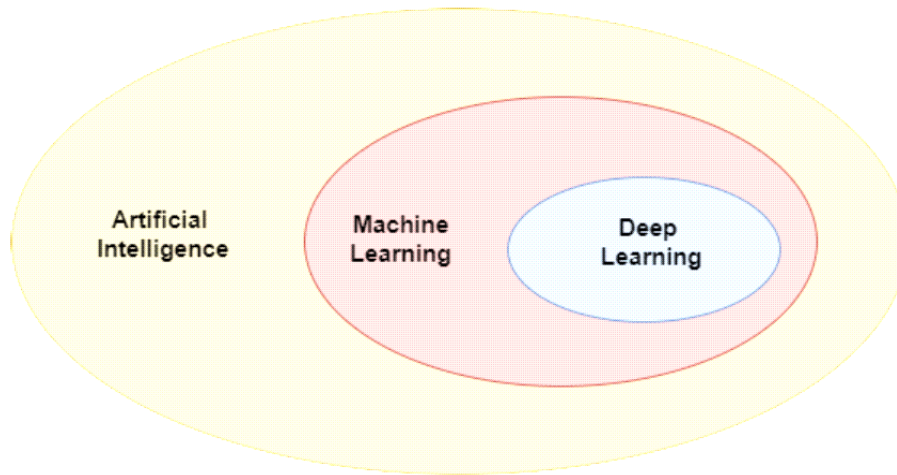


Figure01: Artificial intelligence (Rupali Roy. (Apr 29,2020)

Artificial intelligence is the evolution of computer systems that can execute tasks that can historically required human intelligence. Such as speech recognition and decision making. This field includes different types of techniques, such as machine learning, deep learning, and natural language processing (NLP)

The term artificial intelligence is used to describe a group of technologies today, although many disagree about whether these technologies actually constitute artificial intelligence. Some people argue that the technology we use today in practical life is actually just advanced machine learning, and that it is just the beginning of achieving true artificial intelligence, also called "general artificial intelligence."(GAI). However, most people today use the term artificial intelligence (AI) to refer to a set of technologies that support machine learning, such as computer vision or Chat GPT, and which allow machines to perform tasks that were previously only human, such as creating written content, or operating a vehicle. , or data analysis. , despite numerous philosophical debates about whether “true” intelligent machines actually exist. Artificial

intelligence is the core of computer science. It is a scientific development through which machines are developed to perform tasks within the scope of human intelligence, such as teaching, logic, self-correction, and self-programming. The main goal of artificial intelligence is to make computers do the work that humans do. Artificial intelligence is vital in some scientific and applied fields. (Staff 2024)

1.2 History of Artificial Intelligence And its Development Phases: (Gulati,2024)

"Artificial intelligence as a concept dates back to ancient mythology, but the formal foundation of AI as an academic discipline was established in the mid-20th century, particularly with the Dartmouth Conference in 1956." (Russell & Norvig, 2021)

Artificial intelligence began to take shape in 1943, just before the Second World War ended .The following is a timeline of artificial intelligence's development stages:

1.2.1 Towards Artificial Intelligence's Maturity (1943-1952)

The period between 1943-1952 is called the golden age of artificial intelligence, as it was characterized by the establishing examples and early perceptions that paved the way for the evolution of this area.

In 1943, the two well-known scientists, Warren McCulloch, a neurophysiologist, and Walter Pitts, a logician, collaborated to suggest a model on artificial neurons. The model suggest a simplistic neural network model for the brain.

In 1949, The Canadian, Psychoogist ,Donald Halp wrote a ground-breaking book called "The Organisation of Behaviour" . There, the concept of " Hebbian learning" was introduced, which is a basic concept in the field of neural networks. It demonstrated the connection strength between neurons.

A year later, The English Mathematician Alan Turing, published the Computing Machines and Intelligence, In which he proposed the famous Turing Test. The function of this test is to assess the machine's capacity to execute intelligent behavior identical to human behavior.

1.2.2 Artificial Intelligence: The Birth of a New Age (1952-1956)

The period from 1952 to 1956 is called as a decisive turning point in showing the history of artificial intelligence. During this period, the field has attested extensive developments and improvements, marking the beginning of a completely new age for artificial intelligence.

In 1955, two prominent computer scientists created the logical theorist "Allen Newell and" Herbert A. Simon".The latter represents an important step forward in the historical development of artificial intelligence.'Logical Theorist' was created to prove mathematical theorems,And display problem-solving abilities.He has strengthened about 52 of these theories and improved the evidence for others.

At this time, John McCarthy came up with the term artificial intelligence, during the Dartmouth conference, which is a significant milestone in the history of AI. At the conference, the participants envisioned machines capable of learning, solving problems, and improving their performance over time. This vision laid the basic foundations for establishing artificial intelligence as a formal and distinct field of study.

1.2.3 The Golden Years of AI (1956-1974)

The golden years of artificial intelligence extended from 1956 to 1974, witnessed a reduce in financing, a refuse in the level of success, and a decrease in expectations, which created it a difficult time for the development of this field. (McCorduck, 2004)

1. Year 1966

The Computer scientist and astronaut Joseph Weizenbaum unveiled the first chatbot, ELIEA. This robot succeeded in processed natural language and simulated conversation, and is known for its ability to generate human-like responses. This ability has opened the door to further advances in chatbots and conversational agents.

2. Year 1972

In 1972, Japan revealed the first intelligent robot WABOT-1 that resembled a human and had the organs of vision, touch, and hearing that enabled it to easily understand what was going on around it.

1.2.4 The First AI Winter (1974-1980)

The first AI winter beyond from 1974 to 1980, It witnessed a deny in the level of financing, a reduce in the quality of interest, and a decrease in expectancies about the future

of this field.. AI research was in such chaos that it would not receive funding for the upcoming many years.

The unfulfilled promises made during the early AI boom was one of the many factors contributing to the advent of this AI winter. Although AI researchers claimed that the capabilities of AI would increase rapidly in the visible future when actually applied to broader or more complex problems. AI-powered systems turned out to fail miserably. This ultimately resulted in a significant reduction of funding both from the government and private sectors.

In addition, putting complicated algorithms and models into practice presented several difficulties for AI researchers. The main cause of this, in contrast to modern norms, was the dearth of computing power at the time.

All these ultimately redounded in a complete slowdown of the development of new technologies. still, on the bright side, researchers learned a lesson from this and shifted their focus to developing more practical and narrow AI applications, such as expert systems. This eventually led to the resurgence of the field of AI in the late 1980s.

1.2.5 The Boom of Artificial Intelligence (1980-1987)

In the period from 1980 to 1987, it witnessed a bombing of the level of interest, an increase in financial support, and a remarkable progress in the date of exploring and developing artificial intelligence, including the introduction of expert systems and symbolic artificial intelligence integration with machine learning.

In 1980, the launch of expert systems that were designed to imitate human decision - making capabilities in certain areas. These systems were widely used in various fields such as medicine, engineering and financing.

The National Congress of the American Society for Artificial Intelligence was held at Stanford University, during this period, This was the occasion in which they discussed the latest developments in the field of artificial intelligence.

1.2.6 The Second AI Winter (1987-1993)

In an unexpected turn of events, the boom of artificial Intelligence was cut short and soon turned into the second winter of AI. Some of the key reasons behind the same were,

- Expert systems, although they bore great results, turned out to be very cost-effective
- The government and investors stopped funding AI companies due to the fear of a lack of returns.
- Expectations set during the boom of Artificial Intelligence were high, promising rapid progress. However, the field failed to deliver on these promises, thereby leading to disappointment.

All these ultimately presented to another period marked by reduced funding, scepticism, and a revaluation of AI's potential. Several AI companies faced financial

difficulties and ultimately fallen. This led to the perception of AI as overhyped and financially risky. (Haugeland, 1985)

1.2.7 AI's Emergence (1993-2011)

Thankfully, the second AI winter did not last for long. By the end of 1993, artificial intelligence returned strongly, as advancements in computing power were made, algorithms were developed, and a renewed seat on practical applications of AI was pushed.

In the history of artificial intelligence, in 1997 it highlights as the year that witnessed the first victory of a computer over a world champion in chess in its traditional style. Where the match took place between IBM's Deep Blue and the reigning world chess champion, Gary Kasparov.

By 2002, IR robot launched the robotic vacuum cleaner called Roomba which was powered by AI algorithms that allowed it to move in confined spaces, avoid obstacles, and clean bottoms without any form of human intervention. With the introduction of Roomba, AI was suitable to enter the home as a consumer product for the first time ever.

By the year 2006, AI held its first way into the business world, as major tech companies such as Facebook and Twitter started integrating this technology into their business processes. (Gulati, 2024)

(Mijwel, 2015)

1.3. Types of Artificial Intelligence: (Burns, Artificial Intelligence)

Arend Hintze, an assistant professor of integrative biology and computer science and engineering at Michigan State University, explained that Artificial intelligence can be

categorized into four types, beginning with the task-specific intelligent systems in wide use today and progressing to sentient systems, which do not yet exist. The categories are as follows:

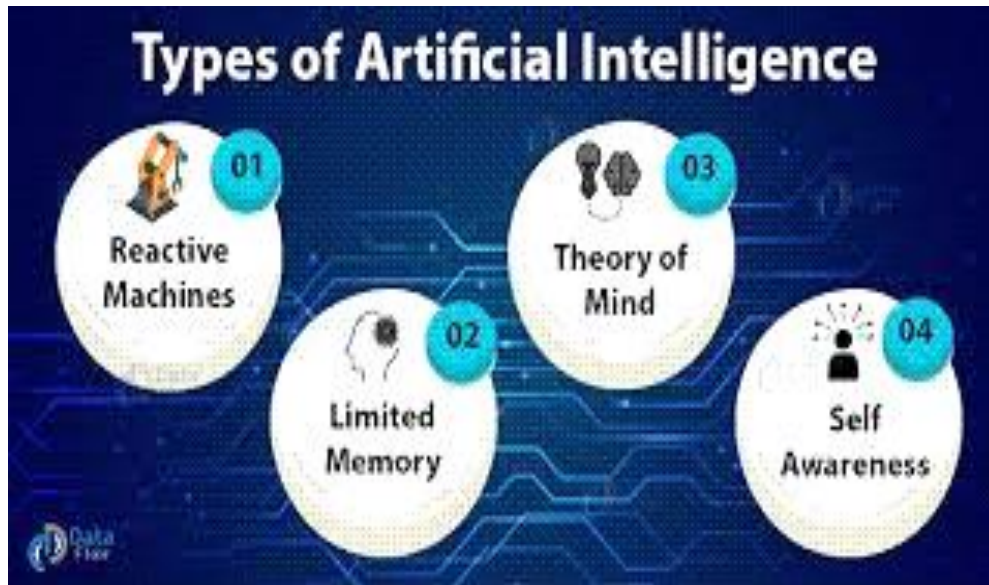


Figure 2: Types of artificial intelligence (Nov 16.2019) 2/<https://data-flair.training/blogs/wp-content/uploads/sites/2/2019/10/Types-of-AI.jpg>

1.3.1 Reactive Machine AI

Artificial intelligence systems known as interactive machines have no memory and are created for one highly specialized purpose. They are limited to currently accessible data because they are unable to remember previous outcomes or choices. Interactive AI is based on statistical mathematics and can process large amounts of data to create outputs that appear intelligent.

Rodney Brooks said that :

"Reactive machine intelligence is purely reactive, with no ability to form memories or use past experiences to inform current decisions."

Brooks succinctly defines reactive machine intelligence as merely responsive, lacking the ability to memory or learn from previous encounters. This highlights its clear limitations in contrast to more advanced AI systems.

Reactive Machine AI Examples :

- **IBM Deep Blue:** In the late 1990s, artificial intelligence, specifically IBM's chess-playing supercomputer, beat world-famous chess grandmaster Garry Kasparov. He did this by analyzing the pieces on the board and predicting the possible outcomes of each move.
- **The Netflix Recommendation Engine:** Netflix's viewing recommendations are based on analytical models that process data sets from viewing history, to deliver relevant content to customers that they are likely to like.

1.3.2.Limited Memory AI:

Unlike Reactive Machine AI, this form of AI can remember events and issues once and examine specific objects or situations over time.. Limited Memory AI can use past- and present-moment data to decide on a course of action most likely to help achieve a desired outcome. However, while Limited Memory AI can use past data for a specific amount of time, it can't retain that data in a library of past experiences to use over a long-term period. As it's trained on more data over time, Limited Memory AI can ameliorate in performance.

Examples of Limited Memory AI :

- **Generative AI:** such as ChatGPT, Bard and DeepAI rely on limited memory AI capabilities to predict the next word, phrase or visual element within the content it's generating
- **Virtual assistants and chatbots:** Siri, Alexa, Google Assistant, Cortana and IBM Watson Assistant combine natural language processing (NLP) and Limited Memory AI to understand questions and requests, take appropriate actions and compose responses

- **Self-driving cars:** Autonomous vehicles use Limited Memory AI to understand the world around them in real-time and make informed decisions on when to apply speed, brake, make a turn.

1.3.3 Theory of Mind AI :

Theory of Mind AI refers to artificial intelligence systems that can attribute mental states such as beliefs, desires, intentions, and emotions to themselves and others, allowing them to understand and predict human behavior in social contexts. **(Premack & Woodruff, 1978)**

It is a functional class of AI that falls underneath the General AI. Even if it's not yet possible , AI with Theory of Mind functionality would understand the thoughts and emotions of other entities. This understanding can affect how the AI interacts with those around them. Theoretically, this would allow the AI to simulate human-like relationships. Because Theory of Mind AI could infer human motives and reasoning, it would personalize its relations with individuals based on their unique emotional requiremet and intentions. Theory of Mind AI would also be able to understand and contextualize artwork and essays, which today's generative AI tools are unable to do.

Emotion AI is a theory of mind AI presently in development. AI researchers hope it will have the capability to analyze voices, images and other kinds of data to recognize, simulate, monitor and respond appropriately to humans on an emotional level. To date, Emotion AI is unable to understand and respond to human feelings.

1.3.4 Self-Aware AI:

A type of functional AI class for applications with super AI capabilities is called self-aware AI. Self-Aware AI, like theory of mind AI, is purely theoretical. If it were ever realised, it would be able to comprehend human emotions and ideas in addition to its own internal conditions and characteristics. It would also have feelings, requirements, and beliefs of its own.

Researchers hope it will have the ability to dissect sounds, images and other types of data to recognize, mimic, monitor and respond to humans appropriately on an emotional level. So far, emotional AI cannot understand and respond to human emotions.

1.4 Importance of AI in today's world:

Artificial Intelligence (AI) is increasingly crucial in today's world due to its ability to drive innovation and solve complex problems across various sectors. AI technologies such as machine learning, natural language processing, and computer vision empower organizations to automate repetitive tasks, optimize processes, and extract valuable insights from vast amounts of data. This capability not only enhances operational efficiency but also enables businesses to deliver personalized experiences, improve decision-making, and innovate new products and services that meet evolving customer demands. **(Bengio, Goodfellow, & Courville, 2017)**

Artificial intelligence (AI) is become progressively interested nowadays, with its effect being felt across many different industries. Here are five reasons why AI is so important nowadays: **(Akhtar, 2024)**

Automation :AI is allowing the automation of many habit and repetitive works, freeing up human to concentrate on more innovative and critical work. This is leading to elevated productivity and efficiency in many industries.

Personalization :AI is being used to epitomize products and services, grounded on person preferences and actions. This is allowing to better client adventures and higher degrees of customer enjoyment.

Predictive: Analytics AI is being used to evaluate massive volumes of data and generate predictions about future events, allowing businesses to create better informed opinions and distinguish chances for growth.

Healthcare: AI is being utilized to enhance healthcare results by analyzing case data and providing more personalized treatment appliances. AI is also being used in the growth of novel medication and disease treatments.

Safety and Security: AI is being used to improve safety and security in a range of settings, containing transportation, public safety, and cyber security.

Besides above, Artificial intelligence has the strength to convert many phases of our lives, leading to increased efficiency, better decision-making, and improved outcomes across a range of industries and sections.

1.5 The Major Branches Of Artificial Intelligence: (Garanhel,2024)

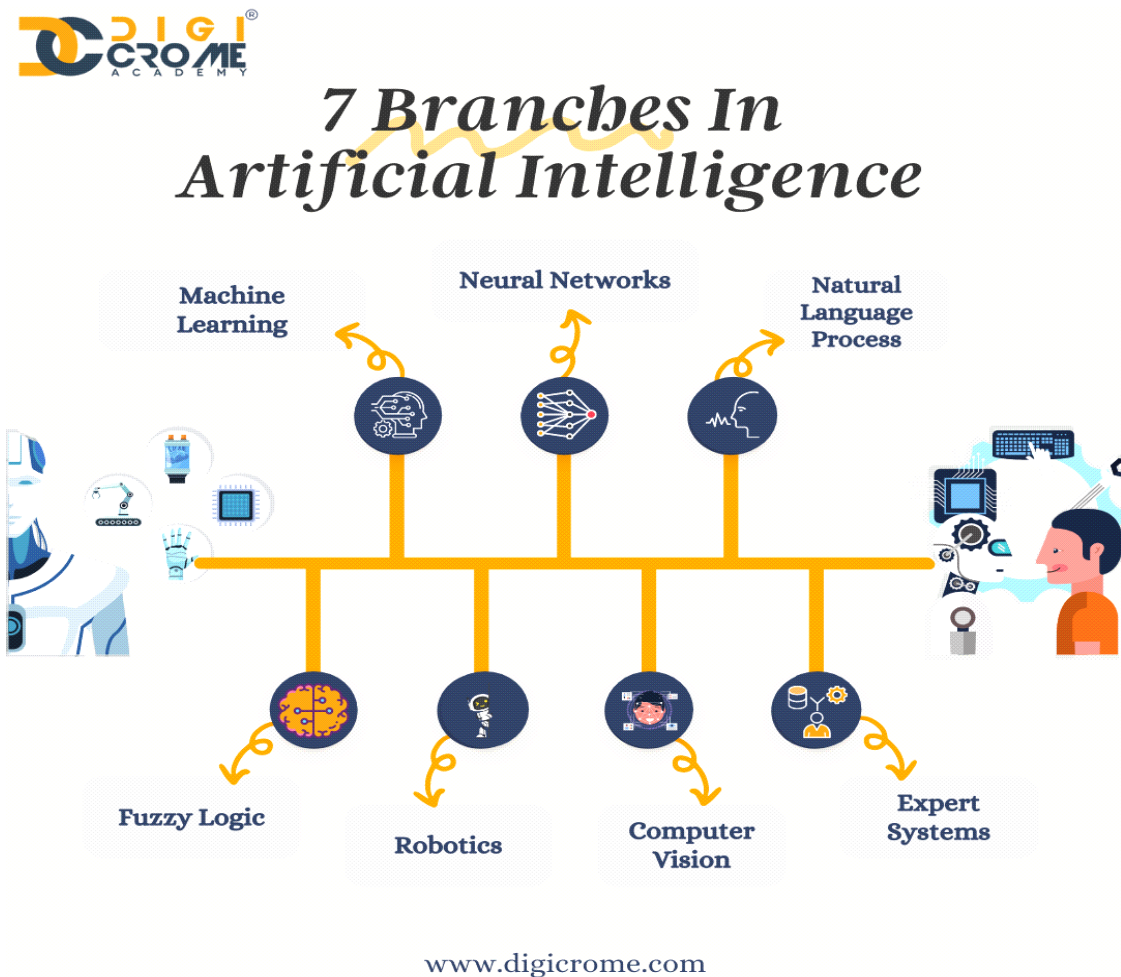


Figure3: branches of artificial intelligence (Sajal Digicrome Jul20, 2023)

1. Computer vision

Computer vision is a field of artificial intelligence that enables computers to interpret and make decisions based on visual data from the world. It involves acquiring, processing, analyzing, and understanding images and, in general, high-dimensional data from the real world to produce numerical or symbolic information. (Szeliski, 2011)

It aims to evolve approaches that aid computers in seeing and agreement digital pictures and videos.

Relating machine learning models to images permits computers to identify things, faces, humans, animals, and more. Algorithmic models aid computers educate themselves about visual data's contexts, and with properly data fed through a model, computers can teach themselves to characterize one picture from another.

A convolutional neural network tasks alongside a model to quit pictures down into pixels, giving them labels. The neural network also utilizes the tags to supervise difficulties , which is a mathematical mission on two functions to create a third event and create predictions about what it sees.

Computer vision has applications around industries, such as:

- **Object tracking.** . Following or tracking identified things.
- **Image classification.** An image is restricted and accurately expected to belong to some categories.
- **Facial recognition.** Face unlock on smartphones unlocks devices by planning and matching facial features.

2. Fuzzy Logic

Fuzzy logic is a mathematical framework for dealing with uncertainty and imprecision, providing a way to process data by allowing partial set membership rather than crisp set membership. It is particularly useful for complex systems where traditional binary logic cannot effectively model the system's behavior. **(Klir & Yuan, 1995)**

A method for resolving contradictions or assertions that can be true or untrue is fuzzy logic. This approach mimics human decision-making by weighing all potential outcomes between digital values of "yes" and "no." In other words, it quantifies the degree of accuracy of a hypothesis.

You'd use this branch of artificial intelligence to reason about uncertain topics. It's accessible and flexible way of implementing machine learning techniques and copying human thought logically.

Fuzzy logic's architecture is composed of four parts:

- **Rule base.** Has all the rules and if-then conditions.
- **Fuzzification.** Helps to convert inputs.
- **Inference engine.** Determines the degree of match between rules and fuzzy inputs.
- **Defuzzification.** Converts fuzzy sets into crisp values.

Companies like Nissan use fuzzy logic to control breaks in dangerous situations, which depend on individual car acceleration, speed, and wheel speed.

3. Expert systems

An expert system is a program specializing in a singular task, just like a human expert. These systems are mainly designed to solve complex issues with human-like decision-making capabilities.

They use a set of rules, called inference rules, that a knowledge base fed by data defines for them. By using if-then logical notions, they can solve complex problems and help in information operation, virus detection, loan analysis, and more.

The 1970s saw the improvement of the first adept system, which had a expressive effect on the development of artificial intelligence. CaDeT, a diagnostic help system that helps medical practitioners in the early discovery of cancer, is an example of an expert plan.

Jackson defined the expert system as "expert systems are computer programs that emulate the decision-making ability of a human expert in a specific domain. They use knowledge stored in the form of rules, heuristics, and algorithms to solve complex problems and provide recommendations or solutions, often with reasoning capabilities." (**Jackson, 1999**)

4. Robotics

Robots are programmed machines that can automatically carry out complex series of conduct. People control them with external devices, or their control systems can be embedded within themselves.

Humans are assisted by robots in laborious and repetitive jobs. In particular, AI-powered robots can support space exploration efforts by organisations such as NASA. The most new advancements and famous examples of robotic development are humanoid robots.

Sophia, a robot evolved by Hanson Robotics, works among a mix of artificial intelligence and neural networks. She recognizes human faces and understands feelings and gestures – and can even interact with people.

Common examples of robotics in everyday life applications include industries like manufacturing, healthcare, retail, and more.

Rodney Brooks said in his article "Robotics is the branch of AI focused on designing and building intelligent machines capable of interacting with the physical world."

So Rodney Brooks concisely captures the essence of robotics as a limb of artificial intelligence. By highlighting the design and structure of intelligent machines suitable of physical intercourse, Brooks emphasizes the interdisciplinary nature of robotics, which draws from domains such as computer science, engineering, and cognitive science. This description underscores the aspiring purpose of robotics: to make machines that not only feel and understand their environment, but also have the capability to turn on it in expressive habits.

Robotics is a field of artificial intelligence and engineering that involves the design, construction, operation, and use of robots. Robots are programmable machines that can carry out tasks autonomously or semi-autonomously, often mimicking human actions or performing tasks in environments where it may be unsafe or impractical for humans.(**Siciliano & Khatib, 2016**)

5. Machine learning

"Machine learning is the science of getting computers to learn from data." - Andrew Ng

Andrew Ng's definition of machine learning elegantly encapsulates the essence of this area. By highlighting the method of educating computers to master from data, Ng underscores the convert capacity of algorithms in pulling figures and insights from huge quantities of information. This remark highlights the fundamental function of data in the learning procedure and remarks the interdisciplinary nature of machine learning, which merges norms from computer science, statistics, and optimization to allow intelligent decision-making by machines.

Machine learning is the capacity of machines to automatically get from data and algorithms, and is one of the more challenging branches of artificial intelligence. Machine learning improve performance utilizing past adventures and can make decisions without being especialy programmed to do so.

The process starts with historical data collection, like instructions and direct experience, so that logical models can be built for future inference. Output accuracy depends on data size – a larger amount of data will make a better model, which in turn increases its accuracy.

Machine learning algorithms are classified into three types:

- **Supervised learning.** Machines are trained with labeled data to predict the outcome.
- **Unsupervised learning.** Machines are trained with unlabeled data, with the model extracting information from the input to identify features and patterns, so it can generate an outcome.
- **Reinforcement learning.** Machines learn through trial and error, using feedback to form actions.

6. Neural networks/deep learning

Neural networks are computational models inspired by the structure and functioning of the human brain. They consist of interconnected nodes, or neurons, arranged in layers. Each

neuron processes input data, applies a mathematical function to it, and passes the result to the next layer of neurons. Neural networks are used in various applications such as image and speech recognition, natural language processing, and pattern recognition. **(Russell & Norvig, 2021)**

Deep learning is a subset of machine learning that uses neural networks with many layers (hence the term "deep") to learn patterns from large amounts of data. Deep learning algorithms automatically discover representations of data through layers of abstraction, allowing them to make decisions or predictions without explicit programming. It has been highly successful in areas such as computer vision, speech recognition, and game playing. **(Schmidhuber, 2015)**

Artificial neural networks (ANNs) and simulated neural networks (SNNs) are other names for neural networks. Neural networks—which imitate how organic neurones communicate with one another—are the brains of deep learning algorithms. An input layer, one or more hidden layers, and an output layer make up the node layers of artificial neural networks. Every node, also known as an artificial neurone, has a threshold and weight that are connected to other neurones.

A node is activated to deliver data to the next network layer when its output exceeds a predetermined threshold value. For neural networks to learn and become more accurate, they require training data.

7. Guage processing

Natural language processing (NLP) is a field of artificial intelligence that focuses on the interaction between computers and humans through natural language. The goal of NLP is to enable computers to understand, interpret, and generate human language in a way that is both meaningful and useful. **(Jurafsky & Martin, 2020)**

Computers that use natural language processing are able to comprehend spoken and written language much like people. Computers are now able to process human language in speech or text data and comprehend its complete meaning, intent, and sentiment by combining machine learning, linguistics, and deep learning models.

In speech recognition or speech-to-text, for illustration, voice data is reliably converted to text data. This can be challenging as people speak with varied intonations, emphasis, and accents. Programmers have to educate computers natural language-driven applications so they can understand and recognize data from the beginning.

Some natural language processing use cases are:

- **Virtual chatbots.** They can recognize contextual information to offer customers better responses over time.
- **Spam detection.** Natural language processing text classification can scan language in emails to detect phishing or spam.
- **Sentiment analysis.** Analyzing language used in social media platforms helps to extract emotions and attitudes about products.

1.7.Challenges of AI : (Dane,2023)

1: Data Quality and Availability:

Large-scale, unbiased, high-quality datasets are needed for effective training of AI models. To develop AI responsibly and successfully, it is essential to ensure that the datasets used to build AI models are representative and free of bias.To guarantee the relevance and reliability of data, organizations that use AI should have a robust data collection process that accommodates most, if not all of the following:

- Diverse data sources
- Data augmentation techniques
- Rigorous labeling and annotation
- Bias detection and mitigation
- Transparency and continuous monitoring
- Open data initiatives
- Partnerships with external organizations
- Active collaboration between experts

2: Transparency and Explainability :

Deep learning models in subjective are often referred to as "black boxes" in the context of AI. This signifies that it's demanding to understand how they gain opinions. However, trust and accountability turn on this comprehending.

So, a way to solve this problem of AI is to invest in research and the development of resolvable AI (XAI) ways that offer insights into model predictions. This'll let users understand the factors impacting AI decisions.

We could also encourage AI models that prioritize transparency and accountability by design, alongside regulatory norms that require explainability in critical applications.

We can improve openness and support for ethical AI if we can encourage the use of clearer and more understandable models as well as transparent documentation of model structures and training data.

3: Ethical Concerns

The application of AI presents moral conundrums relating to monitoring, privacy, and the possibility of abuse. This implies that in order to ensure the moral use of AI, extensive policies and procedures must be established.

Giving ethical issues a priority when developing AI is one way to address this problem. From data collection to delivery, transparency, justice, and accountability should be prioritised throughout the AI lifecycle.

Interdisciplinary collaboration between technology experts, ethicists, policymakers, and stakeholders should also facilitate the creation of regulatory standards that govern AI usage. This collaboration can guarantee AI's alignment with societal values and fundamental rights.

Continuous public engagement and awareness campaigns also underscore the importance of ethical AI practices and the consequences of misuse. With collective efforts, we can successfully deal with all of these artificial intelligence problems and solutions.

4: Regulation and Governance :

It can be difficult to assign blame for the choices and actions made by AI systems, particularly when those systems are abused or make mistakes. It is essential to provide a precise legal and regulatory framework for AI applications in order to address this.

The roles and responsibilities of developers, operators, and users must all be defined. This includes implementing transparency requirements, setting up regulatory bodies, and setting up industry standards for ethical and safe AI use.

With international cooperation for the standardization of AI regulations, global challenges can be addressed. Plus, continuous monitoring, compliance audits, and reporting mechanisms can make sure that people are following AI governance guidelines.

Additionally, incorporating responsibility and accountability considerations into AI development processes can resolve regulatory enforcement concerns and encourage responsible AI innovation.

5: Security and Robustness :

Malicious attacks can exploit AI systems, causing small changes in data input to achieve unexpected results. Because of this, it's crucial to worry about the security and stability of AI models.

It will take a multifaceted approach to lessen this difficulty. The following are some potential ways to strengthen the security and resilience of AI models against hostile attacks:

- Advancing research in adversarial training techniques where AI models are trained to resist such attacks
- Developing intrusion detection systems specifically designed to identify malicious activities targeting AI
- Employing encryption methods to protect sensitive AI models and data
- Securing data storage and transmission
- Rigorous testing and validation of AI systems under a variety of conditions
- Continuous monitoring for anomalies
- Collaborating with cybersecurity experts
- Adopting best practices for secure AI development

6: International Cooperation :

As was already said, the development of AI is a worldwide undertaking, and effective resolution of ethical, legal, and security issues requires international cooperation. The establishment of international agreements and alliances is necessary to promote the

exchange of knowledge, standardisation, and harmonisation of AI policies and principles. Collaborations on cross-border research, data sharing, and concerted attempts to establish moral principles and legal requirements ought to be promoted. These could encourage a more coordinated strategy for the governance and development of AI. Global issues can be collaboratively addressed by international organisations or forums devoted to AI talks, ensuring responsible and beneficial AI worldwide.

7: Job Displacement :

Automation and AI technologies have the capacity to supersede certain jobs, which can guide to workforce disruptions. Potential results include infusing in robust teaching programs that seat on reskilling and upskilling workers to suit to varying job requirements.

Governments, businesses, and educational institutions can collaborate to identify emerging job sectors and promote lifelong learning. They can also support affected workers through financial assistance and career transition programs.

AI improvement efforts should also shift toward creating technologies that increase human capabilities rather than replace them. In turn, this promotes the development of new roles and opportunities. For example, students are hampering their personal creativity and writing skills by using an AI essay generator to fully do the work for them. Instead, they may use AI to help with researching relevant information and refining their essays with accurate grammar.

By doing this, we can take advantage of AI as a tool to enhance productivity and innovation while safeguarding job stability and economic resilience.

8: Human-AI Interaction

It's hard to plan addict interfaces for AI systems, like chatbots or self-driving cars, that are simple for human to utilize and effective. This difficulty underscores the request for easy-to-use and efficient platforms that allow seamless collaboration between people and AI.

User-centric design, natural language processing, and user-friendly interfaces can create AI technology accessible to a wide audience.

Developing AI systems that can understand and suit to human preferences and context is critical. This takes promotion in human-computer intercourse and personalization techniques.

AI interfaces can also be improved by doing extensive user testing and feedback loops. Building user confidence in the technology is an additional benefit.

1.8. Applications of Artificial Intelligence in Academic Research (Bello,2024)

The future of academia is likely to be transformed by AI language models such as ChatGPT. Here are some other tools worth knowing about.

In a post on X, Mushtaq Bilal, a postdoctoral researcher at the University of Southern Denmark, expressed, "ChatGPT will redefine the future of academic research. But most academics don't know how to use it intelligently."

The integration of academia and artificial intelligence (AI) is deepening, and with AI's continuous advancement, academics may either embrace its potential or express concerns about its risks. The integration of academia and artificial intelligence (AI) is deepening, and with AI's continuous advancement, academics may either embrace its potential or express concerns about its risks.

Many professionals have noted that language models like ChatGPT do not create output that can be trusted in terms of accuracy or quality. There are occasions where the generated text is erroneous, biassed, or restricted. However, Bilal argues that understanding those limitations,

paired with the right approach, can make language models "do a lot of quality labour for you," notably for academia.

Here are other AI-driven software to help the academic efforts, handpicked by Bilal.

1.8.1 Consensus

According to Bilal, "If ChatGPT and Google Scholar got married, their child would be Consensus an AI-powered search engine". Consensus resembles typical search engines, yet it distinguishes itself by responding to Yes/No inquiries, furnishing answers aligned with the collective viewpoint of the academic community. Consensus can also be questioned by users on cause and effect or the connections between ideas. As an illustration, does immigration boost the economy? Consensus would respond to such a query by affirming that the majority of studies indicate that immigration tends to enhance the economy. It would offer a compilation of the academic papers it referenced to establish this consensus, and ultimately, it would share summaries of the primary articles it scrutinized. The AI-powered search engine is only outfitted to respond to six topics: economics, sleep, social policy, medicine, and mental health and health supplements. **(Bello,2024)**

1.8.2 Elicit.org

Elicit is a powerful AI-powered research assistant that can help automate tedious tasks such as literature reviews. Even in the absence of a perfect key words match, Elicit can locate publications relevant to your queries with the aid of its language models. It can extract crucial information for you and condense the most significant lessons from the papers. In addition to its main purpose, Elicit facilitates text categorization, summarizing, and brainstorming. Enrolment is quick and simple. All things considered, Elicit is a really helpful instrument that can ease your life and save you many hours of tiresome research work. **(Bello,2024)**

1.8.3 Scite.ai (Brody,2021)

Josh Nicholson and Yuri Lazebnik established Scite (<https://scite.ai/>) which was previously supported by the National Institute on Drug Abuse (NIDA) and the national Science Foundation (NSF). More than 800 million citation statements may be found in the Scite database. These comments have been classified by a machine learning system as either mentioning, supporting or disagreeing with the conclusions of cited publications as well as by their positions within the citing articles (introduction, results , methods ,discussion, or other). Scite also provides a number of editorial notices for each article. Users can search the website and install plugins for Chrome and Firefox and reference management tools such as Zotero. Additional tools include reports, dashboards, badges, and automated reference checks. Researchers can use Scite to identify evidence and evaluate references. Librarians to promote projects with research impact; Publishers and editors should check reference lists of submissions journals, publishers, and databases to create context and showcase impact.

3.1 Scite Tools for Researchers

Scite is used by researchers to view how other people have cited their work and how their findings relate to the overall field. Are their works referenced in the methods sections? Are their results supported or compared to new work? Researchers can view this information by customizing the Scite badge and adding it to their websites. Researchers can set up author alerts and create a very limited number of reports and visualisations with a free account. A paid account allows researchers to access the reference checking feature, which alerts authors of an uploaded manuscript to references that may be disputed, retracted, or receive editorial notice. Most publishers do not review reference lists for retracted or disputed papers; Authors can ensure they are citing articles appropriately by using the Scite.ai tool to alert them to potentially disputed references. **(Brody,2021).**

3.2 Cite Responsibly

Researchers, and students can see more nuanced citation by using the Scite browser and Zotero plug-ins, which can help them better evaluate articles. For example, a student may choose to cite an article if they notice that it has a lot of citations. However, the student may be advised to choose another work, the results of which have not been so hotly contested, if they observe a significant number of opposing citation statements. Scite Smart Citations have begun to appear on databases, including EuropePMC, and journal websites. Smart citations add another way to evaluate articles in the broader context of research and scholarly communication. Librarians must keep up with these developments to prepare for questions from their research communities. Publications housed in personal reference libraries or stored on websites run by nonpublishers could not include links to retraction or erratum notices, or they might not have the most recent information available. When the underlying metadata is available, the Scite browser plug-in offers context and insights across platforms and databases. Access to the Scite data is provided by the Scite Zotero plug-in, which is integrated into a reference library and is updated often with details on citation statements for publications that have been stored. This can help users quickly check reference libraries for papers, the findings of which have been contrasted. (Brody,2021)

1.8.4 Research Rabbit

"Research Rabbit is an amazing tool that quickly tracks your research. Best of all, it's free. But most academics don't know about it," Bilal tweeted. Research Rabbit, which its founders call the "Spotify of research," allows academic papers to be added to "collections." These groups allow the software to learn about the user's interests, resulting in new, relevant recommendations. Research Rabbit also allows visualization of the network of scholarly research and co-authorship in graphs, so users can follow the work of a single subject or author and delve deeper into their research.

Advanced search features that enable users to filter results by authors, keywords, publication dates, and other criteria are among Research Rabbit's standout features. In order to assist researchers in finding fresh and pertinent literature for their area of study, the site also provides users with personalised recommendations based on their browsing history and interests. Furthermore, Research Rabbit offers tools for maintaining and organising research references, including bibliography creation and citation management. Additionally, it might have collaboration tools that let scholars share and work together on projects with peers. By giving researchers quick access to a variety of scholarly tools and resources, Research Rabbit seeks to simplify the research process overall. This will enable researchers to save time and make better decisions during their work. (Bello,2024)

1.8.5 ChatPDF

ChatPDF utilizes advanced artificial intelligence to revolutionize the way users access information within PDF files. With its cutting-edge technology, users can seamlessly navigate through extensive documents, including research papers, legal contracts, essays, and manuals. Through natural language interactions, individuals can engage with PDF content as though conversing with a human. This AI-driven platform analyzes PDFs to offer summaries and extract pertinent information across various content categories, spanning from academic texts to legal documents. With ChatPDF, the possibilities are limitless, from generating book summaries to delivering concise biographies of key characters. (Panda,2023)

5.1 Features of ChatPDF

ChatPDF offers a range of distinctive features: (Panda,2023)

- **Utilizing AI technology:** With the help of sophisticated AI, ChatPDF guarantees the delivery of correct and trustworthy information.

- **Information extraction:** Extract important data from a variety of document kinds, like books, research papers, essays, manuals, and contracts.

- **Semantic indexing:** By employing semantic indexing, ChatPDF thoroughly examines PDFs, generating a semantic index for every paragraph. This ensures that user queries receive more accurate and pertinent responses, enhancing the overall user experience.
- **Integration with ChatGPT API:** ChatPDF utilizes natural language processing to process user enquiries and offer answers in a seamless integration with the ChatGPTAPI.
- **Secure cloud storage:** Knowing that all data is safely kept in the cloud environment gives you peace of mind. Additionally, data is automatically deleted after seven days, giving confidentiality and privacy first priority.
- **User-friendly interface:** ChatPDF is designed with a user-friendly, accessible and intuitive interface, meeting the needs of students, professionals and curious individuals alike.

1.9. Advantages/Drawbacks of Artificial Intelligence In Academic Research(Almokadim,2023)

With all the hype over artificial intelligence, robotics, self-driving cars, etc., it is not hard to discover that artificial intelligence technologies have honorably penetrated all areas of life. All of us agreement with artificial intelligence in one habit or another almost every day. From the time you wake up to bill your smartphone or admit a notification about an appointment you've delivered in your phone calendar, artificial intelligence has rapidly produced its way into our daily lives.

The advanced technology of artificial intelligence is an powerful tool in the ground of research. Artificial intelligence permits the use of large data and the application of machine learning techniques to examine it and extract valuable information. However, utilizing AI in research approaches with a set of advantages and drawbacks that must be held into consideration.

- Artificial intelligence can examine large amounts of data rapidly and more accurately than a people can.

- Artificial intelligence can be utilized to draw applicable consequences and transitions from this data.

- AI can detect hidden patterns and trends in data, enabling researchers to identify new research trends or complex relationships between variables.

- Artificial intelligence can apply statistical and mathematical analysis techniques accurately and reliably.

- AI can relate machine learning algorithms to derive and read new outcomes or future possibilities based on available data.

- AI can facilitate collaboration, which is another advantage for scientists.

- AI can also be used to

- identify novel correlations and trends in research data, which can shed important light on scholarly subjects.

"Artificial intelligence would be the utmost version of Google. The utmost search engine that would comprehend everything on the web. It would understand exactly what you wanted, and it would give you the right thing. We're nowhere near doing that now. However, we can get incrementally closer to that, and that is basically what we work on." Larry Page

This quotation, according to Larry Page, emphasises artificial intelligence's aspirational objective of reaching a comprehension and responsiveness comparable to the ultimate search engine. According to Page, artificial intelligence (AI) will be a technology that can effortlessly provide relevant results by accurately interpreting user intent and fully understanding the web. He does concede, though, that although this vision is still unfulfilled, advancements in AI research and development get us ever-closer to the goal. It emphasises the continuous attempts to improve artificial intelligence (AI) technology in order to better meet human requirements and expand the potential of digital assistants and search engines.

Artificial intelligence also has drawbacks:

- Heavy reliance on artificial intelligence may reduce the human capacity for innovative thinking and deep analysis; This affects individual scientific progress and the comprehensive understanding of scientific phenomena.

- The data and algorithms utilised in the development of artificial intelligence are crucial components. Results could be erroneous or untrue if the data is imprecise or inadequate.

- Artificial intelligence (AI) in scientific research may bring up moral concerns about discrimination, privacy, and community safety. These concerns must be considered, and technology must be treated ethically.

Despite the remarkable progress made in artificial intelligence, researchers retain distinctive abilities crucial for creative thinking and innovation. This is because artificial intelligence cannot fully replicate the unique capabilities inherent in human cognition. Therefore, we must exercise caution when integrating AI into scientific research, acknowledging and addressing the associated challenges and issues. It's essential to view technology as a tool to augment human capabilities and maximize potential, rather than as a substitute for them.

In summary, artificial intelligence is regarded as a helpful tool in scientific study and has several benefits, including the ability to analyse data and identify patterns. Negatives, including the absence of human thought and possible ethical issues, must be considered nonetheless. AI must be used carefully and impartial to create trustworthy results and lend both science and world.

"The development of full artificial intelligence could possess the end of the human race. It would take off on its own, and re-design itself at an ever-increasing quality. Humans, who are defined by slow biological progress, couldn't compete, and would be superseded." Stephen Hawking

Stephen Hawking's statement underscores the potential existential dangers associated with evolving advanced artificial intelligence. He informs that the advent of totally autonomous AI

systems could command dire consequences for the world. Hawking envisions a scenario in which artificial intelligence surpasses human intelligence and develops independently, potentially beyond our capability to handle or understand it. Given the limitations of human biological development, he implies that humans may struggle to keep up with the exponential growth of artificial intelligence, eventually leading to obsolescence or even extinction. This cautionary perspective emphasizes the need for wary consideration of the ethical, societal, and existential implications of AI progress.

2.10. Ethical considerations in AI-driven academic research

Maintaining ethical standards is essential in academic research, as it ensures integrity, trustworthiness, and ethical innovation. Ethical considerations protect participants, maintain credibility, and lay the groundwork for socially responsible progress. This infographic, developed by Mind the Graph, delves into the ethical dimensions of AI-driven academic research. It offers five tips on effectively leveraging AI's capabilities while adhering to principles of integrity and transparency.

While there are many advantages to AI-driven academic research, researchers must also take a number of ethical issues into account. **(Pamplona, 2023)**

10.1 Data bias and fairness: AI systems learn from the data they are trained on, and if that data includes biases or societal prejudices, the AI models may inadvertently perpetuate those biases. It's crucial for researchers to meticulously curate and preprocess data to promote fairness and mitigate bias in AI models.

10.2 Privacy and data protection: Large volumes of data, including sensitive and personal information, are frequently handled in AI research. Researchers must make sure that data collection, storage, and analysis adhere to applicable privacy standards and that participants have given their informed consent.

10.3 Reproducibility and robustness: Researchers should strive for reproducibility by offering comprehensive documentation of their AI models, algorithms, and datasets. It's vital to make certain that AI models are resilient and capable of generalizing effectively to unseen data, thereby avoiding overfitting or biased outcomes.

10.4 Intellectual property and ownership: AI research often involves collaboration and the use of pre-existing data sets and models. Clear guidelines must be constituted regarding intellectual property rights. Ownership of data and distributing of AI models and codes between researchers.

10.5 Social impact and job displacement: AI technology have the power to automate some employment categories and disrupt entire sectors. When conducting AI-driven research, scientists should think about how their findings will impact society and try to make jobs, ensure a fair transition, and reduce any unfavourable effects.

"Artificial intelligence is not a tool we control, but a system we design. It is imperative that we design it ethically." - Timnit Gebru

The quotation from Timnit Gebru highlights the accountability that comes with creating artificial intelligence. She emphasises AI as a dynamic system that humans actively change through design, as opposed to seeing it as a passive instrument under human control. Gebru emphasises the significance of ethical issues in this process, acknowledging that the choices taken throughout the creation of AI have a big impact on society. We can reduce potential risks and make sure AI technologies are consistent with our beliefs by building AI systems ethically. This viewpoint emphasises how important ethical supervision and responsibility are to AI research and development.

Conclusion

In summary, the exploration of artificial intelligence in this chapter has provided the foundation for understanding its many facets, from its historical origins to its types, its importance and diverse branches of this transformative technology which has had a profound impact on the world, changing the way people live and work. This chapter also provides a comprehensive analysis of AI's role in academic research, highlighting its potential for transformation alongside inherent challenges. By examining the advantages and disadvantages of Artificial Intelligence, we understand its capability to establish research processes while managing concerns such as data bias, interpretability, and ethical considerations. The chapter highlights the meaning of ethical awareness in embracing Artificial intelligence technologies, stressing the importance of fairness, transparency, and reliable practices. Through a particular assessment of AI's effect, this chapter donates to a nuanced comprehension of its implications for academia and broader society.

Chapter Two:

Research Methodology and Data Analysis

2.1 Introduction

In this research study our main purpose is to highlight the impact of artificial intelligence dependency in research. This chapter purposefully describes the strategy and results of an academic intervention, a questionnaire and an interview, in which a questionnaire is directed to the teachers; in addition the interview is submitted to the students of master two degree of Ibn khaldoun University.

2.2 Description of the Study Context

This study is conducted in Algeria, the city of Tiaret. The students were selected from the department of English language (master two degree both didactic and linguistic student).However, the teachers were from Ibn Khaldoun University.

2.3 Description of the Research Design

The research design contains the choice of the research method, the sample and the interview.

2.3.1 Choice of the Research Method

We used both qualitative and quantitative methods for our investigation in this research paper in order to critically assess the study s general validity and reliability and to get accurate results. The main issues of this research study is to highlight the challenges and drawbacks of using AI tools in academic research .

2.3.2 Sample

According to John W. Creswel (2014) A sample is a subset of the population that is selected for the actual study. It represents the population and is used to draw inferences about

that population. Therefore, our sample, which consists of twenty four (24) teachers of both University and high school.

2.3.3 The Interview

John W. Creswel declare in his book *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed., p. 190) that An interview is a form of data collection in which questions are asked by the researcher to elicit responses from participants. Interviews can be structured, semi-structured, or unstructured, depending on the level of control the researcher has over the questions and answers.

In our study, the interviewees were selected from the master two degree students of Ibn Khaldoun University Tiaret (both linguistics and didactics students).

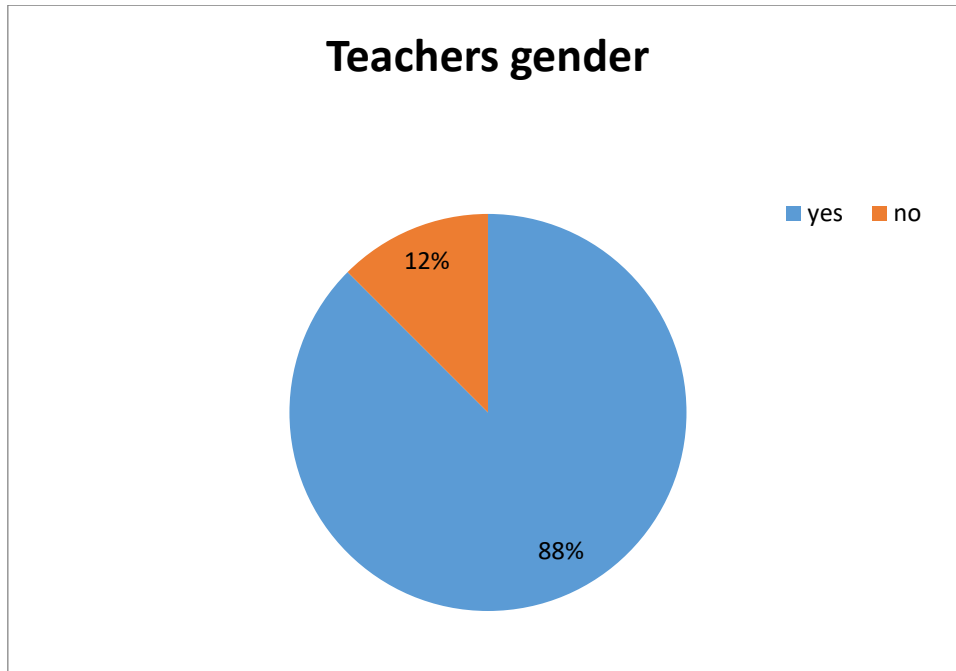
2.4 Methods of Data Collection

This study employed a mixed-methods approach, combining quantitative and qualitative data collection techniques. From this angle, a questionnaire and an interview are used correspondingly to collect data. First, an online questionnaire is directed to teachers in the English language Department and high school. Twenty four (24) teachers are participated. Our questionnaire is a contains 16 questions, a combination of closed and open ended questions. The main objective of this questionnaire is to collect more information and data about AI dependency and know if the teachers are using this technology. In addition, an interview is used to know the student's opinion on AI and the effect of relying on it extensively.

2.5 Data Analysis of the Findings

2.5.1 Analysis of The teacher's Questionnaire

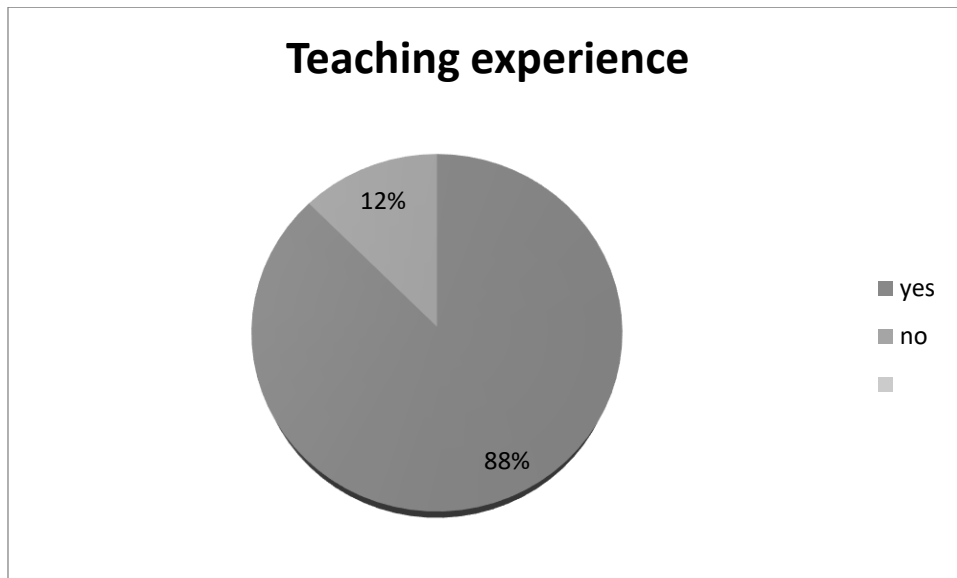
Q1: Gender



In this sample, a total of 24 teachers participated in the questionnaire. The gender distribution is skewed towards females, with 75% of the respondents being female (18 respondents) and 25% being male (6 respondents). This significant disparity suggests that the female demographic is more represented in the context of this study. This might reflect the gender distribution within the population being studied or indicate a higher response rate among females. Understanding the gender composition is crucial for interpreting the results and ensuring that any conclusions drawn are representative of the entire population.

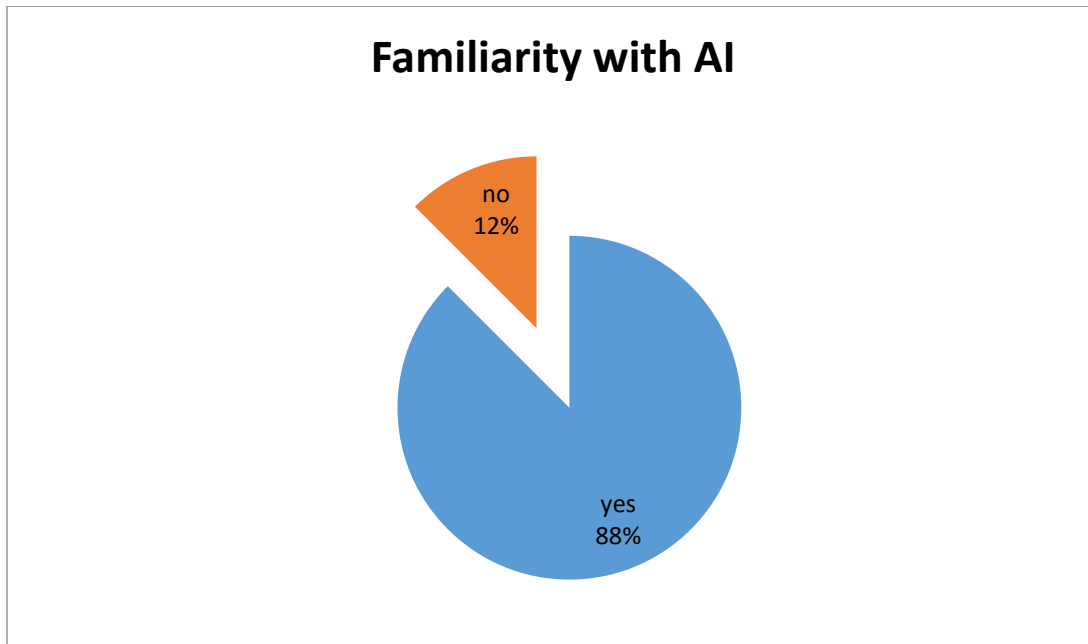
Q2: Teaching Experience:

For how long you have been teaching english !



Among the 24 participants, the distribution of teaching experience is relatively balanced across the three categories. The largest group has 5-10 years of teaching experience, comprising 37.5% (9 respondents). Those with 1-4 years of experience make up 33.3% (8 respondents), while those with 11-20 years of experience account for 29.2% (7 respondents). This diversity in teaching experience indicates a broad range of perspectives and insights within the sample, potentially enriching the data collected through varied levels of professional maturity and experience in the field. This spread of experience levels will help ensure that the survey results are representative of different stages in a teaching career.

Q3: Familiarity with AI

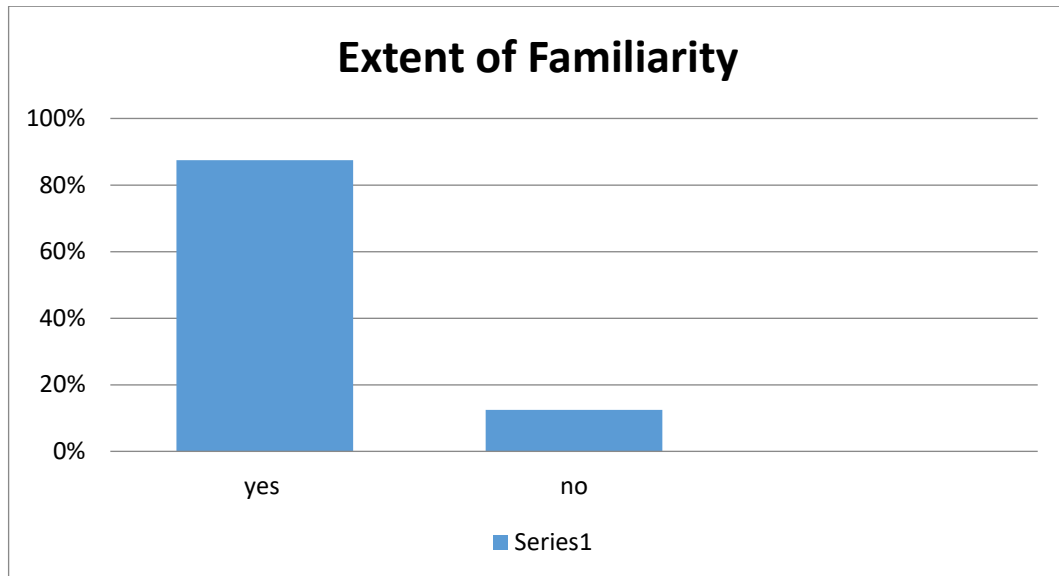


The majority of respondents (83.3%, or 20 individuals) indicated that they are familiar with artificial intelligence, while a smaller proportion (16.7%, or 4 individuals) are not. This high level of familiarity suggests that most participants have some knowledge or experience with AI, which could influence their responses to questions about AI's impact and use in research. This familiarity is crucial for interpreting the data, as it indicates a baseline understanding of AI among most respondents, potentially leading to more informed and nuanced insights into AI's role and effects in their professional and academic activities.

Q4: Extent of AI Familiarity

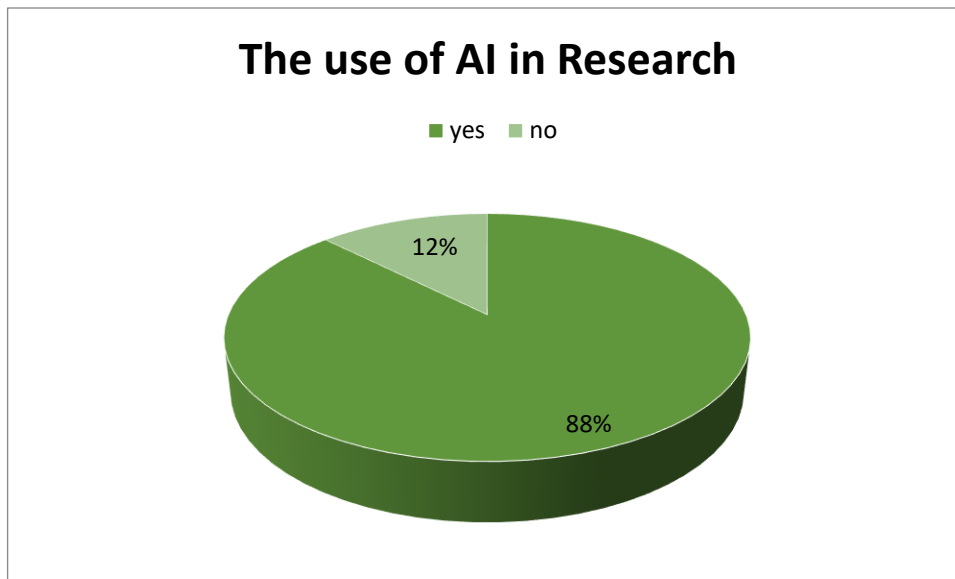
Among the 24 respondents, the majority (54.2%, or 13 individuals) are very familiar with AI, while 29.2% (7 individuals) are extremely familiar with AI. A smaller portion (16.7%, or 4 individuals) are not familiar with AI at all. This distribution indicates that most respondents have a significant level of familiarity with AI, with over 80% reporting being very or extremely familiar. This suggests that the survey responses are likely to be well-informed, particularly

regarding questions about the applications and implications of AI. The presence of some respondents who are not familiar with AI also adds balance, ensuring that the perspectives of those less acquainted with AI are also considered.



Q5: Used AI in Research

A significant majority of respondents (87.5%, or 21 individuals) have used AI in their research, while a smaller portion (12.5%, or 3 individuals) have not. This high usage rate indicates that AI tools are widely adopted among the respondents, suggesting that AI has a notable presence and impact in their research activities. The widespread use of AI among these researchers highlights the importance of understanding how AI is integrated into research processes and its effects on productivity, accuracy, and innovation. It also implies that the insights gained from this survey are likely to be rich in practical experience with AI applications in research.



Q6: Changes Noticed with AI

If yes, have you noticed a change in your work after using AI?

The responses regarding changes noticed with the use of AI in academic research highlight several key benefits and improvements. Many respondents report that AI tools have made their work more professional, efficient, and easier. Specific mentions include enhanced professionalism in their outputs, improved time management, and facilitated access to resources, which collectively help streamline the research process.

Several participants emphasize the significant positive impact of AI on their teaching and research activities, noting that it has helped improve the quality and accuracy of their work. Tools like ChatGPT and Grammarly are specifically mentioned for their contributions to better writing and research facilitation.

A few respondents did not notice substantial changes or only use AI minimally, indicating variability in the extent of AI integration and its perceived impact. Some are still unsure or have not yet experienced the benefits firsthand but expect positive outcomes.

Overall, the responses suggest that AI has become a valuable asset in academic research, contributing to enhanced productivity, improved quality, and greater efficiency. This reflects a

general trend towards increased reliance on AI tools to augment human capabilities in academic settings.

Q7: Dispense with AI

Do you think after using AI for a while, you can dispense with it

The responses to whether participants can dispense with AI after using it reveal a range of perspectives. Many respondents feel that AI is an indispensable tool in their work, emphasizing its usefulness and the added difficulty they would face without it. They acknowledge that while they might technically be able to manage without AI, the efficiency, ease, and quality of their work would likely suffer.

On the other hand, a smaller group believes they could do without AI, highlighting a level of adaptability and flexibility. Some of these respondents express uncertainty or a conditional acceptance of AI's role, indicating that their reliance on AI is not absolute.

Overall, the responses suggest that AI has become deeply integrated into the workflows of many respondents, providing significant benefits that make its absence a notable disadvantage. However, there remains a subset of individuals who retain confidence in their ability to perform effectively without AI, reflecting a nuanced view of its necessity.

Q8: Students Using AI

Have you noticed if your students use AI tools in their research academic progress?

A significant majority of respondents (75%) have observed that their students are using AI tools in their academic work. This widespread adoption suggests that AI is becoming a common resource among students, likely due to its accessibility and the advantages it offers in terms of efficiency and quality of work. The fact that a quarter of the respondents have not noticed AI usage among their students could indicate variability in awareness or differing levels

of AI integration across different educational contexts. Overall, these insights highlight the growing prevalence of AI tools in student research and academic activities.

Q9: Challenges with AI

What challenges have you faced when using AI tools?

Challenges with AI	Frequency	Percent
Lack of understanding	4	16.7%
Ethical concerns	5	20.8%
Data quality	10	41.7%
Others	5	20.8%
Total	24	100.0%

The primary challenge identified by respondents is data quality, with 41.7% citing it as a significant issue. This suggests that ensuring the accuracy, relevance, and integrity of data is a major concern when using AI tools. Ethical concerns, such as the potential for bias and privacy issues, are also notable, affecting 20.8% of respondents. Similarly, a lack of understanding about AI's functionalities and applications is a challenge for 16.7% of the participants, indicating a need for better education and training. The category "Others" encompasses a variety of additional concerns, also reported by 20.8% of respondents, pointing to diverse and context-specific challenges. These findings highlight the complexity and multifaceted nature of integrating AI into academic and professional environments, emphasizing the need for comprehensive strategies to address these varied challenges.

Q10: AI Solving Complex Problems

Do you believe AI can help in solving complex research problems effectively?

AI Solving Complex Problems	Frequency	Percent
Yes	17	70.8%
No	7	29.2%
Total	24	100.0%

The majority of respondents (70.8%) believe that AI can effectively solve complex research problems, indicating a strong confidence in AI's capabilities to handle sophisticated and intricate tasks. This belief likely stems from AI's ability to analyze large datasets, identify patterns, and generate insights that might be difficult for humans to discern. On the other hand, 29.2% of respondents are not convinced of AI's effectiveness in solving complex problems. This skepticism could be due to concerns about AI's limitations, such as the quality of input data, the potential for errors, and the need for human oversight. Overall, while there is substantial confidence in AI's problem-solving abilities, a significant minority remains cautious, highlighting the ongoing debate about the extent to which AI can replace or augment human expertise in complex research scenarios.

Q11: AI and Linguistic Theories

Do you think AI can contribute to the development of new linguistic theories?

The responses regarding AI's potential to contribute to the development of new linguistic theories reflect a range of opinions. Many respondents are optimistic, believing that AI can significantly aid in analyzing vast amounts of linguistic data, identifying patterns, and providing insights that might be difficult for humans to detect. They see AI as a powerful tool that can augment human research capabilities and drive new discoveries in linguistics.

However, there is also a notable portion of respondents who are skeptical. These individuals argue that AI primarily reflects and reproduces existing human knowledge and lacks the creative and innovative capabilities necessary to develop new theories independently. They emphasize the unique role of human creativity and intuition in advancing linguistic research.

Overall, while a majority see AI as a valuable asset in linguistic research, there remains a cautious perspective that underscores the limitations of AI in generating original thought and creativity, highlighting the complementary roles of AI and human intelligence in the field.

Q12: Application Used

Do you make use of any applications that facilitate your academic research? If yes mention some of them

The responses indicate a diverse range of applications used by researchers and students for academic purposes. The most frequently mentioned application is ChatGPT, highlighting its widespread use and popularity for generating content and assisting with research tasks. Other AI-based tools like Quillbot, Grammarly, and various language tools are also commonly used, suggesting that these applications play a significant role in enhancing writing quality and productivity.

A few respondents mentioned specialized tools such as Scholarcy, Paper Digest, and Scite.ai, which are designed to assist with specific aspects of academic research, like summarizing papers and managing citations. The mention of diverse applications like Gemini, AI tools from Snapchat, and newer platforms like aithor.com and Gamma app indicates that the landscape of AI tools is broad and constantly evolving.

Overall, these responses reflect the integration of various AI-powered applications into the academic workflows of researchers and students, illustrating how technology is being leveraged to support and streamline research activities. However, there are still a few individuals who do not use these tools, highlighting variability in adoption and preference for traditional methods.

Q13: Role of AI in Research

In your opinion, what is the role of AI in academic research?

The majority of respondents (50%) identify content generation as the primary role of AI in research, suggesting that AI tools are extensively used to create and enhance written

materials. This indicates the significant impact of AI in automating and improving the quality of research documentation, writing, and presentation.

A substantial proportion of respondents (37.5%) mentioned other roles for AI, which likely include various applications such as data management, predictive modeling, literature reviews, and more. This highlights the versatility of AI in addressing different aspects of the research process.

Data analysis is identified by a smaller segment (12.5%) of respondents, indicating that while AI is valued for its analytical capabilities, it may not be the primary function for most users in this sample. This could reflect the specific needs and priorities of the respondents, with content generation being more immediately beneficial.

Overall, the responses illustrate the diverse and multifaceted roles that AI plays in research, with a strong emphasis on content generation but also recognizing its broader applications in data analysis and other areas.

Q14: Influence on Linguistic Research

Can AI-powered language models influence the linguistic research? Explain

The responses regarding the influence of AI-powered language models on linguistic research vary, reflecting a mix of optimism, uncertainty, and skepticism. Many respondents believe that AI can significantly impact linguistic research by providing powerful tools for data analysis, resource generation, and improving efficiency in research processes. They highlight the potential for AI to accelerate discoveries, enhance translations, and offer new methods for data collection and analysis.

However, there are also respondents who are unsure or unaware of the extent of AI's influence, indicating a knowledge gap or a lack of experience with AI in this specific field.

Additionally, some skepticism exists, with concerns about the limitations of current AI models and their inability to cover all aspects of linguistic research comprehensively.

Overall, while there is a strong belief in the positive impact of AI on linguistic research, the responses also point to the need for more awareness and understanding of AI's capabilities and limitations within the field. This suggests that further exploration and education on AI applications in linguistics could help bridge the gap between potential and perceived effectiveness.

Q15: Dependency on AI

Will students and researchers be dependent on AI in their research?

The responses regarding the dependency on AI in research show a strong inclination towards acknowledging AI as an essential tool for the future. Many respondents believe that students and researchers will increasingly depend on AI, highlighting its growing role and utility in various fields. This dependency is seen as inevitable, with some respondents expressing certainty that AI will become a fundamental part of academic and research activities.

However, there are nuanced views among the respondents. Some emphasize that AI should be considered a complementary tool rather than a replacement for human intellect and creativity, suggesting a balanced approach to its integration. A few responses express concern about over-reliance on AI, fearing it might hinder the development of independent thinking and creativity among students.

Overall, the consensus indicates a recognition of AI's valuable contributions while also underscoring the importance of maintaining a balance to ensure that human skills and creativity are not overshadowed. This reflects a forward-looking perspective on the integration of AI in research, advocating for its use alongside traditional methods to maximize benefits.

Q16: Detection of AI Use in Dissertations

How can you detect that your students have used Chatgpt in their dissertation writing?

The responses on detecting AI use in dissertations suggest a variety of strategies and indicators. Some respondents rely on technological tools, such as AI detection software and plagiarism checkers, to identify AI-generated content. These tools can help flag inconsistencies and unusual patterns in the writing that may suggest AI involvement.

Others emphasize more qualitative methods, such as looking for abrupt shifts in writing style, uncharacteristic language, overly complex vocabulary, and the overall perfection of the text. Teachers who know their students' usual level of writing proficiency can often detect when the quality suddenly improves beyond expected capabilities.

Some responses point to the difficulty of detection, acknowledging that while challenging, it is not impossible. They suggest that subtle clues, such as the use of sophisticated terminology or a lack of typical human errors, can indicate AI use.

Overall, these responses highlight the growing need for educators to be vigilant and equipped with both technological and observational skills to identify AI-generated content. As AI tools become more sophisticated, the ability to detect their use will become increasingly crucial in maintaining academic integrity.

The survey responses provide a detailed understanding of the impact and perception of artificial intelligence (AI) among researchers in academic settings. The data indicates a high level of familiarity with AI, with the majority of researchers actively integrating AI tools into their research processes. This widespread familiarity suggests that AI is well-regarded for its potential to enhance academic work significantly. The sample is predominantly female, which might reflect the gender distribution among researchers in the surveyed context or a higher response rate from women. The respondents also have diverse levels of research experience,

from early career researchers to seasoned professionals, enriching the survey data with a broad range of insights.

One of the most prominent themes in the responses is the significant benefits that AI brings to academic research. AI is celebrated for its ability to enhance efficiency, quality, and professionalism. Tools like ChatGPT and Grammarly are frequently mentioned for their contributions to improving writing and facilitating research. Respondents note that AI helps in content generation, data analysis, and providing easy access to resources, making the research process more streamlined and effective. This positive sentiment underscores the transformative potential of AI in research, where it serves as a valuable asset in augmenting human capabilities.

However, the integration of AI is not without its challenges. Researchers highlight issues related to data quality, ethical concerns, and a lack of understanding among some users. These challenges suggest a need for better education and training on AI tools and practices, as well as robust data management systems to ensure the reliability and accuracy of AI outputs. Ethical concerns, such as the potential for bias and privacy issues, further complicate the landscape, indicating that while AI holds great promise, it must be implemented thoughtfully and responsibly.

The role of AI in solving complex research problems is another area where opinions are divided. A substantial portion of respondents believe in AI's effectiveness in handling sophisticated tasks, recognizing its ability to analyze large datasets and identify patterns that might elude human researchers. Nonetheless, a significant minority remains skeptical, emphasizing the need for a balanced approach that combines AI's computational power with human expertise and intuition. This skepticism highlights ongoing debates about the extent to which AI can replace or augment human intellect in research.

In the field of linguistics, there is optimism about AI's potential to contribute to new theoretical developments. Many respondents believe that AI can analyze vast amounts of

linguistic data and offer insights that could drive innovation in the field. However, some researchers express doubts about AI's creative capabilities, arguing that it primarily reflects and reproduces existing human knowledge without generating original ideas. This tension between AI's analytical strengths and its perceived creative limitations underscores the complementary roles of AI and human researchers.

The survey also reveals a growing dependency on AI among researchers. Many respondents foresee an increasing reliance on AI tools, acknowledging their indispensable role in modern research practices. However, there is a call for a balanced view, where AI is seen as a complementary tool rather than a replacement for human creativity and critical thinking. This perspective advocates for the integration of AI in ways that enhance human capabilities without overshadowing the essential contributions of human intellect.

Detecting AI-generated content in academic work is highlighted as a challenge, with researchers suggesting various strategies, including the use of AI detection tools and qualitative assessments of writing style. This indicates a need for vigilance and the development of effective tools to maintain academic integrity in an era where AI is increasingly used.

All in all, the reactions think back a positive sentiment towards AI's role in academic research, recognizing its potential to transform research practices, improve efficiency, and enhance the quality of outputs. Concurrently, there is an awareness of the challenges and limitations associated with AI, stressing the need for informed and responsible combination. This sophisticated comprehension highlights the importance of balancing the benefits of AI with the maintenance of human creativity and critical thinking in academic research.

2.5.2 Data Analysis of The Student's Interview

1. Key Benefits of Using AI Tools in Research

The responses from students regarding the benefits of using AI tools in their research highlight a range of advantages that significantly enhance the research process. A common theme is the efficiency and speed provided by AI, with many students appreciating how these tools make finding references quicker and facilitate rapid research overall. This time-saving aspect is crucial, as it allows researchers to manage their tasks more effectively within shorter time frames. Additionally, AI tools are praised for enhancing the accuracy and precision of research results, reducing errors, and improving the reliability of findings. Another notable benefit is AI's capability to explain complex ideas and provide relevant vocabulary and terminologies, which enriches the depth and quality of academic writing. Students also emphasize the comprehensive data analysis and information-gathering capabilities of AI, which ensure access to a broad and diverse set of information, thereby enhancing the robustness of their research. The automation of repetitive tasks, such as data entry and reference searches, allows researchers to focus more on critical analysis and interpretation, boosting overall productivity. Furthermore, AI's ability to facilitate improved collaboration and interdisciplinary applications underscores its role in fostering a more integrated research environment. Customization and personalization features of AI tools are also valued, as they provide tailored support that meets the specific needs of researchers. Overall, the students' responses collectively underscore the transformative potential of AI in academic research, highlighting its role in making the research process more efficient, accurate, and comprehensive.

2.

The responses indicate that AI has significantly influenced the accessibility of data and resources in research, with several key impacts highlighted by the students. AI tools have

enhanced the quality of research by providing more accurate and clear data, which directly contributes to the credibility and reliability of research findings. Additionally, AI has expanded the scope of research by enabling access to a wider array of data sources and facilitating more comprehensive information retrieval. This broadens the horizons of what can be studied and how deeply topics can be explored.

Many students acknowledge the positive impact of AI on data accessibility, noting improvements in operational efficiency and the generation of new insights across various fields. AI's capabilities in data mining, retrieval, and the use of improved search algorithms have made it easier to find relevant information quickly and efficiently. Open data initiatives and advanced text and data extraction methods further enhance the ability to access and utilize diverse datasets, thereby enriching the research process.

However, there are also concerns about the quality of data retrieved, with some students pointing out that AI can sometimes provide wrong or less reliable information and may struggle to accurately identify the sources of information. This highlights a need for researchers to critically evaluate AI-generated data and cross-verify sources to ensure the integrity of their research.

Overall, AI has played a transformative role in making data and resources more accessible in academic research. While it brings numerous benefits in terms of quality, scope, and efficiency, it also requires careful consideration and validation of the information provided to maintain high standards in research outcomes.

3. Challenges and Limitations Encountered When Using AI in Research

The responses from students highlight several key challenges and limitations they have encountered when using AI in their research. A major concern is data privacy and security, especially when dealing with sensitive or personal information. Students are wary of how AI

systems handle such data, reflecting broader issues around confidentiality and the ethical use of data.

Another significant challenge is the outdated content provided by AI tools. The rapidly evolving nature of academic research means that AI must continuously update its knowledge base to remain relevant, yet it often lags behind, leading to the use of obsolete information.

Data quality and quantity also pose problems. AI systems require large, high-quality datasets to function effectively, but acquiring and maintaining such datasets can be difficult. This impacts the reliability and accuracy of AI-generated results. Additionally, the complexity of human behavior and the need for AI to generalize across diverse, interactive, and dynamic environments are cited as limitations, suggesting that AI struggles to fully grasp and replicate human intricacies and context-specific nuances.

Safety and ethical concerns, including the handling of reward and feedback mechanisms, are also significant. These issues highlight the importance of developing AI systems that can operate safely and ethically, ensuring they do not inadvertently cause harm or reinforce biases.

Some students mention the illogicality and potential for error in AI-generated answers, which can undermine the trust in AI tools. The complexity of algorithms and the substantial computational resources required for effective AI implementation further complicate its use. These technical challenges can be a barrier, particularly for those without extensive technical expertise or access to powerful computing infrastructure.

Lastly, repetition and limited creativity in AI outputs are noted as drawbacks. AI systems can sometimes produce repetitive or unimaginative results, lacking the creative spark and originality that human researchers bring to their work.

Overall, while AI offers substantial benefits, these responses underscore a range of practical and ethical challenges that researchers must navigate. Addressing these issues requires

ongoing development, critical evaluation, and ethical considerations to maximize the benefits of AI while mitigating its limitations.

4. Risk of Becoming Too Dependent on AI for Research

The responses from students indicate a clear concern about the potential risks of becoming too dependent on AI for research. Many students believe that while AI should be used as a valuable tool to aid research, it should not replace human effort and creativity. They emphasize the importance of maintaining a balance where AI supports but does not overshadow the essential skills and critical thinking abilities of researchers.

A recurring theme is the fear that excessive reliance on AI could lead to laziness and a reduction in human effort. Students express concerns that the ease of access to AI-generated information might make researchers less inclined to engage deeply with their work, potentially diminishing their analytical and problem-solving skills over time. This dependency could result in a loss of essential human capabilities that are crucial for innovative and original research.

Security and privacy risks are also highlighted as significant concerns. Dependence on AI systems that handle vast amounts of sensitive data could expose researchers to vulnerabilities, including data breaches and misuse of information. The importance of safeguarding data privacy and ensuring secure use of AI tools is underscored by these responses.

Additionally, some students worry that reliance on AI limits human creativity. They argue that AI, while efficient, lacks the unique creative spark that human researchers bring to their work. Over-dependence on AI might stifle originality and lead to more homogeneous and less innovative research outputs.

Overall, the responses reflect a cautious approach towards AI in research. While recognizing the substantial benefits AI offers, students are wary of the potential downsides of over-reliance. They advocate for a balanced integration of AI, where it serves as an enhancer of human capabilities rather than a substitute, ensuring that critical thinking, creativity, and essential research skills are preserved and developed alongside technological advancements.

5. Future Role of AI in Research

The responses from students regarding the future role of AI in research over the next decade indicate a generally optimistic outlook. They foresee AI evolving to become even more integral, advanced, and transformative in the research landscape. Several key themes emerge from their predictions:

- **Enhanced Tools for Complex Analysis:** Students anticipate that AI will continue to develop better tools for complex analysis. These advancements will enable researchers to tackle more sophisticated and intricate research problems, enhancing the depth and quality of their findings.
- **Rapid Evolution and Research Diversity:** The rapid evolution of AI is expected to lead to increased diversity in research. As AI tools become more capable, they will likely support a broader range of research topics and methodologies, fostering innovation and discovery across various fields.
- **Improved Efficiency and Automation:** Many respondents highlight the potential for AI to enhance efficiency and automation in research. By automating repetitive and time-consuming tasks, AI will free up researchers to focus on more critical and creative aspects of their work, thereby increasing overall productivity and research output.

- **AI and Human Collaboration:** There is a strong belief that AI will facilitate greater collaboration between humans and machines. This synergy is expected to result in more powerful and insightful research outcomes, as AI tools complement human intuition, creativity, and critical thinking.

- **Integration and Transformation:** Over the next decade, AI is likely to become more integrated into research processes, becoming a standard tool in the researcher's toolkit. This integration will be accompanied by advancements in AI technologies, leading to transformative changes in how research is conducted and the types of questions that can be explored.

- **Development of Sophisticated Algorithms:** Students trust that AI will play an increasingly prominent role in research by developing more sophisticated algorithms. These advanced algorithms will enhance the ability to process and analyse large datasets, uncovering new patterns and insights that were previously inaccessible.

- **Advantages and Services Across Various Fields:** The expectation is that AI will continue to offer numerous advantages and services across diverse research fields. Its adaptability and versatility will allow it to contribute to breakthroughs and advancements in areas ranging from natural sciences to social sciences and humanities.

Overall, the students envision a future where AI plays a pivotal and expanding role in research. They anticipate that AI will not only enhance existing research methodologies but also open up new avenues for exploration and discovery. The integration of AI into research practices is expected to lead to more efficient, diverse, and impactful research outcomes, driven by the collaboration between advanced AI tools and human ingenuity.

6. Measures for Responsible and Ethical Use of AI in Academic Research

The responses from students highlight several important measures that should be implemented to ensure the responsible and ethical use of AI in academic research. These

measures reflect a comprehensive approach to address the potential ethical and practical challenges associated with AI.

- **Encourage Open Development:** Students advocate for the open development of AI tools. This involves fostering a collaborative environment where AI technologies are developed transparently, with input from diverse stakeholders. Open development can help ensure that AI tools are designed with ethical considerations in mind and are accessible for scrutiny and improvement by the research community.
- **Policy and Regulation:** There is a call for policymakers to fine-tune the abilities of AI to ensure more visible and beneficial consequences. Establishing clear guidelines and policies for the deployment of AI systems in research is essential. These policies should address the ethical use of AI, data privacy, and the prevention of misuse.
- **Ethics Education and Training:** Ethics education and training for researchers are crucial. Ensuring that researchers are well-versed in the ethical implications of AI and are trained to use AI tools responsibly will help mitigate potential risks. This education should cover topics such as bias, privacy, and the ethical use of data.
- **Transparency and Accountability:** Promoting transparency and accountability in AI-assisted research is vital. Researchers should be required to document and disclose how AI tools are used in their research, including the data sources, algorithms, and decision-making processes. This transparency helps build trust and allows for the replication and verification of research findings.
- **Clear Guidelines and Standards:** Establishing clear guidelines and standards for the use of AI in academic research is necessary. These guidelines should outline best practices for implementing AI, ensuring that AI systems are trained and validated to avoid biases and inaccuracies. Adhering to these standards can help maintain the integrity of research outcomes.

- **Limited Use and Reliance:** Some students suggest that the use of AI should be limited and primarily relied on for understanding rather than copying ready-made information. This measure aims to preserve the role of human creativity and critical thinking in research, ensuring that AI serves as a supportive tool rather than a crutch.
- **Bias Prevention and Validation:** Ensuring that AI tools are trained and validated to avoid biases is crucial. Implementing rigorous validation processes can help identify and mitigate biases in AI systems, leading to more fair and accurate research outcomes.

Overall, the responses emphasize a multifaceted approach to ensuring the responsible and ethical use of AI in academic research. By encouraging open development, establishing clear policies and guidelines, providing ethics education, and promoting transparency and accountability, the research community can harness the benefits of AI while minimizing its risks. These measures are essential for maintaining the integrity and ethical standards of academic research in the age of AI.

7. Advice for New Students Starting Their Research Journeys with AI Tools

The advice provided by respondents for new students starting their research journeys with AI tools emphasizes a balanced, ethical, and thoughtful approach to using these technologies. Here are the key pieces of advice distilled from the responses:

- **Use AI as an Assistant, Not a Replacement:** Students are encouraged to use AI tools to assist their research rather than replace their own efforts. AI should be seen as a supportive tool that enhances research productivity and quality without diminishing the importance of human input and creativity.
- **Ethical Considerations:** It is crucial for new researchers to use AI tools ethically. They should be aware of both the positive and negative aspects of AI technologies before interacting

with them. Understanding the ethical implications helps ensure that AI is used responsibly and does not lead to unethical practices or outcomes.

- **Choosing the Right Tools:** New researchers should take the time to choose the right AI tools that best fit their research needs. Considering the specific capabilities and limitations of different tools can help in selecting the most appropriate ones. This choice should also factor in the ethical implications and potential for collaboration.
- **Balanced Reliance on AI:** While AI can be a great source of ideas and assistance, students are advised not to rely entirely on it. They should use AI to complement their own research efforts and not let it overshadow their mental abilities and critical thinking skills. This balanced reliance ensures that researchers maintain their analytical and creative capacities.
- **Fundamental Understanding:** Gaining a solid understanding of the fundamentals of AI and machine learning is important. Students should start by learning the basics, which will help them use AI tools more effectively and understand their limitations and potential.
- **Start Small and Document Work:** New researchers are advised to start small, gradually integrating AI tools into their work as they become more comfortable with them. Documenting their use of AI tools and the outcomes they produce is also essential. This documentation can help in tracking progress and maintaining transparency.
- **Develop Critical Thinking and Soft Skills:** Developing critical thinking skills is crucial for evaluating the information and outputs generated by AI tools. Additionally, soft skills such as collaboration, communication, and ethical reasoning are important for responsible AI use in research.

- **Stay Updated:** AI technologies are rapidly evolving, so it is important for researchers to stay updated with the latest developments. Keeping abreast of new tools, techniques, and ethical guidelines will help them use AI effectively and responsibly.

Overall, the advice for new students emphasizes a thoughtful and balanced approach to using AI in research. By combining a solid understanding of AI fundamentals with ethical considerations and critical thinking, new researchers can harness the power of AI tools to enhance their work without compromising their own skills and integrity.

Conclusion

This chapter was devoted into the description of the tools used in collecting data involving the questionnaire and the interview .Besides this, the chapters shows the discussion of the obtained results of the two methods used to collect and analyses data . The findings of this study includes a set of information concerning the AI's dependency in research.

Chapter Three:

Discussion and Recommendation

Introduction

This chapter displays the discussion and the recommendations of the research study of the key advantages, drawbacks and of offered by AI tools. In addition to discussing the implications of the important findings from the collected data analysis of the employed research methodologies in connection to the research question, this chapter offers recommendations and the limitations we faced since we start this study. These recommendations will aim to strike a balance between harnessing the potential of AI while mitigating its risks, fostering a responsible and ethical approach to its integration into academic research processes. Furthermore, we will discuss the main role of AI in academia, providing insights and guidance for ensuring its ethical and effective utilization in the pursuit of knowledge.

3.2. Discussion of the Student's Interview

Our interview with the students of Ibn Khaldoun University revealed a nuanced perspective on the integration of AI tools in academic research. From this perspective, students noted important obstacles and constraints that need to be addressed in addition to recognizing the major advantages such as effective data processing, pattern identification, and improved resource accessibility. The potential of AI to expedite literature studies, synthesis information from large databases, and unearth discoveries that would be difficult or impossible through manual efforts alone are some of the key advantages mentioned. But a significant issue that has emerged is the lack of interpretability and transparency in many AI models.

Moreover, some differing views were expressed regarding the possibility of an over-reliance on AI. Most of our participants expressed concern about the potential loss of human intuition, creativity, and critical thinking. Others, saw that AI is a powerful tool to support human researchers and students. Then, In order to address these challenges and issues, our participants suggested creating some governance frameworks, moral standard and best practices suited to certain research

fields. It was believed that to be able to enhance trust and ensure accountability, it was necessary to give top priority to openness, interpretability and explainability when developing AI models. For a comprehensive strategy to integrate AI into research, an interdisciplinary collaboration between AI specialists, field researchers, ethicists and policy makers is proposed.

Ultimately, the interview highlighted the need for a responsible and balanced strategy that uses the benefits of AI while reducing its limitations and risks through ethical and regulatory measures, even as they acknowledge the transformative potential of the technology. Academic research employing AI responsibly and ethically is a shared obligation that calls for constant communication, collaboration and a dedication to maintaining scientific integrity.

3.3 The Use of Artificial Intelligence in Research

The analysis of the collected data from the questionnaire disclosed that the majority of teachers used Artificial intelligence in their work and academic research. Thus, the widespread application of AI in research has spurred a conversation about ethics, openness, and the fundamentals of science that goes beyond simple technological advancements. Even while integrating AI has the potential to greatly improve and speed up research process, its unchecked use presents important issues that need to be addressed. On the positive side, AI can speed up discoveries and expand human knowledge due to its remarkable power to digest large volumes of data, recognize complex patterns, and produce original hypothesis. In this context, it is impossible to ignore the ethical issues associated with the use of AI in research. It is reasonable to be concerned about the possibility that AI systems will reinforce or amplify existing societal biases and inequalities. Thus, in order to lower these dangers and ensure that AI is developed and used in an ethical and responsible manner, researchers and students must be extremely vigilant and put strong safeguards in place.

Moreover, the respondents inform that employing AI has helped them in their work. It can provide more time, saving efforts and give professional results of the research especially when time is limited.

3.4 Analyzing the benefits and Drawbacks of using AI in Research

A radical paradigm has arisen from the integration of AI into research projects, presenting both enormous opportunities and challenging obstacles. The main points were observed during this study regarding the benefits of using AI tools in academic research are uncountable such as:

- Artificial intelligence can process and analyse massive amounts of data for quicker and more efficiently than people.
- AI can produce unique hypotheses and research directions that may lead to new discoveries or fields or exploration.
- AI tools can automate many time-consuming tasks, allowing researchers to focus on higher-level tasks and accelerate their work.
- AI can analyze a researcher's strengths, weakness, and knowledge gaps for improvement in order to offer tailored suggestions for professional growth.
- AI tools have the potential to decrease the long term cost of research by eliminating the requirement for substantial infrastructure and human resource.

Despite the fact that there is a plenty of advantages, the drawbacks and limitations of AI in research cannot be overlooked as our participants stated.

- There is a risk that researchers will rely too much on AI technologies, which could eventually cause critical thinking, analysis, and domain knowledge to gradually disappear from research. Instead of completely replacing human researchers, AI should support them.

- AI may struggle with creativity and thinking outside the box, limiting its ability to come up with novel research ideas.
- The use of AI in research raises ethical questions regarding data privacy, consent, and the potential misuse of technology.
- AI systems can be vulnerable to attacks and manipulations, posing security risks to research data and findings.
- AI algorithms can sometimes make decisions that are difficult to explain or justify, leading to concerns about accountability and transparency in research processes. Understanding how AI arrives at its conclusions is crucial for ensuring the reliability and credibility of research findings.

As a result, these drawbacks highlight the importance of using AI tools in research responsibly and being aware of its limitations.

Limitations of the Study

While this study aimed to provide a comprehensive analysis of the impact of AI dependency in research, however the study came across various limitations that posed challenges to its.

To begin with, we were faced difficulties and barriers in gathering enough participating teachers to answer the questionnaire. We have received only twenty four (24) answers. On the other hand, not all students were collaborative in the interview.

In addition to the unavailability of resources .In spite of these obstacles, we make an effort to present an insightful viewpoint on the subject.

3.6 Recommendations

For students:

- Though AI tools can help with many research activities, interpreting and evaluating AI-generated outputs or recommendations requires the development of strong critical thinking skills.
- Recognize that AI has limitations and biases, don't blindly trust AI outputs, but instead, use them as a complement to human expertise and judgment.
- Be aware of the ethical implications of using AI in research, such as privacy concerns, algorithmic bias and the potential for misuse. Adhere to ethical guidelines and best practices.
- Take the time to understand what AI tools can and cannot do. Know their strengths, limitations and potential biases to manage expectations and use them appropriately.
- Approach AI with a critical mindset, and do not blindly believe in the hype or exaggerated claims about its capabilities. Maintain a balanced perspective on the potential and limitations of AI.
- As AI technology rapidly evolves, be prepared to continuously update your knowledge and skills through self-study, online resources, or formal education to stay relevant and responsible in your research endeavors.

By following these suggestions, you can gain a sophisticated grasp of AI's place in scholarly research and learn how to appropriately navigate ethical dilemmas and problems while taking use of the technology's advantages.

For Teachers:

- Encourage students to critically evaluate AI outputs, question assumption and understand the limitations and potential biases of AI systems.

- Facilitate open discussions and debates around the ethical implications of AI in research, fostering a culture of responsible and ethical AI development and deployment.
- Provide opportunities for students to gain practical experience with AI tools and techniques in research settings, under proper supervision and guidance.
- Empower students to be critical consumers and responsible developers of AI technologies by providing them with the necessary knowledge, skills and ethical foundations.
- Educate students about AI's capabilities, limitations, and ethical implications in research.

Conclusion

In this chapter, we discussed the most important think that should take in consideration when using AI tools in any research study. While AI technologies offer significant benefits, it is also present challenges and ethical implications. Moving forward, it is crucial for researchers, students to approach AI integration in academic research with a balanced perspective, emphasizing ethical considerations. By addressing these issues proactively, we can harness the potential of AI while mitigating its risks, ensuring responsible and impactful use of AI in research.

General Conclusion

General Conclusion

The use of artificial intelligence (AI) in academic research is growing; it presents significant challenges as well as strong possibilities. This dissertation looked at the benefits, problems, and moral dilemmas related to artificial intelligence's expanding use in research. Artificial intelligence (AI) has allowed researchers to quickly scan massive data sets, uncovering patterns and insights that would otherwise be difficult to find manually. AI may also automate monotonous processes and enable complex data analysis. This has encouraged creative solutions to difficult issues and created new opportunities for interdisciplinary research. However, there are a number of serious drawbacks to increased reliance on AI. Over-reliance on AI has the potential to undermine critical thinking, creativity, and thoughtful decision-making—all vital human abilities. AI's technical difficulties, such as algorithmic biases and problems with data quality, make integrating it into research procedures much more difficult. By taking a balanced, ethical approach, the academic community can leverage AI's strengths to advance knowledge while upholding research integrity and trustworthiness. Addressing AI's challenges is crucial for ensuring its positive and sustainable integration into the research landscape.

In summary, even while AI offers groundbreaking possibilities for scientific research, its integration must be done responsibly and carefully. The academic community can take full advantage of AI to advance knowledge and address complex global concerns by balancing AI skills with human expertise, while also adhering to ethical standards. This will ensure that AI has a positive and long-lasting impact on academic research.

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Appendix 1

Teacher's Questionnaire

Dear teachers,

You are kindly invited to fill out this questionnaire which is part of a research study at Ibn Khaldoun University Tiaret. This investigation tool aims to investigate the impact of artificial intelligence dependency in research. Your contribution and collaboration will be highly appreciated.

Thank you.

- **Gender**

Male female

- **For how long you have been teaching English?**

1-4 years 5-10years 11-20year

- **Are you Familiar with artificial intelligence?**

Yes no

- **To what extent are you familiar with AI tools?**

Very familiar extremely familiar not familiar at all

- **Have you ever used AI tools in your academic/professional research?**

Yes no

- **If yes, have you noticed a change in your work after using it?**

.....

- **Do you think after using AI for a while, you can dispense with it?**

.....

- **Have you noticed if your students use AI tools in their research academic progress?**

Yes no

- **What challenges have you faced when using AI tools?**

Lack of understanding

Ethical concerns

Data quality

Others

- **Do you believe AI can help in solving complex problems effectively?**

Yes

no

- **Do you think AI can contribute to the development of new linguistic theories?**

.....

- **Do you make use of any applications that facilitate your academic research? if yes mention some of them.**

.....

.....

- **In your opinion, what is the role of AI in academic research?**

Data analysis

Content generation

Other

- **Can AI-powered language models influence the linguistic research? Explain**

.....

.....

- **Will students and researchers be dependent on AI in their research?**

.....

.....

- **How can you detect that your students have used Chatgpt in their dissertation writing?**

.....

.....

Appendix 2

Student's Interview

- 1) What are some of the key benefits you have noticed from using AI tools in your research?
- 2) How has AI influenced the accessibility of data and resources in your research?
- 3) What challenges or limitations have you encountered when using AI tools in your academic research?
- 4) Do you think there is a risk of becoming too dependent on AI for research? Why or why not?
- 5) How do you see the role of AI in research evolving over the next decade?
- 6) What measures do you think should be out in place to ensure responsible and ethical use of AI in academic research?
- 7) What advice would you give to new students starting their research journeys with respect to using AI tools?

Summary

This research explore the advantages, drawbacks and ethical concerns of using ai tools in research. Data was collected through questionnaire and interview from both students and teachers of ibn khaloun university. Findings indicate that although students and teachers are aware of the negatives of AI they still use it.

Resume

Cette recherche explore les avantages, les inconvénient et l'éthique de l'utilisation de l'intelligence artificielle dans la recherche. Les données ont été collectes via questionnaire et d'entretiens avec les professeures et les étudiants de l'université ibn khaldoun. Les résultats indiquent que même si les professeures et les étudiants sont conscients des inconvénients de l'intelligence artificielle, ils l'utilisent encore.

المخلص

يستكشف هذا البحث ايجابيات سلبيات و الاخلاقيات المتعلقة باستعمال الذكاء الاصطناعي في البحث. تم جمع البيانات من خلال الاستبيانات و المقابلات مع كل من اساتذة و طلبة جامعة ابن خلدون تيارت. تشير النتائج الى انه على الرغم من وعي كل من الاساتذة و الطلبة بسلبيات الذكاء الاصطناعي لا يزالون يستعملونه.