

Obstacles and Recommendations of AI-Chatbot as an educational tool in Iraq

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الملخص:

في هذه الأيام، أصبحت أدوات الذكاء الاصطناعي المتاحة للجميع موضوعاً شيقاً للغاية للشركات العامة والحكومات والأفراد. هذه الأدوات، مثل الشات بوت، توفر خدمات وحلولاً هامة يمكن أن تبسط الإجراءات وتمنحنا العديد من الفوائد في عدة جوانب، مثل الأعمال، الاقتصاد، التعليم، والترفيه. في هذه الدراسة، سنركز على جانب التعليم وكيف يمكن للذكاء الاصطناعي أن يمنحه تقنية متقدمة، حيث نضيق نطاق البحث ليكون حصرياً على دور الشات بوت في تطوير تقنيات التعليم. لذلك، يسعى هذا البحث إلى شرح تفاصيل الشات بوت بالذكاء الاصطناعي والفرص المتاحة للتطوير لخدمة التعليم، إلى جانب بعض الصعوبات المحتملة والقضايا الأخلاقية.

الكلمات المفتاحية: تقنيات الذكاء الاصطناعي، تعليم الذكاء الاصطناعي.

Abstract:

These days, the AI tools that are available for all have become the most interesting subject for public companies, governments, and individuals. These tools, such as Chatbot, provide important services and solutions that can simplify the procedures and give us a lot of benefits in several aspects, business, economy, education, and Entertainment. In this study, we will look at the education aspect and

how AI can give it an advanced technique, in this direction, we narrow the search to be exclusive on the role of AI-Chatbot in developing educational techniques. So, this research seeks to explain the AI-Chatbot details and what's the opportunities for development to serve education, some more difficulties that can be faced, and the ethical issues.

Keywords: AI technologies, Chatbot, Chatbot implementation, AI education

1. Introduction:

Artificial intelligence AI technologies, today, can provide many services that decrease the burdens, decrease the human-errors, and give us the speediest and most immediate responses, these services can be available as standalone or embedded in another system as a support module to provide creation, analysis, or other human-knowledge services. One most interesting example, the AI-Chatbots, this technology has progressed upon the level of development of Natural Language Processing (NLP), Neural Network (NN), and Deep Learning, Chatbot is a computer agent that give us a more similar illusion as a human-interactive agent. The primary responsibility of the Chatbot receive the user queries and respond to them as an experiment agent, these responses can be general or specified in a specified field that the user requires. In many research studies, chatbots can be referred to by several terms, such as smart bots, interactive agents, digital assistants, or artificial conversation entities

(Caldarini *et al.*, 2022). AI-Chatbot is easier to use especially since it doesn't require installation in most cases, it can be available online across websites or Telegram such as Chat GPT from OpenAI, Bard from Google, Bing from Microsoft, and others.

AI-Chatbot generally mimics human conversation, but more specifically it mimics an experiment or Knowlagent-agent for basically auto-replay, or in advanced information retrieval, and information generation, these tasks are important in business, financial, healthcare and education fields. Thus, the relationship between AI-Chatbot and education become more tied day after day due to the simplification and the solutions they can provide for student and researchers, the effects of AI-Chatbot on the education field cast its shadow on the oldest procedures that was costly and time-consuming for individual and institutions, and this effect would become more clearly in researching progression improving and the speed of completing studies. For instance, the GPT Chatbot can generate a research article on a specified subject in a few seconds, also a GPT or Bard can give us a complete or a part of code in any programming language, and other AI-Chatbot can summarize a specified section, and article, book chapter or describe an image, all these images are evident for our mean about the role of simplification and solutions that can be provided by AI-Chatbot in education fields (Rahman, Al Mamun and Islam, 2018).

In light of the aforementioned information, our research delves into a comprehensive exploration of AI chatbot technology, encompassing

its fundamental components, various types, benefits, challenges, issues, and contemporary developments in the field.

1.1 Background:

In 1950, Alan Turing presented the first idea about Chatbot when he posed the question: “Can machines think?”, this question involved the primary concept of how the machine can understand the user intent and how it can interact with him (Caldarini *et al.*, 2022). In 1966, with the progression of NLP, the ELIZA was heavily dependent on linguistic rules and pattern matching. It takes the user's input and through a matching algorithm, it responds to him with an appropriate reformulated answer. ELIZA's knowledge base is very limited and its matching rules can't be modified to implement a new domain.

This limitation was enhanced with the ALICE (Tuhuteru *et al.*, 2021), in 1980. ALICE referred to (as Artificial Intelligent Internet Computer Entity) depends on Artificial Intelligent Markup Language (AIML) and is an extension of XML. The knowledge base can be expanded by adding a new dialogue pattern knowledge. This knowledge is represented by a data object composed of topics and categories stored in AIML.

In the mentioned Chatbots there is a crucial limitation, which is the rules and pattern matching are manually written and implemented for a specified domain, thus making their development and usage efficient and inflexible.

Recently Chatbots combined both advanced machine learning techniques and NLP tools, this combination made them more suitable

and at hand and easier in general usage or fine-tuning for a specific domain. For instance, the development of Deep Learning algorithms helps in the development of intelligent personal assistants, such as Amazon's Alexa, Apple's Siri, Google's Assistant, Microsoft's Cortana, and IBM's Watson, these personal chatbot assistants provide an easier way to interact the user with the machine via voice or text for getting specified information, or open an application.

1.2 problem statement:

As a new education era, several education platforms have been established in Iraq, such as Newton, Ta3leem, DrossNet, Wahaj, and else, all these platforms don't take into our account the AI requirements that could fit with the student's favorites. The AI techniques can make these platforms more convenient and advance to improve the spreading and the usage, and make easy to enriching the contents since they will be user-oriented management instead of rigid procedures enforcement with fixed template contents, that required a human intervention and more efforts to make these platforms continuous and usable.

1.3 Chatbot implementation:

In this section, two kinds of chatbots will give a brief about their architectures, Rule-based chatbots, and Artificial Intelligence chatbots, and present the main limitations and advantages of each.

1.4 Rule-Based Chatbot:

Also known as a “Deterministic” or “scripted” chatbot, it’s operated on predefined rules and patterns that are written manually by human–base knowledge, and implemented for a specified domain, it follows a strict step and instructions to interact with users (Thorat and Jadhav, 2020). The main architecture is:

- i. Rule Creation: a set of rules that satisfy a more frequent question and query that is required by users.
- ii. Pattern Matching: the program analyzes the user query, and identifies the main keywords and phrases to use them for the matching pattern process.
- iii. Response Generation: once the matching rule is found, the program prints the predetermined response according to its database that involves predefined rules. If the program doesn’t find the correct rule, it may print a mismatched default response or express its inability to understand the user’s inputs.

Rule–based chatbots have several advantages, it generates an accurate response when dealing with user queries that fall in a predefined rule. The information that is retrieved is under the control of the developers thus it is consistent and reliable. Without complex learning algorithms, a rule–base chatbot can process and respond to user’s queries quickly.

On another hand, Rule–based chatbots have several drawbacks, it is difficult to expand the scope of the knowledge base since it requires manually crafted rules. It can’t handle the user’s queries that deviate

from the predefined rules. It interacts with simple and structured user inputs and struggles with complex inputs.

Customer Support chatbots, Virtual Assistants, Interactive FAQs, Appointment Scheduling, Travel Booking Assistants, E-commerce Product Recommendations, and Language Translation, all these and else are examples of rule-based chatbots.

1.5 Artificial Intelligence Chatbots:

In artificial intelligence chatbots (Gupta *et al.*, 2020), there are no manual rules definitions or pattern-matching code, the Machine Learning and NLP algorithms will take this role to make the model simulate human-like conversations. In this context, the model, firstly, trains on a real conversation dataset, then, the model will interact with users to get their input (queries or else) and understand their intents to retrieve the appropriate possible responses. AI chatbots have several Characteristics:

- i. Natural Language Processing NLP: it uses NLP algorithms to understand and interpret the user's inputs.
- ii. Machine Learning ML: it incorporates ML algorithms to enhance its ability to understand the user's input intents, learn from user interactions, and generate more relevant responses.
- iii. Context Awareness: AI chatbots maintain the conversation's context, to make the consequent responses constitute and coherently.

- iv. Personalization: depending on the user's history and preferences, the model will manipulate the queries and generate the required responses.
- v. Multimodal interaction: AI chatbots support both voice and text conversations.
- vi. Integration: several systems can incorporate AI chatbots to perform some tasks, such as real-time tasks, FAQs, or others. The integration may contribute to mitigating the human-dependent tasks, decrease the cost of latency, and speed up the response.

Today, many users can't leave user of many AI Chatbots such as virtual Assistants (Apple's Siri, Amazon's Alexa, Google's Assistant, And Microsoft Cortana), customer support Chatbots, healthcare Chatbots, finance and banking Chatbots, language translation Chatbots, Educational Chatbots, HR and recruitment Chatbots, social media Chatbots, and Travel and hospitality Chatbots.

As stated in figure (1) and figure (2) AI chatbots become the trend and the most queried term in search engines and Scopus indexing engine. So, the efforts of the developers have been focused on making the AI chatbot model increasingly capable of processing complex and context-rich conversations.

In general, AI Chatbots models can be Information Retrieval models, and Generative models, following details about them:

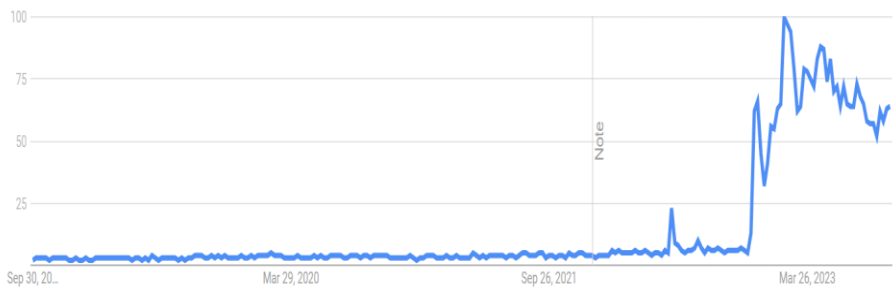


Figure 1 ... AI chatbots trends on Google Search Engine through last five years

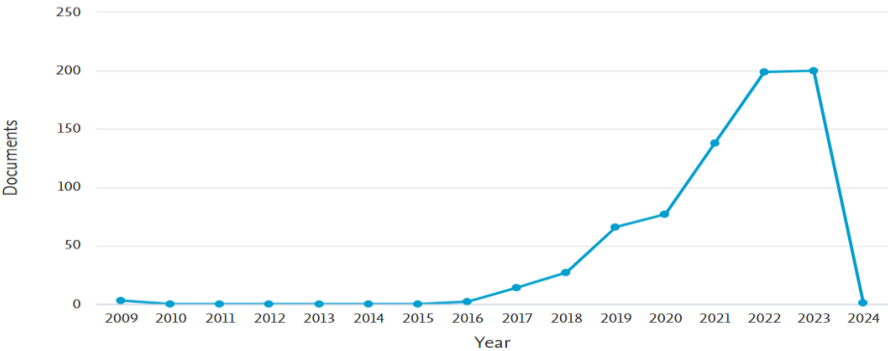


Figure 2 ... AI chatbots documents that indexed within Scopus through last five years

Information Retrieval models: these models take the user’s inputs and after performing analytic handling to understand the user’s intent, the model accesses and retrieves the relevant information to respond to the user queries effectively. These models may involve Rule–base and machine learning algorithms, the predefined rules can be used for more frequent questions and answers. The greatest advantage of these models, that is most responses are accurate, they ensure the best quality because its knowledge–based responses and not auto–

generated. On the contrary, it is similar to Rule-based Chatbots, it lacks the flexibility and the necessary new knowledge base. Also, the expanded knowledge base can lead to inaccurate responses due to the matching handling complexity.

On another hand, Generative AI chatbot models are trained on a massive dataset of text and code to be capable of learning the relationships between words and phrases, this enables them to generate a human-like text that is both informative and engaging.

Generative Chatbots are more efficient in understanding and responding to a wider range of user queries. They can provide more natural conversations and easily adapt to new domains and applications, where the model may be a specific knowledge domain or trained on different domains without requiring a rewrite of the entire algorithms and code due to it incorporating NLP-solving tasks.

Now, the most commonly used are Bard, LaMDA, and Megatron-Tuning NLG from Google AI, and ChatGPT from Open-AI. For different user requirements and a variety of domains, in customer services, Education, Entertainment, Healthcare, and Productivity, only one Generative model can be run and efficient results can be achieved.

2. Literature review:

The benefits of the AI chatbots-based educational that are mentioned encouraged the researchers to propose novel and ambitious ideas about how to harness the AI chatbots in education domains. Thus, in (Karad, 2021) the proposed AI chatbots were

found to decrease the institute's burdens and found an algorithm that can fulfil the student's queries and questions about the course details, eligibility criteria description and admission without needing to consult the administration centre. in such direction, (Windiatmoko, Rahmadi and Hidayatullah, 2021) proposed an AI chatbot that can be applied to mitigate the administration and management accessibility and availability, especially in pandemic times. The proposed system was developed by deep learning models based on RNN and LSTM which are already integrated with the RASA framework. The proposed models were evaluated using metric (automatically) assessments, precision, recall, and F1, also the model has a response time is less than a second. An AI chatbot as a language learning medium has been proposed in (Simulating, Conversation and Tu, 2019), both as a tutor in practising language and as an independent learning medium. The proposed model presents several advantages, making the students free when dealing with it, the materials have been repeated as the user required, improving the writing, listening and talking skills of users, variety of languages can be provided by the model. An empirical study has been conducted using an AI chatbot for learning a foreign language, this study was selected 200 persons and divided them into two teams, students and controls, the results that ended up this study were encouraging and called for moving towards intensive use of AI in learning (Nghì, Phuc and Thang, 2019). The aim of making the student a main actor in his education was the subjective of some researchers (Villegas-Ch, Arias-Navarrete and

Palacios–Pacheco, 2020), these researchers claimed that the student should be able to classify their curricula depending on his needs, these needs may involve important personal aspects that are help to create an active learning environment. A new theoretical framework has been proposed in (Ilieva *et al.*, 2023) using a generative AI chatbot that keeps the course up-to-date and provides comprehensive blended learning to ensure that the students can interact with instructors online to manage their courses.

3. Methodology:

3.1 That state-of-art of AI Chatbots:

In this section, an implementation of a Generative AI chatbots will highlighted and the recent techniques that are used in this field (Pandey and Sharma, 2023) because this topic has become the most interesting for developers and clients. In the following the main techniques that used to implement Generative AI chatbots:

Large Language Models (LLMs): these models are trained on a massive amount of text data to allow them to learn the statistical relationships between words and phrases. LLMs can be used to generate text, translate languages, write different kinds of creative content, and answer questions in an informative way.

1. Transformers: a type of Neural Network architecture that is well-suited for language processing tasks. it proposed in (Vaswani *et al.*, 2017). It replaces RNN models like Long Short-Term Memory (LSTM), and also it allows for parallelization to improve the training

on a large dataset. Transformer is a basic of the other innovations techniques, such as Bidirectional Encoder Representation from Transformers (BERT) and Generative Pre-trained Transformer (GPT). Different versions of the transformer are proposed, for instance, Transformer XL, and Reformer.

2. Sequence to Sequence (SeqtoSeq): type of encoder-decoder model that is well-suited for sequence-to-sequence tasks, such as machine translation and chatbot applications. The model works by encoding the input sequence into a hidden state vector, this vector represents the meaning of the input. After that, the decoder takes the vector as input and generates the output sequence, this process is done in one token at a time. SeqtoSeq is a supervised learning approach, the model is given a set of input-output pairs. The main drawbacks of SeqtoSeq are computationally expensive, sensitive to the quality of the training data, and sometimes generates unrealistic data.

3. Generative Adversarial Networks (GANS): used to generate realistic data, such as images or text. This network consists of two networks, generator and discriminator, the former is responsible for generating real data, while the latter is learned to distinguish between real and generator data. The learning process is competitive, while the generator tries to trick the discriminator when it generates the new real data, the discriminator tries to learn to distinguish between the generated data and the real one. In advanced steps, both networks become more sophisticated. The using of GANs is important and

involves some risks sometimes when they are used to create fake news or fake multimedia.

4. Variational Autoencoders (VAEs): used to generate new data that is similar to the data that the model was trained on. VAEs are trained in a dataset of existing data and they learn to represent the data in a latent space, and by sampling from the latent space, the VAEs decode the latent representation into a new data point. VAEs are less efficient than GANa since they require a huge data in training.

In general, there are additional methods through which can be implemented the Generative AI chatbots, for example using a variety of different machine learning algorithms such as SVMs and Decision trees.

3.2 Datasets used to train AI chatbots:

To train an AI chatbot using a dataset, follow the main steps:

1. Choose a relevant dataset that is related to the application of the AI chatbot.
2. Cleaning the data, removing any irrelevant or duplicated data.
3. Choose a training algorithm: Transforming, SeqtoSeq, GAN, VAN, and so on.
4. Train and evaluate the model.

A variety of datasets are used to train AI chatbots, some of the most common datasets include:

1. Conversational datasets: used to implement a model that engages in natural conversation with users.

2. Question Answering datasets: used to implement a model that helps users find informative answers to your question.
3. Creative text generation datasets: creative text such as poems, code, and so on.
4. Code generation datasets: involved code snippets.

There is a specific example of datasets that are used to train AI chatbots, such as Cornell Movie–Dialogs Corpus which contains transcripts of over 220,000 movie dialogues, it's a popular dataset for training chatbots to have natural conversations. SQuAD is a question–answer pairs dataset on a different topic. WikiText–103 contains 103 million words of text from Wikipedia, mostly, used to train a generative text chatbot. CodeSearchNet from GitHub contains over 14 million code snippets. Other datasets contain social media posts, customer support tickets, and product reviews.

The general idea from the abovementioned statement is that there are two categories of AI chatbots: general–purpose AI chatbots and domain–specific AI chatbots. In this classification, the type of dataset used in the training process plays a crucial role.

3.3 Evaluate the efficiency of AI chatbots:

The evaluation of the conversation applications is a challenge due to these applications differ in their tasks and domains. In practice, there are a variety of, measurements that can be used to evaluate an AI chatbot, these measurements reflect the efficiency and the ability of the system, sometimes all of them used in evaluation, but in some

cases, one or more measurements be used. These measurements are followed (Maroengsit et al, 2019):

1. Accuracy: is the percentage of user queries that the chatbot can answer correctly.
2. Relevance: the percentage of user queries that the chatbot answers in a way that is relevant to the user's intent.
3. Fluency: is the degree to which the chatbot's responses are grammatically correct and easy to understand.
4. Naturalness: is the degree to which the chatbot's responses sound like they were written by a human.
5. Engagement: is the degree to which the chatbot can keep users engaged in conversation.

The ways that can be applied to evaluate these aspects can be categorised into two broad classes:

1. Human (Manual) assessments.
2. Metrics (Automatic) assessments.

3.3.1 Human (Manual) assessments:

Human assessments are a process of evaluating AI chatbots by having humans interact with the chatbot and provide feedback. Human evaluation can be used to evaluate AI chatbots on a variety of dimensions, such as accuracy, relevance, fluency, naturalness, and engagement.

One approach to implementing the human assessment is a crowdsourcing platform which recruits users to interact with the

chatbot and provide feedback depending on a set of user queries and corresponding responses.

PARADISE (PARAdigm for Dialogue System Evaluation) is an example of Human assessment and is a framework for the evaluation of spoken dialogue systems. It was developed by Marilyn Walker, Diane Litman, Candace Kamm, and Alicia Abella at the University of Maryland in 1997. it's based on the idea of decoupling task requirements from how the agent carries out the task via dialogue. It can assess the dialogue system depending on task success, dialogue cost, and user satisfaction.

Despite the human assessments are a comprehensive framework and most importantly since their results are closer to reality, they involve some difficulties, such as being time-consuming, expensive, and biased.

3.3.2 Metric (Automatic) assessments:

These metrics involved using machine learning algorithms to assess the chatbot's performance on a set of user queries. These metrics are useful WE, and it is easier to implement and requires fewer resources concerning Manual assessments. But at the same time, these assessments are leaked to the real-world performance of the chatbot. Table (1) shows the key differences between Metric assessments and Human assessments.

There are several Automatic assessments, such as the f-score: which is a measure of the accuracy and completeness of a chatbot's responses. The f-score is calculated by combining the precisions and

recall of the chatbot’s responses. Precision is the percentage of chatbot responses that are correct and recall is the percentage of correct chatbot responses.

Table1 summaries the major differences between the Manual and Human assessments form three main aspects, implementation, domains, and methods.

Table 1... key differences between Manual and Human Assessments		
Characteristic	Manual assessment	Human assessment
Who conducts the assessment?	Humans	Humans
What is the focus of the assessment?	The chatbot's performance on a set of user queries	The chatbot's ability to perform specific tasks or to meet user needs
What methods are used to conduct the assessment?	Typically, human evaluators rate the chatbot's responses on a variety of dimensions.	Could involve manual assessment, user interviews, surveys, or other methods.

3.4 How can AI chatbots improve Education tools:

AI chatbots can improve education in several ways. Here are a few examples (Labadze, Grigolia and Machaidze, 2023):

1. Personalized learning: AI chatbots can provide personalized learning experiences for each student. This can be done by tailoring

the chatbot's responses to the student's individual needs and interests.

2. Adaptive learning: AI chatbots can adapt to the student's learning style and pace. This can help students to learn more effectively and efficiently.

3. Real-time feedback: AI chatbots can provide real-time feedback to students on their work. This can help students to identify and correct their mistakes early on.

4. One-on-one tutoring: AI chatbots can provide one-on-one tutoring to students. This can be especially helpful for students who need extra help in certain areas.

5. Access to experts: AI chatbots can connect students with experts in different fields. This can allow students to learn from the best and brightest minds in the world.

Here are some specific examples of how AI chatbots are already being used in education:

1. A chatbot called "Buddy" is being used in schools to provide students with personalized learning support. Buddy can help students with their homework, answer their questions, and provide them with feedback on their work.

2. A chatbot called "Tutor.com" is being used to provide students with one-on-one tutoring in a variety of subjects. Tutor.com can connect students with qualified tutors who can help them to master difficult concepts.

3. A chatbot called "Socratic" is being used to help students learn critical thinking skills. Socratic can pose challenging questions to students and help them to develop their arguments.

These are just a few examples of how AI chatbots are being used in education. As AI chatbots continue to develop, it is expected to see even more innovative and effective ways to use them in the classroom. In addition to the benefits listed above, AI chatbots can also help to make education more accessible to everyone. For example, AI chatbots can be used to provide education to students in remote areas or to students with disabilities. AI chatbots can also be used to provide educational content in different languages, making education more accessible to people all over the world. Overall, AI chatbots have the potential to revolutionize education. By providing personalized, adaptive, and engaging learning experiences, AI chatbots can help all students learn more effectively and efficiently.

4. AI Education in Iraq obstacles and Recommendations:

Such systems require some advanced infrastructures and dedicated teams in our education institutes, they have abilities to initiate to prepare the plans and views and support the AI developers and the graduation projects that are specified in AI education systems. These first steps in long way towards making AI is the basic factor in Iraqi educational institutes, that's right, the country may late in this regard due to there is no pre-plane to make the educational program available and accessible through digital environments and the classical ways that are used in presents them cannot be left.

Noteworthy, AI systems are the next stage that always comes after the stage of making all educational contents in one great database, and all other related issues that are concerning to student affairs are also involved in the mentioned database. Thus, let's call it the “National Educational Database”, this database is a more crucial element in any future AI education system. So, Iraqi educational institutes should be concerned with three main materials:

- 1) Providing support to the database systems developer to create the central National Educational Database.
- 2) Establishing the necessary supplies and infrastructure.
- 3) Assembling AI teams and engaging them in graduation AI projects aimed at enhancing educational tools.

5. Ethical issues:

Several ethical issues arise in the development and use of AI chatbots (Coghlan *et al.*, 2023).

5.1 Main Ethical issues:

Some of the most important ethical issues include:

1. Bias: AI chatbots are trained on data, and if that data is biased, then the chatbot will also be biased. This can lead to chatbots that discriminate against certain groups of people.
2. Privacy: AI chatbots can collect a lot of data about users, including their personal information and their interactions with the chatbot. This data can be used for a variety of purposes, including

targeted advertising and marketing. It is important to ensure that users' privacy is protected when using AI chatbots (Williams, 2023).

3. Transparency: Users need to know how AI chatbots work and what data they collect. This information should be disclosed to users before they start using the chatbot.
4. Accountability: If something goes wrong with an AI chatbot, it is important to be able to hold someone accountable. This can be difficult to do, as AI chatbots are often complex and difficult to understand.
5. Autonomy: As AI chatbots become more sophisticated, they may start to make decisions on their own. This raises the question of whether AI chatbots should have autonomy.

These are just some of the ethical issues that arise in the development and use of AI chatbots. It is important to be aware of these issues and to take steps to mitigate them.

Here are some specific examples of how these ethical issues can manifest in the real world:

1. A chatbot that is trained on biased data could be used to target certain groups of people with discriminatory advertising.
2. A chatbot that collects a lot of data about users could be used to track their movements and activities without their knowledge or consent.
3. A chatbot that is not transparent about how it works could give users inaccurate or misleading information.

4. If something goes wrong with an AI chatbot, it could be difficult to identify who is responsible for the problem.
5. An AI chatbot that makes decisions on its own could make decisions that are harmful to users.

5.2 Ethical issues addressing:

It is important to address these ethical issues before AI chatbots become more widely used. Developers and users of AI chatbots need to be aware of the potential risks and take steps to mitigate them.

Here are some ways to alleviate the ethical issues and build a trustworthy AI chatbots(Said Saidakhrarovich and Islombek Rustambekovich, 2023):

1. Bias: Developers need to be careful to avoid bias in the data that they use to train AI chatbots. They should also use techniques to mitigate bias in their chatbots.

Following the practical means used to mitigated the bias issue:

- a. Identifies the hidden bias, manages the missing values, and manipulate the unbalanced datasets, during the feature selection phase.
- b. Optimizes the algorithm procedures, such as Decision Tree pruning, enhance the feedback optimization for Neural Network algorithm, and so on.

2. Privacy: Developers need to be transparent about how AI chatbots collect and use user data. They should also use legal techniques to protect user privacy, the legislation should cover both

the source from which the data collected, usage of the collected data, and processing tools that used(Gil, 2023).

3. Transparency: Developers need to be transparent about how AI chatbots work and what data they collect. They should also provide users with clear instructions on how to use the chatbot and how to control their privacy. The stakeholders should provide a guideline for their product, and manage the quality of using in appropriate fashion(Yanisky–Ravid and Hallisey, 2018).

4. Accountability: Developers need to develop mechanisms for holding themselves accountable for the actions of their AI chatbots. This could include developing clear policies for how to handle user complaints and how to investigate and respond to problems.

5. Autonomy: Developers need to think carefully about whether and to what extent they want to give AI chatbots autonomy. They also need to develop mechanisms for ensuring that AI chatbots make decisions that are in the best interests of users. This creates a trust connection between the users and product's results, led to make the development tasks easier and accurate diagnosis of deficiencies(Khan, 2023).

By addressing these ethical issues, AI chatbots ensured to be used responsibly and ethically.

6. Conclusion:

This study has presented the primary view and the implementation of the AI chatbot as one of the AI technologies, and the relationship between this technology with different domains especially the education domain that the study focused on. Based on what has been presented, AI Education should be the highest priority for the future of education in Iraq because of the great expected outcomes from this technology. Also, this technology involves a variety of services that can decrease the cost, improve the quality, increase engagements, simplify the torturing instructions, mitigate the institute burdens, and acquire new and special experiences. All these advantages will enhance Iraq's educational reputation at the International educational regulatory institutions thus enhancing Iraq's educational institutes ranking. AI is the future, so, it is suggested that Iraq's educational institutes should set a plan and allocate the financial budget responsible for implementing it.

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