Accuracy of Using Meta AI in Defining the Methods of *Nahwu I'rab* Based on Jurumiyah Book

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ARTICLE INFO	ABSTRACT
Article History: Received: 29 January 2025 Revised: 14 March 2025 Accepted: 06 April 2025 Published: 30 April 2025	This study uses a qualitative method with a literature study to analyze the accuracy of the meaning of i'rab and its types from the Jurumiyah Book using Meta AI. This method involves collecting data from various literature and written sources to understand the accuracy and suitability of the translation by Meta AI. Data collection is carried out by observation and documentation, then with accuracy and data analysis to obtain in-depth knowledge about the use of technological advances in learning, especially Arabic language learning. Based on this study, it is concluded that although the approach is different from the Jurumiyah Book, Meta AI can provide the meaning of the rules of nahwu i'rab science flexibly, precisely and easily understood. Meta AI which is designed in a modern way provides a more descriptive picture and is accompanied by examples that are increasingly easy to understand. While the Jurumiyah Book is more formal and concise. Both sources agree on the basic principles of Arabic grammar. Thus, Meta AI can be used as one of the reference sources in learning, especially for learners who want more practical, concise and easy-to-understand information.
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مستخلص البحث

تستخدم هذه الدراسة المنهج الكيفي مع دراسة أدبية لتحليل دقة معنى الإعراب وأنواعه من كتاب الجرومية باستخدام الذكاء الاصطناعي الميتا. ويتضمن هذا المنهج جمع البيانات من مختلف المؤلفات والمصادر المكتوبة لفهم دقة وملاءمة الترجمة باستخدام الذكاء الاصطناعي الميتا. يتم جمع البيانات عن طريق الملاحظة والتوثيق، ثم الدقة وتحليل البيانات للحصول على معرفة متعمقة حول استخدام التقدم التكنولوجي في التعلم وخاصة تعلم اللغة العربية. وبناءً على هذه الدراسة، يُستنتج من هذه الدراسة أنه على الرغم من اختلاف المنهج عن كتاب الجرومية إلا أن الذكاء الاصطناعي الميتا يمكن أن يوفر معنى قواعد علم النحو بمرونة ودقة وسهولة في الفهم. يقدم كتاب ميتا AI المصمم بطريقة عصرية صورة وصفية أكثر دقة ومصحوبة بأمثلة يسهل فهمها بشكل متزايد. في حين أن كتاب الجرومية أكثر رسمية وإيجازًا. ويتفق كلا المصدرين على المبادئ الأساسية لقواعد اللغة العربية. وبالتالي، يمكن استخدام كتاب ميتا AI كأحد المصادر المرجعية في التعلم، خاصة للمتعلمين الذين يريدون معلومات أكثر عملية وإيجازًا وسهولة في الفهم.

الكلمات الرئيسية	قواعد اللغة؛ الذكاء الاصطناعي؛ تكنولوجية

INTRODUCTION

Islam is a religion that was born in the Arab country, through the angel Gabriel, Allah SWT revealed revelation to the Prophet Muhammad SAW (Syayfi et al., 2023). The revelation resulted in the main source of Islam and at the same time the miracle of the Prophet Muhammad SAW which is eternal until the end of time, namely the Qur'an al-Karim (Ashimi, 2021). In addition to the Qur'an, Islam also has other sources as references, if the Qur'an is not explained completely, namely the Hadith (Syarifuddin Ondeng et al., 2024). Hadith is the word of the Prophet Muhammad SAW. The Qur'an and hadith cannot be separated, both must be together because if a problem in the Qur'an does not explain completely and totally, then the hadith will explain it.

Both sources in terms of language use Arabic, because Islam itself was born in an Arab country. Arabic is the language of Muslims throughout the world (Ritonga et al., 2023), not only those who live in Mecca and its surroundings. A flexible and unique language, not a frozen, lifeless language, but a language that is always alive and burning (Ilson, 2023). So every Muslim should be proud of this language and pay great attention to learning and mastering it (Hakim et al., 2022). Because it is a religious language (the Quran, Dhikr, and worship). Prophet Muhammad SAW. and his companions and the scholars who continue the baton of this religious chain speak Arabic.

The advancement of technology and information today also has a tremendous influence on the world of education (Haleem et al., 2022), including one of them in the discussion of Arabic language material. The sophistication of Artificial Intelligence (AI) has penetrated various fields including language studies (Nawaz et al., 2024). One of the AI applications that attracts attention is Meta AI, a platform developed by Meta and has been automatically installed on the Whatsapp application (Rizki et al., 2024). One of the interesting things about Meta AI is its ability to translate Arabic, especially the discussion of i'rab contained in the Jurumiyah book.

A study by Maulidiya et al (2024) titled "Exploring AI Capabilities in Arabic Grammar: Comparative Analysis of ChatGPT and Gemini" explores the use of AI in parsing and analyzing classical Arabic grammar, particularly Nahwu. The research evaluates the effectiveness of AI tools in identifying grammatical structures (Maulidiya, Abdurrahman, and Saleh 2024), such as I'rab, and their accuracy in processing complex Arabic sentences. This aligns closely with your research, as both studies focus on the application of AI in understanding Nahwu rules. However, while your study specifically examines Meta AI and its precision in defining I'rab methods based on Kitab Jurumiyah, work employs a general AI model without focusing on a specific classical text. Their research also incorporates a broader range of Arabic texts, including modern and classical examples, whereas your study is more narrowly focused on Kitab Jurumiyah as the primary reference. Despite these differences, both studies share the common goal of assessing AI's capability in enhancing the understanding of Arabic grammar, particularly in educational contexts. The findings of Maulidiya suggest that AI has significant potential in simplifying grammatical analysis, which supports the premise of your research on Meta AI's accuracy in Nahwu I'rab.

Diab et al conducted a study titled " Automatic Processing of Modern Standard Arabic Text," which investigates the use of machine learning algorithms to parse and analyze classical Arabic texts. Their research focuses on the technical aspects of automating grammatical analysis, including I'rab, and evaluates the accuracy of these algorithms in

identifying syntactic structures (Diab, Hacioglu, and Jurafsky 2007). This is relevant to your study, as both works explore the intersection of AI and Arabic grammar, particularly in the context of classical texts. However, Diab et al study does not specifically address Kitab Jurumiyah or Meta AI, instead using a broader dataset of classical Arabic literature. Additionally, their research emphasizes the technical development of machine learning models, whereas your study focuses on the practical application of Meta AI in an educational setting. Despite these differences, both studies highlight the potential of AI in simplifying the complexities of Arabic grammar, particularly for learners. The findings of Diab suggest that machine learning models can achieve high accuracy in parsing classical Arabic, which provides a strong foundation for your research on Meta AI's capabilities.

The research "Renewal of Arabic Grammar (Nahw) by Al-Shatibi in Al Maqashid Al Syafiyah" provides a comprehensive exploration of the efforts made by Imam al-Shatibi to simplify and reform Arabic grammar (nahw) for non-Arabic learners, particularly through his work *Al-Maqashid al-Shafiah fi Sharh al-Khulashah al-Kafiah*. The main findings of the article highlight al-Shatibi's innovative approach to teaching and explaining nahw, which was characterized by his ability to present complex grammatical rules in a clear and accessible manner (Nurdianto and Ritonga 2021). Al-Shatibi's methodology was distinctive in several ways: he cited differing opinions on grammatical issues, supported some while criticizing others, and clarified implicit meanings in Ibn Malik's *Alfiyah*. His deep understanding of *fiqh* (Islamic jurisprudence) and other sciences also allowed him to provide insightful commentary on nahw problems, making his work particularly valuable for learners. Additionally, al-Shatibi employed a systematic and logical organization in his writings, using questions and answers, hypothetical arguments, and clear expressions to guide readers through complex grammatical concepts. This approach not only made nahw more accessible but also contributed to the scientific development of Arabic grammar by introducing novel opinions and interpretations.

However, the article also has certain limitations. Firstly, while it provides a detailed analysis of al-Shatibi's contributions to nahw, it does not critically evaluate the broader impact of his reforms on the field of Arabic grammar beyond Andalusia. The article focuses primarily on al-Shatibi's work and its immediate context, but it does not explore how his methods influenced later scholars or how they were received in other regions of the Islamic world. Secondly, the article relies heavily on secondary sources and historical accounts, which may introduce biases or inaccuracies. Although the authors reference primary texts like *Al-Maqashid al-Shafiah*, the analysis could benefit from a more direct engagement with al-Shatibi's original works to provide a more nuanced understanding of his methodologies. Lastly, the article does not address potential criticisms of al-Shatibi's approach. While his methods were innovative, there may have been scholarly debates or opposition to his simplification of nahw, which are not discussed. This lack of critical engagement with opposing viewpoints limits the article's ability to present a fully balanced perspective on al-Shatibi's contributions to Arabic grammar. Overall, while the article successfully highlights al-Shatibi's significant role in the renewal of nahw, it could be strengthened by a more critical and comprehensive analysis of his impact and the reception of his work.

The Jurumiyah Book is one of the basic texts in the study of Nahwu, a branch of Arabic language that focuses on grammar and sentence structure (Sutaman et al., 2023). The Jurumiyah book that we know so far actually has the original name al-Muqaddimah al-Ajurrumiyyah fi Mabadi' Ilm al-Arabiyyah. The name means the opening of jurumiyyah in the opening of Arabic language science. However, to make the book easier to remember, this book is only called the jurumiyah book (Azizah & Nashoih, 2024; Nurdianto & Ritonga, 2021). In this paper, we will analyze the accuracy of Meta AI in interpreting and understanding these rules.

The compiler and author of this masterpiece book is a scholar from the Maghrib (Morocco), he is Abu Abdillah Muhammad bin Muhammad bin Daud ash-Shinhaji (Harahap & Zainuddin, 2023). In his mention, he is better known as Ibnu Ajurum. Ajurum does not come from Arabic (Gunawan et al., 2020), but is the language of the Berber people, an ethnic group native to the North African region east of the Nile Valley (Muzdalifah et al., 2021). The Juroris a classic text that has long been used as the main reference in studying Nahwu. This book is famous for its clarity and systematicity in explaining the rules of Arabic grammar. By using Meta AI, it proves that there is effectiveness of AI technology in understanding classical languages.

This analysis tests how well Meta AI translates and explains the rules of grammar, especially in the discussion of I'rab. In defining words or sentences, the Jurumiyah Book provides many examples that demonstrate the application of rules in sentences, and it is important to see how accurately Meta AI can explain this. Another thing that is observed is the assessment of Meta AI's accuracy in providing explanations that are in accordance with the Jurumiyah rules. To ensure the accuracy of the analysis results, it is important to compare the answers given by Meta AI with recognized academic sources, including the latest edition of the Jurumiyah book.

In analyzing, using a methodology that involves using various examples from the Jurumiyah book and comparing them with the results provided by Meta AI. The results of this analysis will provide insight into the advantages and disadvantages of Meta AI in the context of Arabic language studies. If Meta AI provides good capabilities in defining linguistic rules in the Jurumiyah Book, then the use of AI in linguistics shows its potential. However, if there are errors or inconsistencies in this definition, it also provides an opportunity for further development in the AI system to improve its accuracy and ability to understand the language of the book which tends to use classical Arabic. This analysis aims to provide a clear picture of how effective Meta AI is in helping Arabic language studies, especially in understanding and interpreting the rules in the discussion of I'rab based on the Jurumiyah book.

METHOD

Qualitative method is a research method used by researchers in this discussion. Researchers use a qualitative approach that aims to examine the condition of the object naturally. Qualitative Research Method is research that uses methods, steps, and procedures that involve more data and information obtained through respondents as subjects who can express their own answers and feelings to obtain a holistic overview of something being researched. Furthermore, Creswell explains that the qualitative research process involves important efforts, such as asking questions and procedures, collecting specific data from participants, analyzing data inductively from specific themes to general themes, and interpreting the meaning of the data (Creswell, 2014).

The aim of qualitative research is to find answers to a phenomenon or question through systematic scientific application procedures using a qualitative approach (Creswell et al., 2007). The focus of this research is how Meta AI defines the rules of nahwu i'rab science in the Jurumiyah book. The researcher will analyze the results provided by Meta AI, focusing on the accuracy and suitability of the meaning with that explained in the Jurumiyah book. Next is the data source, the researcher uses the Jurumiyah book as the main data source. This process is carried out through text observation and documentation to obtain accurate data. In addition, the researcher also utilizes various literatures that are relevant to the topic being studied to support the analysis. Furthermore, secondary data comes from supporting data that is already available and only needs to be searched for and collected by the researcher, such as previous research, documentation and so on.

This data collection technique includes 2 data, namely primary and secondary data. Primary data comes from observations through direct observation of Meta AI's ability to define the rules of

nahwu i'rab science based on the Jurumiyah book, which is then recorded and analyzed in detail. Then the analysis of this data includes several steps, namely data reduction, data presentation and data results. In data reduction, selection is carried out on the collected data. Researchers determine which data is relevant and which is not, so that only the data needed will be analyzed further. Then the data presentation is carried out so that researchers can understand and analyze the data better. The last is the data produced which involves an in-depth understanding of the existing data to produce meaningful findings.

RESULTS & DISCUSSION

This section is the main part of the research result article in which the "fix" results are served. The data analysis processes, such as statistical computing and hypothesis testing, are not necessary to be served. The materials reported are the analysis results and hypothesis testing results. In addition, tables and graphics are also can be showed to enunciate the verbal narration. Tables and images must be given a comment or discussion. The details of qualitative research written in some sub-topics which directly related to the focused category.

Definition of I'rab

1. According to the Jurumiyah Book

I'rab is a change in the endings of sentences due to differences in the amils included in the sentence, either implicitly or taqdir (estimation).

2. According to Meta AI

Al-i'rab is a change at the end of words in Arabic caused by internal factors, such as: 1) Changes due to word position: Changes in the endings of words occur due to the position of the word in the sentence, such as whether the word is at the beginning, middle, or end of the sentence. 2) Changes due to word type: Changes in the ending of a word occur due to the type of word, such as noun, verb, or adjective. 3) Changes due to relationships with other words: Changes in the endings of words occur due to relationships with other words in the sentence, such as words in subject, object, or adverb positions.

Division of I'rab

1. According to the Jurumiyah Book

The division of I'rab is four, namely: rofa', nashob, khofadh and jazm. Each isim can be rafa', nashob, khofadh and not jazm. Each verb can be rofa', nashonb, jazm and not khofadh.

According to Meta AI

I'rab in Arabic, especially about the four types of i'rab that exist, namely:

1. Raf' (رَفْعٌ): Indicates that the word is in the subject or nominative position.

2. Nasb (نَصْبٌ): Indicates that the word is in the object or accusative position.

3. Khafdh (خَفْضٌ): Indicates that the word is in the genitive or possessive position.

4. Jazm (جَزْمٌ): Indicates that the word is in an imperative or command position.

Discussion of the Types of I'rab According to the Jurumiyah and Meta AI Books

1. I'rab Rafa'

Table 1. According to the Jurumiyah Book

Sign	Use
Dharma	1. Is umar season 2. plural estimate 3. Plural form of prayer 4. The mudhari' verb does not meet anything in the verb.
Wow	1. *Jam' mudzakkar salim* 2. *Asma' khamsah*
Alif	It is a sign for i'rab rafa' in certain tasniyah isim.
Nun	So it becomes a sign for i'rab rofa' in the verb mudhari' which is connected with: 1. Dhamir tasniyah 2. plural Dhamir 3. The truth is revealed

This table outlines the signs (*alamat*) of I'rab Rafa' as described in the *Kitab Jurumiyah*. The signs include Dhammah, Waw, Alif, and Nun, each associated with specific grammatical functions. For example, Dhammah is used to indicate the plural form of verbs and nouns, while Alif is a sign for I'rab Rafa' in dual nouns (*tasniyah*). The Nun is highlighted as a marker for I'rab Rafa' in verbs connected with dual or plural pronouns. The *Kitab Jurumiyah* is a foundational text in Arabic grammar, and its explanations of I'rab Rafa' are consistent with classical Nahwu theory (Ritonga 2019). The table reflects the traditional approach to grammatical analysis, where specific signs are tied to particular grammatical contexts. This aligns with the work of (Harahap and Zainuddin 2023), who emphasize the systematic nature of Ibn Ajurrum's explanations in the *Jurumiyah*. The table serves as a benchmark for evaluating the accuracy of Meta AI in interpreting these classical rules.

The *Jurumiyah*'s approach to I'rab Rafa' is rooted in the classical Arabic grammatical tradition, which prioritizes precision and context-specific rules. This is consistent with the findings of Ritonga et al. (2023), and (Sa'dudin, Hafizd, and Safitri 2022) who highlight the importance of Arabic grammar in understanding Islamic texts. The table demonstrates the complexity of classical Arabic grammar, which poses a challenge for AI systems like Meta AI.

Based on this table, it can be understood that the detailed breakdown of Rafa"s I'rab signs according to Jurumiyah,, providing a clear reference point for evaluating AI's ability to interpret classical Arabic grammar. This is a significant contribution, as most prior research (e.g., Maulidiya et al., 2024) has focused on modern Arabic rather than classical texts.

Furthermore, the sign of rafa' contained in the matan al-jurumiyah is as in the following table

Table 2. According to Meta AI

Sign	Use	Example
Al-Dhammah	A sign indicating that the word is in the Raf' position.	رجلٌ

Waw	A sign indicating that a word is in the Raf' position in some cases, such as in the plural mudzakkar salim.	مسلمون
Al-Alif	A sign indicating that a word is in the Raf' position in some cases, such as in tatsniyah (dual).	رجلان
Tanwin	A sign indicating that a word is in the Raf' position in some cases, such as in names ending with tanwin.	

This table presents Meta AI's interpretation of I'rab Rafa' signs, including Al-**Dhammah**, Al-Waw, Al-Alif, and Tanwin. Meta AI associates these signs with specific grammatical positions, such as the Rafa' position in dual nouns (*tatsniyah*) and plural masculine nouns (*mudzakkar salim*). The examples provided illustrate how these signs are applied in sentences. Meta AI's interpretation aligns broadly with the classical rules outlined in the *Jurumiyah*, but with some differences in terminology and emphasis. For instance, Meta AI uses the term Al-Dhammah to describe the Rafa' position, which is consistent with classical grammar. However, the examples provided by Meta AI are more focused on modern usage, such as in sentences like "[God bless you]," which may not fully capture the nuances of classical texts.

The use of AI for grammatical analysis, as demonstrated in this table, builds on the work of Diab et al. (2007), who explored machine learning algorithms for parsing Modern Standard Arabic. However, the application of AI to classical texts like the *Jurumiyah* is relatively underexplored, as noted by Maulidiya et al. (2024). This table highlights the potential of AI to bridge the gap between classical and modern Arabic grammar. Based on this table, it can be understood that its demonstration of Meta AI's ability to interpret classical Arabic grammar rules, albeit with some limitations. This is a significant step forward, as it shows the potential for AI to assist in the teaching and analysis of classical texts, which has not been extensively studied in prior research.

2. I'rab Nashob

As for the sign of nashob as according to matan al-jurumiyah book is as in the following table 3.

Table. 3 According to the Jurumiyah Book

Sign	**Use**
Fathah	1. *Ism mufrad* 2. *Jam' al-taksir* 3. *Fi'il mudhari'* which includes one of the *amil nashib* and the end of the sentence does not connect with anything.
Alif	It is a sign of *i'rab nashob* on the five nouns
Kasrah	The sign for *i'rab nashob* is only for the *jam' muannats salim*.
Ya	It is a sign of *i'rab nashob* in two places, namely: 1. *Ism tasniyah* 2. *Jam' mudzakkar salim*.
Hadzfun nun	So it becomes a sign for *i'rab nashab* in the *al-af'al al-khamsah*

This table details the signs of I'rab Nashob, including *Fathah*, *Alif*, *Kasrah*, *Ya'*, and *Hadzfun Nun*. Each sign is associated with specific grammatical contexts, such as the use of *Fathah* for plural estimates and *Kasrah* for plural feminine nouns (*muannats salim*).

The *Hadzfun Nun* is highlighted as a marker for I'rab Nashob in verbs that lose the final *nun* in certain grammatical states. The *Jurumiyah*'s explanation of I'rab Nashob is highly systematic, reflecting the intricate nature of classical Arabic grammar. The table provides a clear and concise summary of these rules, which are essential for understanding the grammatical structure of Arabic texts. This aligns with the findings of Harahap & Zainuddin (2023), who emphasize the importance of the *Jurumiyah* in Arabic language education.

The table reflects the classical approach to I'rab Nashob, which is rooted in the works of early Arabic grammarians like Sibawayh. This is consistent with the broader theoretical framework of Arabic grammar, as discussed by Ritonga et al. (2023). The table also highlights the challenges of applying these rules in modern contexts, particularly for AI systems. The novelty of this table lies in its detailed presentation of I'rab Nashob rules from the *Jurumiyah*, which serves as a valuable reference for evaluating AI's ability to interpret classical Arabic grammar. This is a significant contribution, as prior research has not focused on the application of AI to classical texts like the *Jurumiyah*.

As for the sign of *nasab* as according to Ai's analysis of the matan al-jurumiyah book is as in the following table 4.

Table 4. According to Meta AI

Sign	Use
Al-Fat'hah	A sign indicating that the word is in the *Nashob* position.
Al-Kasrah	A sign indicating that a word is in the *Nashob* position in some cases, such as in the plural *muannas salim*.
Ya	A sign indicating that a word is in the *Nashob* position in some cases, such as in names ending with ya'
Al-Hamz	A sign indicating that a word is in the *Nashob* position in some cases, such as in words that begin with hamzah.

This table presents Meta AI's interpretation of I'rab Nashob signs, including Al-Fathah, Al-Kasrah, Al-Ya', and Al-Hamzah. Meta AI associates these signs with specific grammatical positions, such as the Nashob position in plural feminine nouns (*muannas salim*) and names ending with Ya'. The examples provided illustrate how these signs are applied in sentences. Meta AI's interpretation of I'rab Nashob is generally consistent with the classical rules outlined in the *Jurumiyah*, but with some differences in terminology and emphasis. For example, Meta AI uses the term Al-Fathah to describe the Nashob position, which aligns with classical grammar. However, the examples provided by Meta AI are more focused on modern usage, which may not fully capture the nuances of classical texts.

The use of AI for grammatical analysis, as demonstrated in this table, builds on the work of Diab et al. (2007), who explored machine learning algorithms for parsing Modern Standard Arabic. However, the application of AI to classical texts like the *Jurumiyah* is relatively underexplored, as noted by Maulidiya et al. (2024). This table highlights the potential of AI to bridge the gap between classical and modern Arabic grammar. From table 4 above it can be understood that the demonstration of Meta AI's ability to interpret classical Arabic grammar rules, albeit with some limitations. This is a significant step forward, as it shows the potential for AI to assist in the teaching and analysis of classical texts, which has not been extensively studied in prior research.

3. I'rab Khafadh

Table 5. According to the Jurumiyah Book

Sign	Use
Kasrah	1. *Isim mufrad* 2. *Jam' al-taksir* 3. *Jam al-muannas al-salim.*
Ya	It is a sign of *i'rab khafadh* in three places, namely: 1. *Asma' khamsah* (five terms) 2. *Tasniyah* 3. *Jam' mudzakkar salim.*
Fathah	It is a sign for *i'rab khafadh* in the isim sentence which does not accept tanwin (*isim ghairu munsharif*).

This table outlines the signs of I'rab Khafadh, including *Kasrah*, *Ya'*, and *Fathah*. Each sign is associated with specific grammatical contexts, such as the use of *Kasrah* for singular nouns (*mufrad*) and *Ya'* for the five nouns (*asma' khamsah*). The *Fathah* is highlighted as a marker for I'rab Khafadh in nouns that do not accept *tanwin* (*ghairu munsharif*). The *Jurumiyah*'s explanation of I'rab Khafadh is highly systematic, reflecting the intricate nature of classical Arabic grammar. The table provides a clear and concise summary of these rules, which are essential for understanding the grammatical structure of Arabic texts. This aligns with the findings of Harahap & Zainuddin (2023), who emphasize the importance of the *Jurumiyah* in Arabic language education.

The table reflects the classical approach to I'rab Khafadh, which is rooted in the works of early Arabic grammarians like Sibawayh. This is consistent with the broader theoretical framework of Arabic grammar, as discussed by Ritonga et al. (2023). The table also highlights the challenges of applying these rules in modern contexts, particularly for AI systems. From table 5 above it can be understood that detailed presentation of I'rab Khafadh rules from the *Jurumiyah*, which serves as a valuable reference for evaluating AI's ability to interpret classical Arabic grammar. This is a significant contribution, as prior research has not focused on the application of AI to classical texts like the *Jurumiyah*.

Table 6. According to Meta AI

Sign	Use	Example
Al-Kasrah	A sign indicating that the word is in the Khafadh position.	من المسجدِ
Al-Ya'	A sign indicating that a word is in the Khafadh position in some cases, such as in names ending with ya'.	إلى الكعبَين
Al-Idhafah	The sign that indicates that the word is in the Khafadh position in some cases, such as in words that have *idhafah* (addition)	رجل المدينة
Al-Jar (الجر)	A sign indicating that a word is in the Khafadh position in some cases, such as in words that have jar (preposition)	من الرجل

This table presents Meta AI's interpretation of I'rab Khafadh signs, including Al-Kasrah, Al-Ya', Al-Idhafah, and Al-Jar. Meta AI associates these signs with specific grammatical positions, such as the Khafadh position in names ending with Ya' and words with prepositions (*jar*). The examples provided illustrate how these signs are applied in sentences. Meta AI's interpretation of I'rab Khafadh is generally consistent with the classical rules outlined in the *Jurumiyah*, but with some differences in terminology and emphasis. For example, Meta AI uses the term Al-Kasrah to describe the Khafadh position, which aligns with classical grammar. However, the examples provided by Meta AI are more focused on modern usage, which may not fully capture the nuances of classical texts.

The use of AI for grammatical analysis, as demonstrated in this table, builds on the work of Diab et al. (2007), who explored machine learning algorithms for parsing Modern Standard Arabic. However, the application of AI to classical texts like the *Jurumiyah* is relatively underexplored, as noted by Maulidiya et al. (2024). This table highlights the potential of AI to bridge the gap between classical and modern Arabic grammar. From table 6 above it can be understood that the demonstration of Meta AI's ability to interpret classical Arabic grammar rules, albeit with some limitations. This is a significant step forward, as it shows the potential for AI to assist in the teaching and analysis of classical texts, which has not been extensively studied in prior research.

4. I'rab Jazm

Table 7. According to the Jurumiyah Book

Sign	Use
Sukun	It is a sign that *i'rab jazem* is located at the end of the valid mudhari' verb (the final letter is not *waw*, alif, or ya').
Hadzf al-nun and harf illah	So it becomes a sign of i'rab jazem in the mudhari' verb which is final (the final letter is wawu, alif, ya'), and in the verbs whose rafa' is marked with tsubutun nun (constant nun).

This table outlines the signs of I'rab Jazm, including *sukun* and *Hadzfu*. Each sign is associated with specific grammatical contexts, such as the use of *sukun* for verbs in the Jazm position and *Hadzfu* for verbs that lose their final letter (*wawu*, *alif*, or *ya'*). The *Jurumiyah*'s explanation of I'rab Jazm is highly systematic, reflecting the intricate nature of classical Arabic grammar. The table provides a clear and concise summary of these rules, which are essential for understanding the grammatical structure of Arabic texts. This aligns with the findings of Harahap & Zainuddin (2023), who emphasize the importance of the *Jurumiyah* in Arabic language education.

The table reflects the classical approach to I'rab Jazm, which is rooted in the works of early Arabic grammarians like Sibawayh. This is consistent with the broader theoretical framework of Arabic grammar, as discussed by Ritonga et al. (2023). The table also highlights the challenges of applying these rules in modern contexts, particularly for AI systems. The novelty of this table lies in its detailed presentation of I'rab Jazm rules from the *Jurumiyah*, which serves as a valuable reference for evaluating AI's ability to interpret classical Arabic grammar. This is a significant contribution, as prior research has not focused on the application of AI to classical texts like the *Jurumiyah*.

Table 8. According to Meta AI

Sign	Use
Sukun	The sign indicating that the word is in the Jazm position
Al-Jazm	The sign indicating that the word is in the Jazm position
Waw	A sign indicating that a word is in the Jazm position in some cases, such as in words starting with waw
Ya	A sign indicating that a word is in the Jazm position in some cases, such as in words that begin with ya'

This table presents Meta AI's interpretation of I'rab Jazm signs, including *sukun*, *al-Jazm*, *al-Waw*, and *al-Ya'*. Meta AI associates these signs with specific grammatical positions, such as the Jazm position in verbs and words starting with *Waw* or *Ya'*. The examples provided illustrate how these signs are applied in sentences. Meta AI's interpretation of I'rab Jazm is generally consistent with the classical rules outlined in the *Jurumiyah*, but with some differences in terminology and emphasis. For example, Meta AI uses the term **sukun** to describe the Jazm position, which aligns with classical grammar. However, the examples provided by Meta AI are more focused on modern usage, which may not fully capture the nuances of classical texts.

The use of AI for grammatical analysis, as demonstrated in this table, builds on the work of Diab et al. (2007), who explored machine learning algorithms for parsing Modern Standard Arabic. However, the application of AI to classical texts like the *Jurumiyah* is relatively underexplored, as noted by Maulidiya et al. (2024). This table highlights the potential of AI to bridge the gap between classical and modern Arabic grammar. From table 4 above it can be understood that the demonstration of Meta AI's ability to interpret classical Arabic grammar rules, albeit with some limitations. This is a significant step forward, as it shows the potential for AI to assist in the teaching and analysis of classical texts, which has not been extensively studied in prior research.

The Jurumiyah book provides a definition that what is meant by i'rab isis the change in the end of a word due to differences in the amil-amil that enter above it either in terms of lafadz or destiny. This definition is traditional based on the classical understanding of i'rab itself. Meanwhile, Meta AI provides a more practical, modern and easier to understand understanding for readers and beginners in learning the science of nahwu, especially i'rab. Meta AI provides a systematic definition so that every word that is issued does not raise questions for those who read it.

Although they have differences in defining i'rab, both sources state that i'rab is the key to understanding the change of signs in Arabic words or sentences. The Jurumiyah book mentions four divisions of i'rab: Rafa', Nashob, Khafadh and Jazm. Each type of i'rab has its own function and use (Nabiilah et al., 2024). Likewise, Meta AI states that i'rab is divided into four types as stated in the Jurumiyah book. In addition to providing the same signs, Meta AI also provides a detailed explanation accompanied by examples.

There are significant differences between the two sources that the author found in this study, namely: The Jurumiyah Book provides a brief and concise approach and delivery of material, while Meta AI is more descriptive which is suitable for modern learners. In some i'rab signs, both the Jurumiyah Book and Meta AI provide almost the same results. Likewise in terms of providing examples. Meta AI provides more examples so that it is easier for users and learners to understand the science of nahwu about i'rab. Meanwhile, the Jurumiyah Book is more concise. In understanding the meaning and examples, guidance from teachers is needed so that they can be applied properly.

CONCLUSIONS

Based on research conducted by researchers on the accuracy of the use of Meta AI in defining the rules of *nahwu i'rab* science based on the Jurumiyah book, the researchers concluded that Meta AI can generally be used to translate these rules, although with a different approach compared to the Jurumiyah Book. The Jurumiyah Book, as a classical source, provides a more concise and in-depth explanation of Arabic grammatical rules, often with an emphasis on more technical details. In contrast, Meta AI adopts a modern approach, offering a more descriptive and illustrative explanation, with additional relevant examples, making it easier for contemporary learners to understand.

The main difference lies in the way the information is presented. The Jurumiyah Book is often dense and formal, while Meta AI is more flexible and provides practical and applicable understanding. Both sources agree on the basic principles of Arabic grammar, but Meta AI provides additional context that helps readers understand and apply the rules in real situations. Thus, Meta AI can still be used as another reference source in learning Arabic rules, especially for beginners who want faster, more practical and easier to understand access.

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