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The Arabic Imperfective Verb Application Model

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ABSTRACT: This article demonstrates the application model used by a system purposefully devised to identify Arabic imperfective verbs. The imperfective verb is a type of verb that shows an action or an ongoing event. This verb has a character that distinguishes it from types of verbs. These characters are then applied in the computing system. The method used is the library method which collects data by listening and observing directly the data contained in the application and recording it in a notebook. Data analysis was carried out descriptively through three interrelated stages, namely data reduction, data presentation, and drawing conclusions or verification. The results show that the application model used in identifying imperfective verbs is a form of application of tagmemic theory, especially in the predicate slot filled with verb phrases or verbs. Verbs are then parsed based on their constituent morpheme, and the outer tagmeme apprised by the bound morphemes prone to the base morpheme.

Keywords: Model, Application, Imperfective Verb

1. INTRODUCTION

The imperfective verb is one type of verb that shows an event or work is currently taking place. As with types of verbs, the existence of imperative verbs in grammatical sentences is essential because it regulates the actuality of other words in the grammatical arrangement, both words which must be in front of or behind. The formation of imperfective verbs in Arabic is complex because it involves various elements. The elements in question are pronouns or personas (pronouns), aspects (perfective and imperfect), tense (past, present, future), gender markers (masculine and feminine), number (singular, dual, plural), roots, words. Basic, pattern, clitic, and others (Zuhriah et al., 2021).

The number of elements involved in imperfective verbs requires a system to apply grammatical rules in identifying each component that forms Arabic verbs. The application of grammar rules is essential because the statistical model by the previous application did not give good results. For instance, it is apparent in the google translation application in translating Arabic verbs into Indonesian. Verbs كتب and يكتب are translated with the same meaning, namely "to write" these two words have different aspects and tenses. كتب is a perspective verb with past tense and يكتب is an imperfective verb with the present tense. The correct translation for these two words is كتب 'wrote', and يكتب 'write'.

Based on this, a system should apply grammatical rules in identifying each component in the source language. Identifying the fair constituent may increase accuracy in determining the output. System analysis model with grammar provides additional competence for an application engine. The grammatical rules applied to an imperfective verb detector application to develop or improve an existing application.

2. LITERATURE RIVEW

Application Model

A model is a pattern of something to be made; an example of something to be created; the person demonstrating the clothes on the stage; or small imitations with the exact shape of the original (Chulsum & Novia, 2014). In modeling, the model is a depiction operation system that aims to show or describe the interactions between the components. The model starts from a simple one until a representative model. It developed using a well-known theory, and its development allows it to be repeated or refined. One system can have multiple models, depending on the point of view and interests. Thus, the model is a design of how the system or application works in identifying verbs based on the given theory.

The app or application is a program that people employ to do things on a computer system. Based on the Indonesian Dictionary, the app means application, utilization, and addition (Chulsum & Novia, 2014). According to Jogiyanto, the application is the usage in a computer, instructions, or statements that are arranged in such a way that the computer can process input into output (Jogiyanto, 1999). In line with this opinion, Tirtobisono said that the application is a term used for computer users for problem-solving. Occasionally, the term application is paired or combined with software (Tirtobisono, 2009). Applications can also verbalize as software t is ready to be used by carrying out instructions from the user. The apps were invented to help with various purposes such as reports, printing, and others (Yuliato & Wijaya, 2014). In terms of understanding, an application is a program ready to be operated to carry out a function for users of application services and other applications that can be used for a target to be coped with (Juansyah, 2015). Based on these opinions, the application as software employed specific rules and languages to carry out its functions according to the intended target.

Tagmeme

Tagmeme is a structural grammar theory developed by Kenneth Lee Pike and used by *the Summer Institute of Linguistics* to train language researchers. This theory was first introduced in his work entitled *Language in Relation to a Unified Theory of the Structure of Human Behavior* (Tarigan, 2009). The Tagmemic genre was born in 1977, along with the publication of Pike and his wife Evelyn G. Pike's book entitled *Grammatical Analysis*. Previously, the tagmemic term was introduced by Walter A Cook in his book *Introduction to Tegmemic Analysis*. However, the classification of tags only had two parts, namely slots and classes (categories) (Soeparno, 2008). Pike then refined it into four tags by adding roles and cohesion.

According to tagmemic theory, each structure consists of several tagmemes. Tagmeme is part of a grammatical construction that has four types of completeness by specifications, such as; slot, class, role, and cohesion. A Slot is a tagmemic marker that constitutes a space in the structure that the tagmemic function must fill. At the level of the tagmemic function clause, it can be a subject, a predicate, and an object. At another level, the tagmemic function can be in the form of a *nucleus* and an outer core *(margin).* Class is a tagmemic marker which is a tangible form of a slot. It is in the form of the names of lingual units from the lowest level (i.e.morphemes) to the highest (i.e.discourse). The role is a tagmemic marker to carry the tagmemic function. Cohesion is a tagmemic marker that controller the relationship between tagmeme. Controlling this relationship at the clause level are transitivity rules, intransitive rules, and equity rules.

The Arabic flexion type with one of its conjugative properties results in changes in the form of the verb is affected by various components such as persona, number, variety, tense, and others. The researcher will use tagmemic theory and develop it into a computational system to identify Arabic verbs. For example, الطلاب يكتبون الدرس analyzed using the following formula:

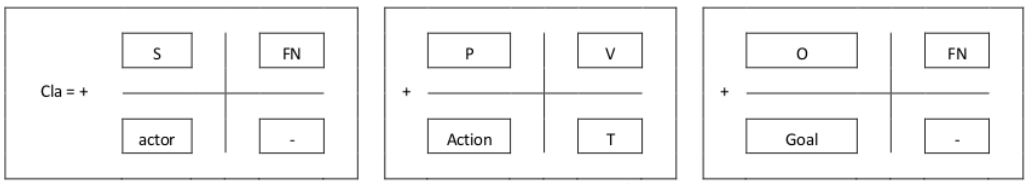

Figure 1. Tagmemic Formula

The formula reads: The transitive clause consists of a mandatory subject tagmeme with the role of an actor filled in by a noun phrase, a mandatory predicate tagmeme with an action role filled by a transitive verb, and a mandatory object tagmeme with a goal role filled by noun phrases.
Verb يكتبون will be analyzed by utilizing form:

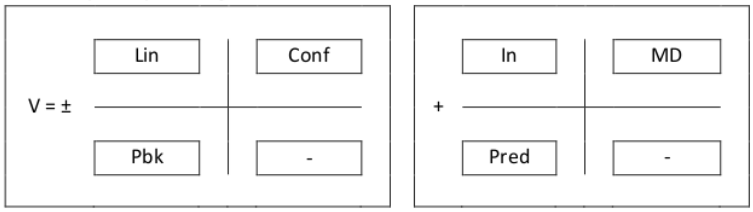

Figure 1. Tagmemic Verb Formula

The above formula reads: Verbs consisting of optional margin tagmeme (Lin) with work-forming roles (Pbk) filled by confixes and nucleus tagmeme (in)) is mandatory with predicative role filled by the base morpheme.
Imperfective Verbs in Arabic
Verbs are types of words that contain the meaning of actions (actions), processes, or circumstances (Hidayatullah, 2017), while al-Dahdah said that the verb (*fi'l*) refers to a situation and event simultaneously related to time (*tense*) (Dahdah, 1995). In line with the two opinions, (Al-Hamid, 1951) and (Al-Jarim & Amin, 1999) also say that *fi'l* or verb is a word that shows events related to time. Narrowly, in the rules of Arabic, *fi'l* can be distinguished in terms of type and condition. Based on the type, verbs divided into *al-fi'l al-Tām and al-fi'l al-Nāqis*, while based on the situation, verbs can be further divided into several parts, namely verbs based on form, verbs based on pattern, and verbs based on time. Verbs in terms of the time of occurrence event are shared into three forms, namely perfective verbs (*madhi*), imperfective verbs (*mudhari'*), and imperative verbs (*amr*). Perfective verbs are the verbs that show events that occur before the utterance. Imperfective verbs indicate events that occur or after the pronunciation, while imperative verbs show the meaning of orders, thus pointing to events following the pronunciation (Nur, 2018).

Imperfective Verb Morphological Process
Arabic verbs are inflectional (التصريف اللغوى) because the word-formation is done by affixation, either in the form of prefixes, infixes, suffixes, or confixes or internal modifications. This formation results in a change in the root word. These changes are called conjugation. Conjugation in verbs is usually related to tense, aspect, mode, person, number, and type (Nasution, 2017). This opinion is in line with what was stated by Abu-Chacra that conjugative verbs are related to the person, gender, and several actors (Abu-Chacra, 2007). The following table will show the conjugation changes of Arabic imperfective verbs:

Category			Verb Form		
			Tenses/Aspects		
			Present	Future	
Persona	Type	Total	Imperfective		
Third Person	Masculine	Singular	يكتب	سيكتب	سوف يكتب
		Dual	يكتبان	سيكتبان	سوف يكتبان
		Plural	يكتبون	سيكتبون	سوف يكتبون
	Feminine	Singular	تكتب	ستكتب	سوف تكتب
		Dual	تكتبان	ستكتبان	سوف تكتبان

		Plural	يكتبن	سيكتبن	سوف يكتبن
Second Person	Masculine	Singular	تكتب	ستكتب	سوف تكتب
		Dual	تكتبان	ستكتبان	سوف تكتبان
		Plural	تكتبون	ستكتبون	سوف تكتبون
	Feminine	Singular	تكتبين	ستكتبين	سوف تكتبين
		Dual	تكتبان	ستكتبان	سوف تكتبان
		Plural	تكتبن	ستكتبن	سوف تكتبن
First Person	Masculine & Feminine	Singular	أكتب	سأكتب	سوف أكتب
		Dual	نكتب	سنكتب	سوف نكتب
		Plural			

Table 1. Conjugation of Arabic Verbs

Word formation by inflection or derivation follows particular ways that are called morphological processes. The morphological process is a way of forming words by connecting one morpheme with another morpheme (Samsuri, 1987). In Arabic, especially verbs, morphological processes can utilize affixation and internal modification.

Affix is a bound grammatical unit which in a word is an element that is not a word and is not the subject of, can attach to other groups to form new words or main words (Ramlan, 1987), while affixation is a change with affixes. It is always a bound morpheme, can append at the beginning of the syllable (prefix) in the process called prefixation, inside the word as an insertion (infix) in the process is called infixation, at the end of the word (suffix) in the process is called suffixation, for some in the process, it is called infixation. The beginning of the syllable and partly at the end of the word (confix, simulfix) is called confixation or simulfixation (Verhaar, 1998). Examples of imperfective verb affixation can be noticed in the following table:

Affixation			
Prefix	**Form**	**Confix**	**Form**
-	أفتح	ي – ان	يفتحان
ن-	نفتح	ي – ون	يفتحون
ي -	يفتح	ت – ان	تفتحان
ت-	تفتح	ت – ون	تفتحون
		ي – ن	يفتحن
		ت – ن	تفتحن
		ا – ا	افتحا
		ا - وا	افتحوا
		ا – ي	افتحي
		ا – ن	افتحن

Table 2. Examples of Arabic Imperfective Verb Affixation

In imperfective verbs, the inflection change occurs when the verb gets an affix in the form of a bound pronoun (persona) confix (ضمير متصل) which functions as a subject marker with different types and numbers of

categories to show the imperfect and present tense aspects as well as the proclitics and for the future tense.

Characteristics of Arabic Imperfective Verbs

In general, verbs can be distinguished from other words in Arabic by looking at their characteristics. These characters can be located before the root verb and can also be after it. The features of imperfective verbs as described by (Hasan, 1979), (Mustafa, nd) and (Dahdah, 1995) are:

1. *Sin* (س)and *saufa* (سوف)

Sin (س) and *saufa* (سوف) are Arabic verb signs that come before the root word. Both are clitics in Arabic that function as markers of aspects of the future and are always related to the imperfective verb (الفعل المضارع). For example, the word سيكتب and يكتب سوف.

2. *Qad* (قد)

Qad (قد) is also a verb sign that always comes before the imperfective verb. An example is in the sentence قد يبرأ المريض.

3. *Harf al-Nasb*

Harf al-nasb is letters that function to change the mode of a verb that was previously indicative (عوفرم) to become subjunctive (بوصنم). These letters include: أنْ, لن, كى, إذن, لام التعليل, لام الجحود, فاء السببية, (Ni'mah, nd). Examples can be seen in the sentences أكتبُ الدرس and أريد أنْ أكتبَ الدرس. In the first sentence, the verb أكتبُ is in the indicative mode, while in the second sentence is in the subjunctive mode.

4. *Harf al-Jazm*

Harf al-Jamz is letters that function to change the mode of a verb that was previously indicative (عوفرم) to jussif (موزجم). These letters include: لمْ, لمّا, لام الأمر, لا الناهية (Al-Galayiny, 2000). Examples are in the sentences أكتبُ الدرس and لم أكتبْ الدرس.. In the first sentence, the verb is indicative while أكتبْ in the second sentence is in jussif mode. Likewise, *lām al-'amr* (لام الأمر)is a particular sign attached to an imperfective verb and is one of the proclitics of Arabic because it is attached to the beginning of the verb, For example; لِأكرم الصّديق and لِتحسنوا إلى الفقراء. *Harf al-nahy,* namely ال occasionally precedes the imperfective verb. An example is in the sentence ال. The existence of لا in the sentence makes the imperative sentence (command) a prohibition sentence.

5. Pronouns (الضمائر)

Pronouns or personas are constantly attached to the Arabic imperfective verbs. These pronouns function as markers of the subject or object in the sentence. In imperfective verbs, the persona is close at the beginning and the end of the verb. Examples are in the following table:

Category				Verbs Form	
Persona		Type	Total	Imperfective	
III	هو	Masculine	Singular	يكتب	ي + كتب
	هما		Dual	يكتبان	ي + كتب + ان
	هم		Plural	يكتبون	ي + كتب + ون
	هي	Feminine	Singular	تكتب	ت + كتب
	هما		Dual	تكتبان	ت+ كتب + ان
	هنّ		Plural	يكتبن	ي + كتب + ن
II	أنتَ	Masculine	Singular	تكتب	ت + كتب
	أنتما		Dual	تكتبان	ت + كتب + ان
	أنتما		Plural	تكتبون	ت + كتب + ون
	أنتِ	Feminine	Singular	تكتبين	ت + كتب + ين
	أنتما		Dual	تكتبان	ت + كتب + ان
	أنتنّ		Plural	تكتبن	ت + كتب + ن
I	أنا	Masculine & Feminine	Singular	أكتب	أ + كتب
	نحن		Dual	نكتب	ن + كتب
			Plural		

Tabel 1. Pronoun/Person as Subject/Marker

As for examples of pronouns, a function is an object in the pronoun "ه", at the end of the verb functions is an object. The word can change according to the persona that is the object. These changes are in the following table:

Persona		Type	Total	Change
III	ه	masculine	Singular	أزوره
	هما		dual	أزورهما
	هم		Plural	أزورهم
	ها	Feminin	Singular	أزورها
	هما		dual	أزورهما
	هنّ		Jamak	أزورهنّ
II	ك	maskulin	Singular	أزورك
	كما		dual	أزوركما
	كم		Plural	أزوركم
	كِ	Feminin	Singular	أزوركِ
	كما		dual	أزوركما
	كنّ		Plural	أزوركنّ
I	ي	maskulin & feminin	Singular	أزورني
	نا		dual	أزورنا
			Plural	

Tabel 2. Pronouns/Persons as Objects

6. *Huruf al-mudāri'* (حروف المضارعة)

Hurūf al-mudāri' (حروف المضارعة) is a letter that is specifically attached to the imperfective verb as a marker of the present tense aspect. The letters are hamzah (أ), nun (ن), ya (ي), and ta (ت) are abbreviations as "أنيت". For example أجلس, نجلس, يجلس, and تجلس. These letters always collaborate with the persona in the formation of Arabic verbs.

7. *Nūn al-Taukīd* (نون التوكيد)

Nūn al-taukīd is one of the Arabic verb signs attached to the end of an imperfective verb. An example is in the verb يذهبنّ . *Nūn al-taukīd* in the verb attends as an affirmation that the step finished.

3. METHODOLOGY

The method used in this study is the library method because this paper only describes the imperfective verb application model previously. The data was collected by doing observation or sighting. The observation is a sighting with a systematic recording of various phenomena, symptoms, situations, and conditions. Observations can implement in a participatory or non-participatory manner. Participatory observation is a data collection technique directly by researchers. Researchers are directly involved in the activities of the observed data sources. Non-participation observation is a data collection technique implemented indirectly by researchers. Researchers are not directly involved in the observation of data source activities (Kurniawan & Puspitaningtyas, 2016). This study applied participatory observation in that the researcher is directly involved in designing the application model and observing the development of how the system works. The researcher made a list of notes that contains all the works has to pass by the system so that the application can perform according to the goals. Periodically, the researcher occasionally observed how the application works, established from several trials. Moreover, when this application examines by several respondents, both technology experts, material/content experts, lecturers, and research students were directly involved in observing it. The respondents who did the trials did not experience difficulties and could immediately ask the researchers if there were things that were not clear. When students use application products in learning, the researcher also establishes direct observations and records these activities. Data analysis was carried out descriptively through three interrelated stages, namely data reduction, data presentation, and drawing

conclusions or verification. Data reduction is part of the analysis that sharpens, categorizes, directs, discards unnecessary, and organizes data conclusions that can be attracted and verified. Data reduction in this study has been carried out continuously during data collection by making summaries, coding, and notes. The second stage is data presented in this stage that researcher presents logically and systematically the relationships between categories and others in a series of sentences that are clear and easy to understand. The third stage is drawing conclusions or verification. At this stage, the researcher presents and describes the inferences of the Arabic imperfective verb application model.

4. ANALYSIS

Arabic verbs contained in the input sentence have been identified based on their markers or characteristics. Markers consist of primary and secondary markers. Primary markers are marks first utilized by the system as indicators in identifying a verb in a sentence, while secondary markers employ by the system in identifying verbs if the primary marker is unable to recognize them. Imperfective verbs have 16 main signs and 16 secondary signs.

Imperfective Verb

The Primary markers in imperfective verbs consist of bound morphemes forming new verbs inflective from the root. The difference with other types of verbs lies in the position or location of the morpheme. If the morphemes as markers in perfective verbs only attach at the end of the word, then in imperfective verbs, these morphemes more vary. Some morphemes are together in front of the verb, affixation, is known as prefixation, and some are jointly at the beginning and end of the verb, known as confixation.

Imperfective verb prefixes are / أ- /, / ن- /, / ي- /, and / ت- /. In Arabic, this prefix is usually strung together into one word, namely to make it easier to remember. Imperfective verb confixes are a combination of prefixes and suffixes, namely / ي - وا /, / ت - ا /, / ي - ا /, / ت - ين /, / ت - ن /, / ي - ن /, / ت - ون /, / ت - ان /, / ي - ون /, / ي - ان /, / ت - وا /, and / ت - ي /. The secondary markers are / س- /, / سوف /, / قد /, / ف- /, / كي /, / لم /, / ل- /, / لا /, / ل - نّ /, / لمّا /, / لن /, / ما /, / -نْ /, / -نّ /, / ان /, and / إذن /.

Imperfective Verb Application Model

Model is a pattern or application in identifying verbs based on the given theory. The clearer the rules applied to a system, the more accurate the results. Based on the grammatical rules, this application is parsable the input sentence and identifies the imperfective verbs.

The way this system works begins by parsing the entered sentence based on the spaces system will examine each word that has been unraveled and matches it to the database. If the word can not find in the database, the system will look for the primary or secondary sign attached to the verb. Imperfective verbs have their character, so they automatically do not have the same as the words in the database because the words in the database are base verbs. Verbs identify based on the sign they have entered into the system based on their constituent tagmeme. The core tagmeme (nucleus) fills with basic morphemes, and the outer core tagmeme (margin) fills with primary and secondary tags.

The above process is a form of application of tagmemic theory, especially in the predicate slot indeed filled by a verb phrase or verb. Verbs are then parsed based on the morpheme they form. An example is noticeable in the following input sentence:

التلاميذ يذهبون إلى الميدان

First of all, the system will parse the words التلاميذ, يذهبون, إلى, and الميدان that build the sentence. After unraveling, the system then matches the words with the database to identify them. Based on the sign attached to the word, the application finds an imperfective verb that fills the predicate tagmeme. In the next step, the system will parse the verb into core and outer tagmeme as shown below:

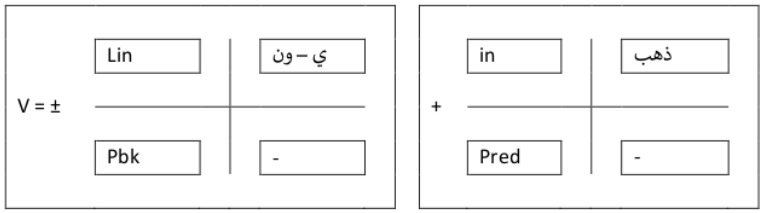

Figure 3. Decomposition of imperfective verbs based on tagmeme

Based on the picture above, it is noticeable that the imperfective verb consists of two tagmemes, namely margin tagmeme (Lin) and nucleus tagmeme (in). The margin tagmeme is optional with the job-forming role filled by the confix ي - ون and the nucleus tagmeme load by the base morpheme ذهب.

Applications of Arabic Imperfective Verbs

Overall, imperfective verbs are recognizable by the system based on their primary and secondary signs. In addition, the system has also succeeded in parsing the morpheme forming the verb and placing it into the tagmeme correctly. The results of the work of this system will be described in detail based on the markers as follows:

1. أ (Hamzah)

Figure 4. The results of the identification of the marker imperfective verb

From the picture above, the system has been able to identify the verbأغسل in the sentence أنا أغسل الملابس based on the signs on it and at the same time determine the type of verb. The system identified that the word أغسل is an imperfective verb. In addition, the system has also been able to place the sign of prefix on the word to the optional margin tagmeme and the basic morpheme غسل to the mandatory nucleus tagmeme.

The system is a complement with notes that can identify verbs explanations regarding the affixes attached to imperfective verbs. The way to bring up the account is by clicking once on the sign. An example of a note is noticeable in the picture above explains that the mark أ (hamzah) utilizes for the first person singular, both masculine and feminine.

2. ن (Nun)

Figure 5. The results of the identification of the marker imperfective verb ن

From the picture above, that the system has been able to identify the verb نحمل in the sentence نحن نحمل الكتب إلى المكتبة based on the sign on it and at the same time determine the type of verb. The system identifies that the word نحمل is an imperfective verb. In addition, the system has also been able to place the sign ن which is a prefix on the word to the optional margin tagmeme, and حمل as the basic morpheme to the neclues tagmeme must exist in the sentence. In the marker section, a note also gains that the sign utilizes for the first person is dual or plural, both masculine and feminine.

3. ي (ya)

Figure 6. The results of the identification of the marker imperfective verb ي

From the picture above, it is clear that the system has been able to identify the verb يقر in the sentence يقرأ الأب الجريدة based on the sign on it and at the same time determine the type of verb. The system recognizes that the word يقرأ is an imperfective verb. In addition, the system has also been able to place the sign ي as a prefix to the word to the margin tagmeme is also optional, and قرأ as the basic morpheme to the neclues tagmeme whose presence in the sentence is mandatory. In the marker section, a note is the sign is used for the third person feminine singular or the second person singular masculine.

4. ت (ta)

Figure 7. The results of the identification of the marker imperfective verb ت

From the picture above, it is clear that the system has been able to identify the verb تطبخ in the sentence تطبخ الأم الأرز في المطبخ based on the sign that is on it and at the same time determine the type of verb. The system identifies that the word تطبخ is an imperfective verb. Furthermore, the system has also succeeded in placing the ت sign as confix in the word to the optional marginal tagmeme and طبخ as the basic morpheme to the nucleus tagmeme must exist in the sentence. The marker section also added a note indicating that the sign used for the third person is dual masculine.

5. ي - ان

Figure 8. Identification results of marker imperfective verbs ان – ي

In the picture above, it is clear that the system has been able to identify the verb يسمعان in the sentence الرجلان يسمعان الأخبار based on the sign on it and at the same time determine the type of the verb. The system successfully identified that the word يسمعان is an imperfective verb. In addition, the system has also been able to place the signs ان - ي are confixes on the word to the optional margin tagmeme, and سمع the basic morpheme to the nucleus tagmeme is mandatory in the sentence. In the marker section, a note also appends that the sign used for the third person is masculine plural.

6. ي - ون

Figure 9. The result of identification of marker imperfective verb ون – ي

In the picture above, it is clear that the system has been able to identify the verb يذكرون in the sentence المؤمنون يذكرون الله قياما وقعودا based on the sign on it and at the same time determine the type of the verb. The system successfully identified that the word يذكرون is an imperfective verb. In addition, the system has also been able to place the signs ون - ي are confixes on the word to the optional margin tagmeme, and the basic morpheme ذكر to the nucleus tagmeme is mandatory in the sentence. In the marker section, a note also appends that the sign used for the third person is masculine plural.

7. ت - ان

Figure 10. The results of the identification of the marker imperfective verb ان - ت

In the picture above, it views that the system has been able to identify the verb تشريان in the sentence هما تشريان العصير based on the sign that is on it and at the same time determine the type of verb. The system successfully identified that the word تشريان is an imperfective verb. Moreover, the system can also locate the ان - ت sign as a confix in the word to the optional margin tagmeme and شرب as the basic morpheme to the nucleus tagmeme must exist. In the parts section, a note also enhances that the sign used for the third person is dual feminine or the second person dual masculine and feminine.

8. ي - ن

Figure 11. The result of identification of marker imperfective verb ي - ن

From the picture above, it can perceive that the system has been able to identify the verb يفرحن in the sentence التلميذات يفرحن بالنجاح based on the sign on it and at the same time determine the type of the verb. The system successfully identified that the word يفرحن is an imperfective verb. Furthermore, the system may also place the ي - ن signs are confixes on the word to the optional margin tagmeme and فرح is the basic morpheme to the mandatory nucleus tagmeme. In the marker section, a note also appends that the sign used for the feminine third person plural.

9. ت - ون

Figure 12. The result of identification of marker imperfective verb ت – ون

From the picture above, the system has been able to identify the verb تلعبون in the sentence أنتم تلعبون كرة القدم في الميدان based on the sign on it and at the same time determine the type of verb. The system has successfully identified that the word تلعبون is an imperfective verb. In addition, the system has also been able to place the ت - ن signs are confixes on the word to the optional margin tagmeme and لعب as the basic morpheme to the nucleus tagmeme must exist. In the marker section, a note appends the sign used for the second person masculine plural.

10. ت - ين

Figure 13. The result of identification of marker imperfective verb ت – ين

From the picture above, the system has been able to recognize the verb تبحثين in the sentence أنت تبحثين اللغة العربية based on the sign that is on it and at the same time determine the type of verb. The system successfully identified that the word تبحثين is an imperfective verb. In addition, the system has also been able to place the ت - ين sign ت - ين is a confix on the word as an optional margin tagmeme filler and the basic morpheme بحث as a mandatory nucleus tagmemic filler. In the marker section, a note appends the sign used for the second-person feminine singular.

11. ت - ن

Figure 14. The result of identification of marker imperfective verb ت – ن

From the picture above, the system has been able to identify the verb تتبعن in the sentence أنتنّ تتبعن إلى الحفلة based on the sign it has and at the same time determine the type of the verb. The system successfully identified that the word تتبعن is an imperfective verb. In addition, the system has also been able to place the ت ن - sign is a confix on the word as an optional margin tagmemic filler and the basic morpheme تبع as a mandatory nucleus tagmemic filler. In the marker section, a note appends the sign used for the feminine second person plural.

In addition, this application completes with verb translation. Verbs translated are verbs identified by the system.

Figure 15. Example of imperfect verb translation

The picture above shows that the system does not only translate the verb يكتب by "writing", but the translation complements with the present tense shows that the 'writing' activity or event is still in progress.

5. CONCLUSION

Imperfective verb identifier application is an application that applies grammatical rules to the system. These rules are related to various elements pronouns or personas (pronouns), aspects, tenses, gender markers (masculine and feminine), number (singular, dual, plural), and tagmemic grammar rules. These application works begins by parsing the input sentence based on spaces. The system then matches it with the database and seeks the primary or secondary sign of the imperfective verb is a distinguishing feature of other types of verbs. Verbs that identify then inserted into the forming tagmeme. The core tagmeme completes the base morpheme, and the outer tagmeme fills the primary and secondary tags. Primary markers are markers that the system first uses to identify a verb in a sentence, while secondary markers are stakes used by the system to identify verbs if the primary marker is incapable. The outcome application can recognize imperfective verbs in the input sentence based on the primary sign. The system also thrives in parsing the verb-forming morphemes and placing them into tagmeme correctly. The system also completed the translation of the identified verbs. Consistently, the system translates all recognize imperfective verbs in the same way. It indicates app applies grammatical rules to develop or improve existing applications.

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