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Arabic Ontology: Linguistic Engineering Foundations

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ABSTRACT

This scientific intervention aims to raise the issue of the automatic processing of natural languages. Especially at its levels related to ontological studies, enabling the machine to recognize information and invest it accurately, beyond the constraints of semantic ambiguity is considered a scientific challenge. This would not be possible without relying on the contextual detection process of linguistic engineering, which is based on a hybrid approach that combines both statistical and linguistic methods. It is an approach that falls within the context of platform linguistics, or what is termed "fourth-generation linguistics", a natural outgrowth of the digital revolution, based on its horizontal extension in various domains and fields of knowledge, thus establishing a new indicative model in which platforms with linguistic and computer interact. In this context, the associative aspects within the compositional linguistic perceptions are a focal point in operating research operations that fall within the automatic processing of natural language, given the nature of its theoretical and methodological architecture with an empirical inductive basis. It also enables the building of computer platforms by preparing morphological, synthetic, semantic, and pragmatic analyzers. Investing in the advanced technological tools provided by the artificial intelligence system; especially in its aspects related to machine learning, deep learning, and neural network; will enable the provision of a linguistic platform capable of developing paths of teaching the Arabic language to non-native speakers.

Keywords: automatic processing of natural languages, artificial intelligence, linguistics platform, ontology, teaching Arabic to non-native speakers

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1. Introduction

This study falls within the semantic computer analysis, especially in its aspects related to the analysis of sentiments and opinion orientations', by adopting the mechanisms of semantic networks provided by ontological studies, as well as the technical tools provided by computer platforms, where reliance will be made in this regard on the open-source NOOJ platform, where it enables the use of contextual detection techniques and machine learning algorithms to determine the direction of feelings according to their levels of positive, negative and neutral by making applications on a digital corpus.

From this standpoint, the measure of the scientific efficacy of Arabic linguistic research is determined by the degree of automation of the Arabic language, and its ability to interact with the figurative reference frameworks that emerged under the automated processing system of natural languages and artificial intelligence techniques that witnessed a fundamental turning point in the field of machine learning, through deep learning techniques, which are based on a system of artificial neural networks (Chaumartin & Pirmin, 2020, p. 174).

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Moreover, building an integrated computer-based linguistic platform for various levels of linguistic study will undoubtedly facilitate the language learning process for both native speakers and non-native learners. This can be achieved by leveraging technologies such as segmentation, concordance, and other functional techniques provided by the platform. The platform's foundational pillars, electronic dictionaries, language corpora, and visual aids, play a vital role in supporting these functionalities. Through the integration of these resources and tools, the linguistic platform will enhance the efficiency and effectiveness of language instruction and make it accessible to a wider audience thanks to computers.

In fact, computers enabled the acquisition of some competencies through the standardization of the human brain, and in this regard, the theory of the synthetic lexicon confirmed its usefulness in this field, this theory was linked in its theoretical construction to the compositional school or what was termed as the associative grammar, especially through the works of its founder, Zelig Harris, the American scientist who left behind an important knowledge production in the field of linguistic research.

Its most important determinants can be monitored through three basic stages, as his book “Methods in Structural Linguistics” (1951) formed its methodological basis, including the theoretical foundations of distributivism, which knew a scientific development after integrating the concept of transformation within its theoretical foundations, as its most important contents were formed in his book published in 1968, under the title "The Mathematical Structure of Language", and in1982 he published a book entitled " *A Grammar of English on Mathematical Principles* ", through which he tried to develop an accurate perception of this concept (Elia & Paveau, 2004, p. 148), which is a central element in the conceptual system of formalism.

In this scientific context of distributive linguistics, the theory of the synthetic lexicon emerged with its most important pioneers Maurice Cross and his scientific team at the Automatic Laboratory of Linguistic Documentation in Paris.

2. Theoretical Framework

Sentiment analysis is a growing field of study that has gained significant attention in recent years. It involves the use of natural language processing techniques to automatically identify and extract the sentiment of text data. Sentiment analysis has applications in a variety of fields, including marketing, politics, and social media analysis. According to the *Ethnologue* website Arabic language is one of the most spoken languages in the world, with more than 420 million speakers, and it is the fifth most widely spoken language in the world (Arabic language corpora analysis is important to analyze the sentiments and opinions of Arabic-speaking people on various topics.

In the context of Arabic language sentiment analysis, there are several challenges that need to be addressed. Firstly, the Arabic language is highly context-dependent with multiple dialects and nuances that can affect the sentiment of a text. Secondly, there is a lack of resources and tools for Arabic language sentiment analysis, which can make it difficult to perform accurate analysis on large datasets.

To address these challenges, several studies have proposed methods for Arabic language sentiment analysis. For example, Al-Hezmi et al. (2018) proposed a hybrid approach for Arabic language sentiment analysis which combines lexical and machine learning techniques to improve the accuracy of sentiment classification. Similarly, Al-Jarrah et al. (2018) proposed a novel approach for Arabic language sentiment analysis based on syntactic and semantic features.

Corpora analysis is another method that can be used for Arabic language sentiment analysis. Corpora analysis involves the collection and analysis of large amounts of text data, known as corpora, in order to extract meaningful insights and patterns. Corpora analysis can be used to identify trends in public sentiment, as well as to evaluate the effectiveness of sentiment analysis algorithms.

In the context of Arabic language corpora analysis, there are several challenges that need to be addressed. Firstly, there is a lack of large, high-quality Arabic language corpora, which can make it difficult to perform accurate analysis on large datasets. Secondly, there is a need for tools and techniques that are specifically designed for Arabic language corpora analysis, which can take into account the nuances of the language and cultural context.

To address these challenges, several studies have proposed methods for Arabic language corpora analysis. For example, Saad et al. (2018) proposed a method for sentiment analysis of Arabic tweets using lexical and syntactic features. Similarly, MA Hadj Taieb et al (2014) proposed a method for sentiment analysis of Arabic news articles using a combination of lexical and semantic features.

In this study, we performed a corpora analysis for machine analysis of the polarity of feeling and opinion trends in Arabic language corpora. Our analysis builds upon previous studies in Arabic language sentiment analysis and corpora analysis and provides valuable insights into public sentiment in Arabic language text. We believe that our study has important implications for marketing, politics, and social media analysis in the Arab world and can help organizations make data-driven decisions based on the trends observed. It also can enhance the teaching of Arabic as a second language by providing authentic language examples, expanding vocabulary, promoting cultural awareness, developing language proficiency, facilitating contextualized instruction, and offering personalized feedback and assessment opportunities.

2.1. Platform Linguistics

Natural language engineering is among the fertile areas of new knowledge, as it combines both the linguistic theories and techniques that have known a great development in the formal tools that they acquired from the fields of humanities and linguistics in particular and the hard sciences that provide logical tools for building and modeling linguistic patterns in mathematical templates that lead to generating and analyzing functions.

Thanks to this linguistic system based on a system of mathematical algorithms centered on the adequacy of the natural speaker, and also thanks to this cross-pollination, the researchers knew that there is cognitive integration between the various components of the linguistic process that combines both the cognitive and computer theories and with this cross-pollination of knowledge, linguistic engineering studies have become an essential gateway to the knowledge society.

Thus, the epistemological foundations of linguistic theories became the subject of discussion from engineering-computer perspectives, from which platform linguistics emerged and thus forming a new generation termed the fourth generation of linguistics, which aims primarily at the visual description of linguistic resources by relying on the techniques of automatic dictionaries and local grammar.

In this regard, it can be said that the construction of automatic dictionaries inevitably requires a new description of the lexical material and the care to present it in an organized and consistent manner that facilitates the process of exploiting it automatically, without being limited to the description that leaves room to human intuition to complete the tacit information that is not contained in the folds of the described material. In other words, the aim of developing

automatic dictionaries is to enable computer programs to process without having prior knowledge of the language studied, which requires an accurate description of its linguistic material by identifying its lexical entries and linking them to their linguistic characteristics.

This is performed according to theoretical foundations and strict methodological tools, possessing the elements of interaction with computer platforms, or in other words, it constitutes the fourth generation of linguistics which scientific formats crystallized within the system of automatic processing of natural languages, as it produced two linguistic theoretical approaches distributed among components and associative grammar.

This interactive process developed its foundations with Pioneers of the syntactic lexicon theory in the automated laboratory for linguistic documentation in France, where automatic dictionaries for a simple and compound vocabulary of the French language were produced based on the programs "INTEX" and "UNITEX". Through this, studies and researchers interested in other natural languages sought to apply them and invest their results in the formalization of their linguistic resources. This process yielded important results that are the essence of the automatic processing of natural languages, bypassing the abstract theoretical perceptions that have been orbiting various scientific research in this area.

If the associative grammar formed the linguistic basis for the automatic processing of natural languages, as they were able to describe the linguistic material according to formal foundations capable of computer processing, then the internal structure of the language and the multiplicity of its functional manifestations with semantic and pragmatic dimensions constituted a basic incentive to question the theoretical foundations and procedural tools of the various linguistic platforms. New possibilities of research emerged from it, aiming to go beyond the reserved field of the single linguistic theory and seek to build bridges between the various theories within the scope of a hybrid approach.

This scientific approach contributed to closing the distances between theories and bypassing the critical vision based on focusing on imbalances and weaknesses, to only highlight shortcomings; towards identifying strengths in order to build an interactive theoretical basis that possesses the methodological ingredients for developing computational linguistics field of research.

In this scientific context, “NOOJ” linguistic platform is a platform concerned with the development of natural languages and their computer applications, equipped with linguistic tools that help build and collect linguistic resources. The mentioned platform is able to formalize a huge corpus in various linguistic phenomena such as orthography, calligraphy, grammar, morphology (syntax and derivation), simple and compound lexical entries and their multi-word expressions (connected and separate), in addition to its ability to formalize morphological structures and synthetic transformations with semantic annotations that respond to the electronic “NOOJ” grammar emerging with the aim of developing automatic processing programs for natural languages.

It focuses on searching for possible ways to overcome the shortcomings that affected its original structure represented in the “INTEX” environment, which architecture was based on five dictionaries within the DELA project framework, however, its operation in an independent manner poses great difficulties, especially at the level of syntactic and etymological changes of complex vocabulary, in addition to its inflexible nature in containing the specificities of some natural languages. On the opposite, NOOJ environment through its reliance on an open format that can integrate various natural languages adopts an integrated method of describing the linguistic material by classifying it into four atomic linguistic units.

By collecting morphemes, simple and compound vocabulary along with separate expressions, and by subjecting them to the annotation process in their inflectional, derivational, and synthetic forms, as the outputs of this process remain in connection with the main lexical entry, framed by a group of linguistic parts of a morphological, synthetic, and semantic nature, through the use of final states technology, which is mainly represented in rational language, adapters, and graphs, as well as its reliance on techniques for contextual detection, grammatical correction, and statistical procedure within the scope of an integrated architecture governed by internal mechanisms, coordinating its procedural operations within an object-oriented structure (بولعلام, 2018, p. 191).

In this context, various research projects aimed at integrating the Arabic language into the system of automated processing of natural languages have emerged, entirety guided by the theoretical foundations and methodological procedures of platform linguistics. They were also motivated by the desire to build morphological, synthetic, and semantic analyzers consistent with the peculiarities of the Arabic language with its fusion structure and etymological fertility, as well as being characterized by diacritization and inserting a sign of extension between the letters “kachida”, and changing the shapes of the letters according to their locations within the structure of the word, or by performing inflectional or derivational operations, all these issues have attracted the attention of researchers in the field of Arabic language engineering.

The methods of addressing these issues differed during the construction of the Arabic morphological analyzers, which eventually led to the search for special factors, in addition to the factors common to various natural languages, which have become available at the level of open-source computer platforms such as “NOOJ” environment. These scientific elements that regulate the paths of research in the scope of morphological and synthetic analyzers have contributed significantly to enriching the geometric-linguistic system of semantic analysis, as an openness bridge to different fields of knowledge, and to break into various research fields, such as the analysis of feelings and opinion orientations, so what about the content of ontology and semantic analysis in the context of machine processing of natural languages?

2.2. Ontology and Semantic Analysis: Systematic Perception

Ontology describes a group of concepts related to a specific field and organizes these concepts in a hierarchy, and then links them with a set of semantic relations or characteristics (Djoufak, Valtchev, & Euzenat 2008, P. 4), in addition to other structural elements that allow the definition of ontology with a figurative lexicon and an unambiguous connotation in order to facilitate and ensure its exploitation by the machine (Boudabous, 2017, P. 7) the following is a breakdown of these components:

- **Classes or entities** which constitute the basic component and the first level in the ontology environment;
- **Individuals** represent components of classes, and can also be considered objects that have common characteristics.
- **Relationships**: It is one of the most important features that characterize ontology, because it ensures that computer systems achieve cognitive integration between different entities, and allows the representation of semantic links between the concepts or terms of ontology, in a way that allows removing ambiguity in order to understand many relationships that are better for a given discourse, and many relationships can be mentioned in this section, such as taxonomic relations, semantic and lexical relations, and inter-hierarchical relations;

- **Properties**, or what is also referred to as attributes, are used in ontology to describe each of the categories and vocabulary according to their distinctive characteristics (عواج, ،2021P: 86).

For reference, the measure of the scientific efficacy of Arabic linguistic research is primarily subject to the available possibilities for the automation of the Arabic language, and its ability to interact with the formal reference frameworks, which emerged under the automatic processing of natural languages system, and artificial intelligence techniques that witnessed a fundamental turning point in the field of learning. Self-machine learning, through its deep learning techniques which are based on a system of artificial neural networks, enabled the computer to acquire some competencies by standardizing the human brain.

In this regard, Yann Lecun (Y. Lecun, Y. Bengio, and G. Hinton, *2015*) confirms that the next stage of deep learning is the possibility of recognizing natural languages, by enabling machines to recognize entire sentences and paragraphs, without being limited to vocabulary. It is a scientific turning point that questions the essence of the automated semantic analysis system, and the extent to which it possesses scientific ingredients in addressing a range of problematic issues, including:

- Synonyms and alliteration;
- Antithesis and synonymy;
- Collocations;
- Idiomatic expressions.

These linguistic phenomena challenge the automated analysis at its semantic and usage levels. In addition, linguistic characterization algorithms are questioned within the formats of formal studies of natural languages. The ability to build control grammar for multi-word expressions, and their integration within the linguistic architecture of the Arabic language's automatic dictionaries, through precise identification of atomic linguistics units, as framed inputs to the general structure of the machine processing of the Arabic language.

3. The problem of Segmentation and Semantic Confusion

The study of these issues requires several methodologies and techniques, in order to be able to carry out a number of major operations in this field, which can be summarized as follows:

Segmentation in its two simple and compound parts: Segmentation constitutes an essential stage in the process of automatic processing of texts, as it enables the identification of primary linguistic units represented mainly in paragraphs, sentences, and vocabulary. The process of segmentation into words constitutes the basic stage in the series of automatic processing of natural languages, but the term "word" in its linguistic sense is not identical to its content in the field of informatics, where the word is considered a "token" unit that is identified through formal separators, such as spaces and punctuation marks. However, relying on the segmentation process, on the simple term alone, is not considered sufficient, rather, it is necessary to take into account the compound term due to its importance in defining the semantic dimensions of multiple linguistic phenomena. The segmentation process adopts two mechanisms:

4. Segmentation with Spaces (see Figure 1)

Segmentation with spaces refers to the process of dividing a text or sequence into individual segments or units based on the presence of spaces between them. In many languages, including English, words are typically separated by spaces, making it possible to identify and isolate individual words by locating the spaces between them.

Segmentation with spaces is a common and straightforward approach to tokenizing or splitting text into meaningful units. By using spaces as boundaries, the text can be divided into separate word tokens, which form the basic building blocks for various natural language processing tasks such as sentiment analysis, named entity recognition, part-of-speech tagging, and machine translation. The following figure 1 is a screenshot taken from NOOJ platform, where the input corpus was segmented based on the spaces between the sentence's components.

Figure 1. Example of segmentation with spaces

While segmentation with spaces is effective for languages that employ space-based word separation, it may not be applicable for languages without explicit spaces between words or for text types like hashtags, URLs, or domain-specific jargon where words are concatenated without spaces. In such cases, alternative tokenization techniques or language-specific approaches may be required.

5. Segmentation with Punctuation Marks (see Figure 2)

Segmentation with punctuation marks refers to the process of dividing a text or sequence into segments or units based on the presence of punctuation marks. Instead of relying solely on spaces as boundaries, punctuation marks such as periods, commas, question marks, and exclamation marks are used to determine the segmentation points.

Segmentation with punctuation marks allows for more fine-grained tokenization, as it considers not only spaces but also the punctuation within the text. This approach is particularly useful for languages or text types where words or phrases are often combined without spaces, or where punctuation marks provide important grammatical or semantic cues. The following (Figure 2) illustrates segmentation with punctuation marks through an example taken from the platform.

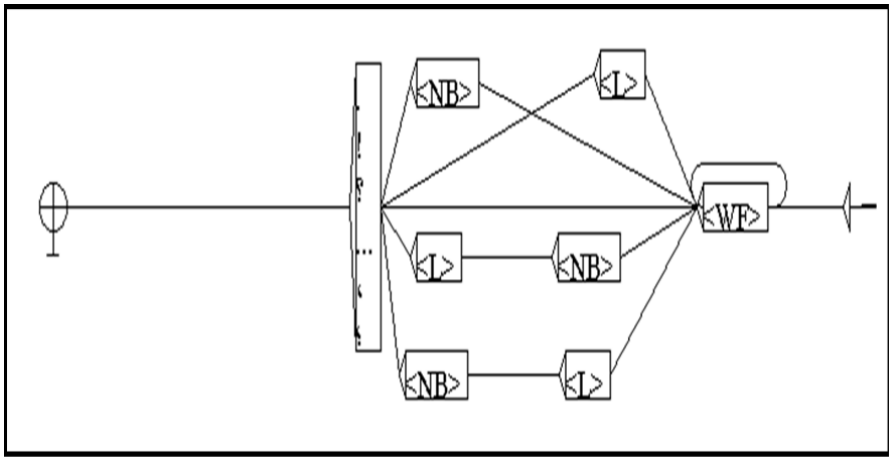

Figure 2. Example of segmentation with punctuation marks

The segmentation process enables the identification of keywords in the text, which constitute a starting point for carrying out the extraction process, by adopting the contextual detection, **concordance**, mechanism. Through this technique, it is possible to identify a linear sequence within a specific text, so whenever it encounters the required sequence, it extracts it within a context that defines its pre- and post-elements according to User preselection. NOOJ platform has a contextual detector that enables this, as shown below.

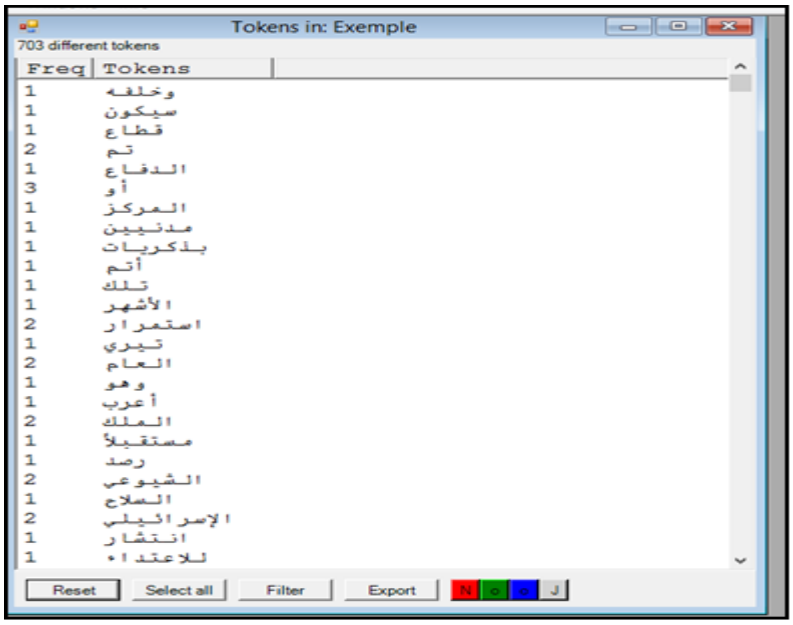

Figure 3. Concordance example

In addition to the process of segmentation and concordance (see Figure 3), the semantic analyzer also aims to examine possible ways to disentangle semantic ambiguity, given the difficulties it poses to the comprehension process of a particular text, whether during the reading or analysis process or in other words when a lexical entry is linked to more than one annotation's value. This phenomenon is considered one of the main problems of the morpho-synthetic analysis of various natural languages, as it affects the linguistic analyzers at their lexical, syntactic, and semantic levels.

The lexical ambiguity results during the segmentation process of the text into graphic sequences, and the syntactic ambiguity is related to the multiple interpretations of a single structural unit and thus differs from the lexical ambiguity because it is not related to the

possibility of one word for more than one meaning, but rather results from the multiplicity of potential relationships between the elements of the structure.

NOOJ platform has incorporated practical measures to decipher ambiguity and overcome its negative effects, but the issue still needs careful studies to overcome this phenomenon, especially with regard to the Arabic language in which ambiguity is linked to some of its special features, resulting from the absence of vowels, syntax, derivation, and its fusion nature.

Faced with this ambiguous situation, graphic and glossary techniques provided by NOOJ platform are resorted to in order to present the possibilities that can be represented through the following examples:

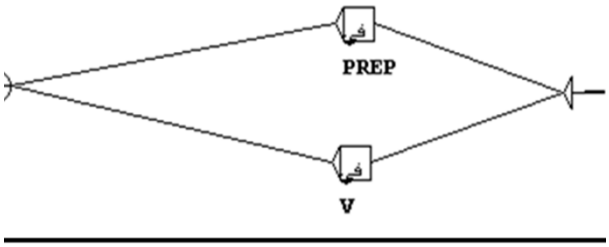

Figure 4. Example of segmentation with dictionaries

6. Segmenting with Dictionaries (Figure 4)

Segmenting with dictionaries, also known as dictionary-based segmentation, is a text processing technique that involves splitting a sequence of characters or words into meaningful units based on a predefined dictionary or word list. This approach is particularly useful for languages or domains where words are often concatenated without explicit spaces or for text types that contain jargon, abbreviations, or compound words**.** Figure 4 is a screenshot taken from NOOJ platform that shows this type of segmentation.

```
#use Dictionnaire.nof

# Quelques mots invariables
مِنْ,PREP
إِلَى,PREP
جِيْنَ,ADV

# Quelques noms

حِجَاب,N+m+FLX=Hijab+DRV=Houjoubon:FlexionPL
طَرِيقَة,N+f+FLX=Tarika+DRV=Houjoubon:FlexionPL
سَبْع,N+m+FLX=Hijab+DRV=Siba3:FlexionPL
سِرْج,N+f+FLX=Hijab+DRV=Asroujon:FlexionPL
عَلَم,N+FLX=Hijab+DRV=Atbak:FlexionPL
طَبَق,N+FLX=Hijab+DRV=Atbak:FlexionPL

ثَقِيفَة,N+f+FLX=Tarika+DRV=Siba3:FlexionPL
مَكْتَبَة,N+f+FLX=Tarika+DRV=Makatib:FlexionPL

# Quelques verbes

سَرَقَ,V+Tr+FLX=V_saraka1+DRV=N_saraka1:FlxDRV


رَمَزَ,V+Tr+FLX=V_ramaza2+DRV=N_ramaza2:FlxDRV
رَشَحَ,V+Tr+FLX=V_ramaza2+DRV=N_ramaza2:FlxDRV
رَقَمَ,V+Tr+FLX=V_ramaza2+DRV=N_ramaza2:Flx1

طَبَخَ,V+Tr+FLX=V_taba3a3+DRV=N_taba3a3:FlxDRV
رَكَعَ,V+Tr+FLX=V_taba3a3+DRV=N_taba3a3:FlxDRV

عَلَّمَ,V+Tr+FLX=V_allama4+DRV=N_allama4:Flx1


# Quelques mots composés

خَضْرَاءُ الْيَدَيْنِ,N+FLX=FlexionNC1

شَهْرَيْنِ اثْنَانِ,N+Mois+Ar+FLX=FlexionNC2
جُمَادَى الأُوْلَى,N+Mois+Hjr+FLX=FlexionNC2
```

Figure 5. Evaluation of results

Figure 5 is a screenshot taken from NOOJ platform showing the stage of analysis of the results after the already mentioned steps of segmentation and concordance, in this step the platform analyses and evaluates the results of the recurrent keywords, in order to come up with a reading of the opinion trend of the input corpus.

7. Analysis of Sentiments and Opinion Trends

7.1. Concept Definition

Sentiment Analysis is among the main concerns of the automatic processing of natural languages, especially in its aspects related to semantic analysis. Automated opinion analysis is of great importance, as it aims to identify the polarity of feelings in their positive, negative, and neutral dimensions (Chaumartin et Pirmin, 2020, P. 150).

This field has witnessed remarkable development due to the centrality of information in a context that relies on the elements of the knowledge society, thus establishing new indicators to measure societal development according to the requirements of the knowledge economy and cultural digitization, as well as the ability to access the information society through the development of digital content and support for a technological environment that transcends the boundaries of natural geography, through moving towards trans-society spaces, which is a problem that questions policies, structures, and mentalities, but rather requires the formulation of new hypotheses which extent is inspired by the privacy of a virtual world, within which the machine has become a partner for humans in production and learning, through the process of standardization and modeling of the human brain, all of which are issues that put digital Arabic content at technological stake in its various dimensions, especially in its aspects related to knowledge engineering and artificial intelligence,(بولعلام , 2021, p. 219). In this sense, Arabic digital content jeopardizes this field, including:

- A single word can carry different connotations due to the absence of diacritics, such as “يعلم” “y ʕ l m” as it can be read in three different forms, “knows”, “informs” and “teaches”;
- The presence of some words such as “*lakin*” “but” in texts sometimes raises the difficulty of resolving two contradictory feelings.
- Multiple antecedents and suffixes for one word (Alhumoud, Altuwaijri, Albuhairi, & Alohaideb, 2015, p. 364-368).

These issues highlight the importance of the linguistic dimension in building an efficient system for the automatic processing of natural languages, by building morphological and synthetic analyzers that includes an accurate description of linguistic phenomena. The polarity of feelings is determined from two angles, either from the point of view of the producer of the text or document or from the point of view of the reader or the user. This is based on machine learning algorithms, whose scope of work has expanded to include social networks in addition to traditional texts.

For reference, most of the data is produced by 70% of the blue space users, and this data is exploited by major companies, such as Apple, Microsoft, Google, and Facebook, where they currently have 80% of personal information related to human digital content (Dugain & Labbe, 2016, p .16). Perhaps working on social networking sites with all its tributaries enables one to identify different social strata and age groups.

7.2. Applications Through the Use of NOOJ Platform

Corpora study: The corpora study includes a set of texts extracted from social networking sites, as a set of web-based platforms, allowing users to create social relationships and share their interests and concerns. The proposed corpora of the study are related to the topic of the murder of two Scandinavian tourists in Imlil, Marrakech, and were extracted from Facebook, an excerpt from which is below:

The smile of the two angels killed me from vein to vein, a radiant innocence that did not know what was being hatched in the cover of darkness, terrifying bats and grim faces assassinated roses and butterflies, what earthquake was this, that shook and collapsed all my senses? Slaughtered beauties with premeditation and in cold blood, the two pure bodies had a language that blew birds, stones, and trees, and their groans, pain, and echoes of their screams planted daggers in the farthest point of the spirit of Shamharooch, the mountain, and everyone who carries an atom of a human being.

I knew that the groaning of the body of angels, has the earthquake humming, the stillness of all times and places, the time stopped terrified, the spring left its colors, and all the birds declared mourning, the humming sprouted thorns for a frightened hedgehog in my bed. I conjured up all kinds of violence that were practiced on the two victims without mercy and without blinking the eyelid of the blindfold. I touched all the multiple psychological states that they experienced, between the fear of sudden surprise, the threat of a knife, and isolation in a deserted place in the depths of the Atlas.

Their fear as they swallowed torment under threat, while they were under the control of obsessions, anticipating the end and death. Perhaps it would be a moment of hope in which she saw the salvation of her endless torment. A waterfall of burning tears did not quell the lava of my anger and pain. From the horror of the scene and I screamed from the pain that penetrated the pores of my soul and declared its overwhelming victory. I see terrorist killers as only remnants of body parts, filth, and eunuchs, a group of failed ignorance whose food is extremism, hatred, and the illusion of paradise virgins.

God forbid that they are animals because animals are among the most merciful creatures, they are definitely surreal monsters when they intercepted the path of the two angels like bad luck, they cowardly and despicably attacked them, beings who locked their manhood and their mummified consciences inside a deep staircase of meanness and threw the key beyond their humanity. They violated their dignity, they scattered their dreams, and assassinated the two smiles. It is certainly a murder of the soul, security, and beauty, with premeditation. They saw in the victims nothing but bodies that their privacy and sanctity has to be violated, filthy, foul beings that smelled of burning, imaginary virility, backwardness, and frightening extremism, mere muddles and bubbles of ignorance. Hatred is their truth and all religions and nations are innocent of them.

The engineering and procedural basis: In discourse analysis, based on computer corpora and language processing tools, the first step is to obtain the huge corpora that represent the state of the discourse to be analyzed, or to collect it with the methods used in the personal blogs in computer corpora linguistics, and then revealing the lists of initial repetitions, whether the central words are specified in advance or not. The repetition lists are followed by looking at the results of the types of words, then expanding the verbal sequence with the words and making them over 2n-grams(المجيول, 2016, p. 21), the extraction is generally based on the contextual detection mechanism “the concordance” Through an algorithm that enables the identification of a linear sequence within a specific text, whenever it encounters the required

sequence, it extracts it within a context that determines its pre and post-elements according to the preselection of the user (Abbas, 2004, p. 35).

For reference, the field of sentiment analysis and opinion orientation is methodologically based on three methods, which are as follows:

The first method: Relies on creating a based-lexicon that includes words and their corresponding feelings according to the positive and negative polarity towards a specific issue, as it is prepared **manually** by relying on previous dictionaries, and based on it, opinions are monitored and the general feeling is calculated. In the case of recording an upward trend for the words indicating positivity, then the direction of opinion is considered positive, and in the opposite case it is considered negative, and in the case of equality it is considered neutral

The second method: is based on machine learning techniques based on algorithms, enabling the **machine** to recognize and classify texts, and to detect words and sentences within their contexts. This would not be possible without the availability of linguistic resources, in the form of morphological, synthetic, semantic, and textual analyzers.

The third method: is based on a **hybrid** approach, which combines the dictionary method with the machine learning technique. Among the algorithms used in this field, we mention the following (العبيدي& الطالب, 2018, p. 17):

1. SVM-Support Vector Machines: are algorithms used for classification, regression, and pattern recognition. Its goal is to find the best classification function, and it also aims to distinguish between members of two classes of training data. The idea of the algorithm is to find an optimal plane hyper that separates the two classes, which is used to classify and identify each style. Among its advantages is the high accuracy of classification, and it is applied in wide areas, including text categorization, image classification, and in medical applications.

2. Naive Bayes: is, for several reasons, an important algorithm: it is easy to build, estimation schemes do not need complex iterative variables, and it can be easily applied to a huge data set. The goal of the algorithm is to build a rule that allows future structures to be assigned to a specific class, by giving vectors of variables that describe that structure, and through which the user can make many easy statistics.

3. K-Nearest Neighbor: is used in classification and regression. It is a non-standard method, as when the sample submitted to the algorithm is unknown in the training phase, it searches for the pattern space of K of the training samples, which are closest to the unknown samples, and depends on the efficiency of the algorithm which is mainly based on the values that are used in the algorithm, and this algorithm is characterized by its classification efficiency and ease.

This technology has proven its effectiveness in determining the polarity of feelings in various fields. In this regard, the procedural tools and technical capabilities provided by NOOJ platform can be invested, especially in the aspects related to segmentation, extraction, and contextual detection (concordance), after defining the keywords in the form of a dictionary of feelings.

7.3. Determining the Keywords

After the process of collecting data from several private pages and websites of some newspapers, a dictionary of feelings was built that includes a set of words of feelings attached to their values with positive and negative connotations. The automated mining process was initiated through NOOJ platform, after the corpora-carrying texts generated by users of social networks were installed, and the initial processing related to “segmentation” was carried out. This process yielded the following results:

The word "crime" was mentioned 59 times.

Figure 6. The word “Crime” repetition

From the above Figure 6, which is a screenshot taken from NOOJ platform, one can notice that after the analysis of the corpus NOOJ had detected the repetition of the word crime 59 time, which can be a solid indicator about the general feeling and standpoint of the corpus.

The word killers: was repeated 25 times.

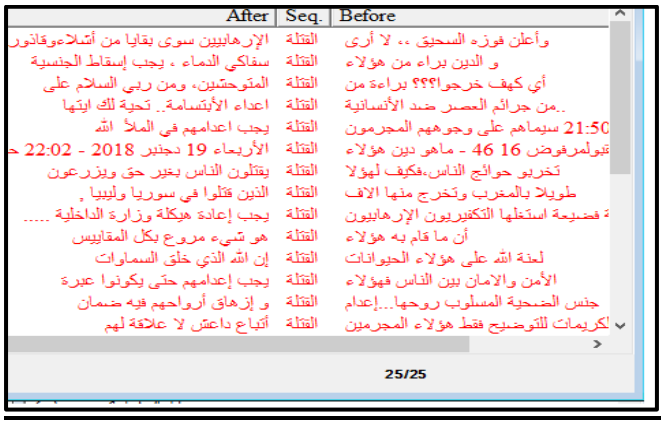

Figure 7. The repetition of the word killers

Figure 7 shows the extracted repetition of the word killers, as it was repeated 25 times which can easily let the reader infer the general opinion of the writer of the corpus.

The word "monsters" was repeated 24 times.

Figure 8. The repetition of the word monsters

Another repeated word that can have a strong connotation about the opinion trends of the corpus, is the word monsters as it was repeated 24 times (see Figure 8), this word in fact describes how the writer see these people who committed this crime.

Execution: 52 times.

Figure 9. The repetition of the word Execution

The word Execution was mentioned 52 times (see Figure 9), this explains the type of punishment the writer is hoping for these killers, which also give us an insight on the opinion trends of the corpus.

By conducting comparisons between the words expressing the polarity of feelings, it becomes clear that the words "Killers", "crime", "murder" and "execution" formed a central trend in expressing a position rejecting the behavior of murder and brutality against the two Scandinavian tourists. This can be represented through the following Figure 10:

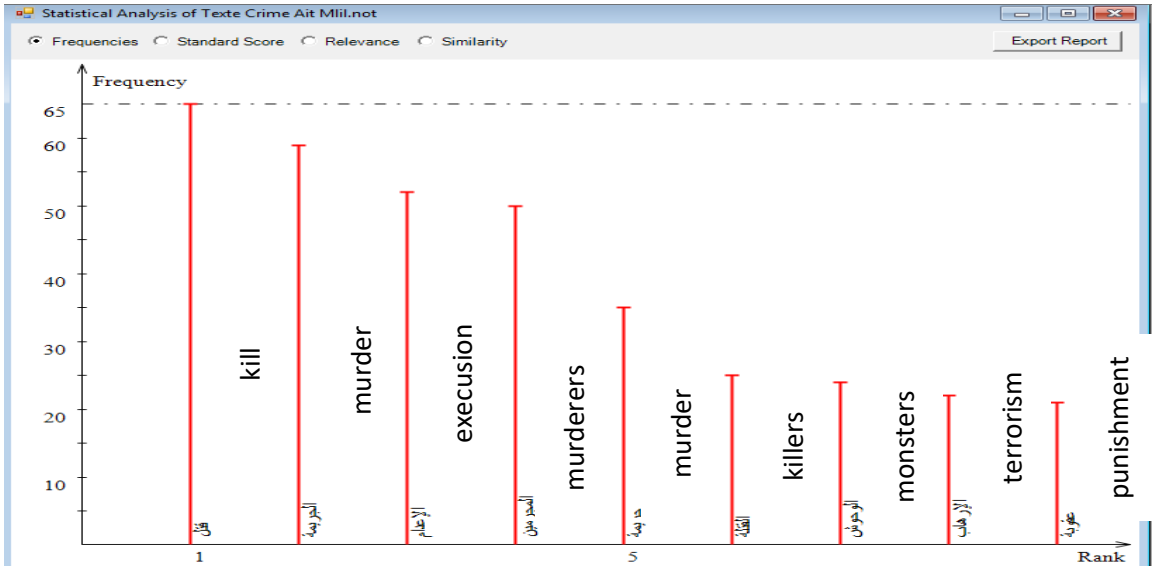

Figure 10. Results analysis

From the above Figure 10, which is a screenshot taken from NOOJ platform one can easily infer the opinion trend of the input corpus, as after segmentation and concordance the analysis of result shows that a number of negative words appear to be repeated for many times, this enables the deduction of the negative attitude of the sentiment of the writer.

8. Analysing and Evaluating the Results

Through the theoretical linguistic engineering foundation, which has provided the methodological basis for platform linguistics, and the development of procedural tools for Arabic ontology, utilizing semantic derivation mechanisms, it has become possible to conduct applications related to sentiment analysis and opinion mining systems. This was achieved by working on a textual corpus constructed from social media platforms, where the polarity of sentiments, including positive, negative, and neutral aspects, was highlighted. This was done through the identification of key terms and the analysis of their semantic and cultural connotations.

Conducting the analysis process constitutes a focal point for the process of analyzing feelings and opinion orientations system, given the multiplicity of semantic loads of words and expressions included in the texts and their openness to different interpretations, which are sometimes bypassed by mechanisms to decipher semantic ambiguity, sometimes it is necessary to employ the mechanisms of pragmatic textual analysis, as an analyzer that has the ingredients to adjust the significance of multi-words expressions according to their use contexts.

In this regard, it should be noted that negation constitutes a real challenge for processing texts and defining their polarity, as the units denoting negation direct the paths of general feeling at the level of the structure, which necessitates approaching them with the necessary precision and proficiency, in order to avoid any deviation from the intended meaning in the text. The juxtaposition of words with negation units inevitably leads to a reversal of their meaning, which is separated from the context. Negation within texts takes multiple forms, whether through tools and words such as, “lai:sa, la, ma, lam, lan” among others, or is manifested through expressions such as, “It would have been better, or the matter requires that instead of that, or the issue needs such and such, they only saw the two victims.” among others.

Additionally, the texts include some intense words of feeling, such as “very, much, definitively, completely, a little, a waterfall of tears, in cold blood, what an earthquake, without mercy, the

lava of my anger, heinous, savage," and others, The corpora also include a set of emojis in the context of interacting with the horror of the tragedy, all of which are issues that are taken into account to highlight opinion trends, in addition to the numerical polarity of the words.

Determining feelings polarity is, in fact, a mixture of elements that revolve around the text, and the interactions appended to it as feedback and comments, sometimes pose some difficulties during building the inputs of the analysis and evaluation system, it is sometimes difficult to return the interactive expressions to their origins at the level of the pre-prepared vocabulary of feelings, in addition to some verbal blemishes that permeate the corpora, which needs to be corrected and cleaned up in order to be prepared for proper processing.

The intensity of the events led to the splitting of the blog into first texts monitoring the killing process and assaulting the right to life, fueled by human rights, religious, and cultural trends. Adopting expressive patterns based on linguistic formulas, eloquent rhetorical methods, and interactive extensions through comments that reveal the emotional depth emanating from the psychological essence, using shorthand expressive methods, such as the use of emoji symbols that indicate surprise, confusion, sadness, and sorrow, among others.

This feature has become a distinctive communicative act among Web users, mainly due to its easy use and its universal nature that regulates social relations on a global level. In fact, the use of emoji has become a basic number in the interaction equation at the blue space level, which necessitated the adoption of a statistical approach whose foundations are inspired by the artificial intelligence system, especially in its approach related to deep learning, as a mechanism for monitoring the distinctive features of images and various symbolic expressions.

For reference, the integration of emoji into virtual communication formats questions the paths of semiotics in its digital aspect, an issue that raises the problem of the epistemological consideration for humanities under the digital revolution, and its ability to formulate new cognitive starting points capable of keeping pace with the artificial intelligence system in its various dimensions, and this will not be possible Without relying on the elements of interface and bridging between cognitive sciences, contributing to the crystallization of a new scientific model that enables the interaction of both human and artificial intelligence, in the context of setting the parameters regulating the post-new Organon.

In this same context, idioms and other multi-word expressions challenge the analysis of feelings and opinion orientations, due to their features and characteristics that are distinct from ordinary expressions. They necessarily necessitated approaching them based on pragmatic use, through procedural tools based on the concept of the *dark area* according to Eric Laporte's conception (Laporte, E, 2006), and the semantic derivation technique based on the procedural engineering included in the theory of the meaning of a text, all of which are issues embedding within semantic networks within the scope of ontological research.

Through what preceded, and after a careful reading of the outputs resulting from automated applications, and determining the values of feelings on a statistical basis, the outcome of the analytical study and the evaluation process proved that the general feeling towards killing the two tourists falls within the polarity of positivity, and this is completely consistent with the trends of opinion rejecting the phenomena of killing, violence, hatred, and negative view of the other.

The challenge of semantic ambiguity in the context of automated processing of natural languages has posed a significant challenge for researchers in this field. In this study, we attempted to tackle this issue by adopting a vision that emphasizes the importance of relying on ontology as a theoretical framework that possesses all the necessary components to capture conceptual relationships across the network of semantic fields. This approach has proven

valuable in overcoming the problem of semantic confusion resulting from phenomena such as lexical ambiguity, synonymy, and idiomatic expressions. Therefore, it has become essential to build a discourse analyzer rooted in the field of ontology.

Finally, computer-based linguistic platforms capable of sentiment and opinion trend analysis can have a significant impact on teaching the Arabic language to non-native speakers. These platforms and Arabic language instruction are interconnected since it encourages authentic language use, in the sense that sentiment analysis and opinion trend analysis rely on real-world language data, including social media posts, online reviews, and news articles. By incorporating such data into the language learning process, non-native speakers can be exposed to authentic Arabic language use in various contexts.

In addition, it expands the vocabulary, because Sentiment analysis platforms often analyze and categorize sentiment-bearing words and phrases. By utilizing these platforms, Arabic language learners can access a wide range of vocabulary related to positive, negative, and neutral sentiments. This exposure helps expand their vocabulary and deepen their understanding of Arabic expressions and emotions.

Moreover, it enhances cultural awareness; Sentiment analysis and opinion trends are closely tied to cultural contexts. Through linguistic platforms, non-native learners can gain insights into cultural nuances, attitudes, and social norms within Arabic-speaking communities. This enhances their cultural awareness and sensitivity, which is crucial for effective communication in the Arabic language. Equally, it helps in language proficiency assessment; due to the fact that computer-based linguistic platforms can assess learners' language proficiency by analyzing their written or spoken expressions for sentiment and opinion orientation. This enables personalized feedback and targeted instruction to improve learners' language skills.

In the same vein, it helps in content selection and creation, in the sense that it can help identify relevant and engaging Arabic language learning materials by analyzing learners' preferences and opinions. Language instructors can use these insights to select or create content that aligns with learners' interests, facilitating a more engaging and personalized learning experience.

Overall, computer-based linguistic platforms with sentiment analysis and opinion trend capabilities enhance Arabic language instruction for non-native speakers by providing authentic language exposure, expanding vocabulary, promoting cultural awareness, assessing language proficiency, facilitating content selection, and offering opportunities for language practice and production.

9. Summary

By addressing the problem of building an Arabic ontology, several issues can be summarized such as: Constructing a semantic discourse analyzer for Arabic and other natural languages relies heavily on the concept of ontology. In addition, linguistics of platform-based approaches, which bridge cognitive sciences and hybridize linguistic theories, provide a suitable framework for building digital linguistic resources rooted in ontological perspectives.

As for overcoming ambiguity, it requires the construction of well-organized semantic networks for interconnected concepts within a specific semantic field. Concerning, applications in sentiment analysis and opinion mining, this issue has tangibly demonstrated the procedural importance of an ontological foundation in overcoming semantic confusion and pragmatic ambiguity. Moreover, linguistic blogs serve as a fundamental source for building a viable Arabic ontology that can be leveraged in various domains such as language education, machine translation, text mining, and more.

Concerning NOOJ, it is a powerful linguistic analysis tool, but its effectiveness relies on the quality of creating linguistic resources and rules. Properly defining and refining the rules based on the specific domain and dataset is crucial for accurate sentiment analysis and opinion-mining results.

To Sum up, the analysis of feelings and opinion trends is an important research path in the context of the knowledge society, as it is an effective mechanism in the decision-making process in all areas and fields. It also constitutes a scientific measure to test the effectiveness of the system of automated processing of the Arabic language, which will not achieve its goals without building accurately described linguistic resources in which morphological, syntax, semantic and textual analyzes mix within, in order to produce comprehensive data, which can be invested through algorithms, whose foundations are derived from the technical capabilities that It is provided by the artificial intelligence system in all its formats, which is mainly manifested in machine learning, deep learning, and neural networks.

10. Recommendations

The preparation of an Arabic Ontology inevitably requires reliance on a linguistic theory with formal foundations, such as the theory of the syntactic lexicon and the theory of the meaning of a text. In addition, comprehensive knowledge of linguistic resources in building an ontology requires a combination of dictionaries and blogging techniques. The linguistic analyzers are the focal point for building an effective ontology.

11. Limitations

The weakness of the Arabic digital content poses great difficulties in building an ontology for the Arabic language the availability of large amounts of training data is crucial for machine learning algorithms to learn and improve their accuracy. However, there is a limited availability of Arabic language corpora for training sentiment analysis models, which can hinder the accuracy of the analysis.

Moreover, improving Arabic digital content requires the development of mechanisms to purify it from impurities resulting from the absence of a comprehensive vision to control the relations between classical Arabic and dialects. In fact, Arabic is spoken in many different dialects and variations, and these dialects may use different expressions and language structures to convey feelings and opinions. This can lead to inconsistencies in the analysis, as different dialects may require different approaches to sentiment analysis.

While NOOJ can be a useful tool for analyzing and evaluating sentiment polarity and opinion orientations, it also has certain limitations that should be considered:

1. Language-specific resources: NOOJ relies on language-specific lexicons, grammars, and linguistic rules. The availability and quality of these resources may vary across different languages. Limited or outdated linguistic resources can affect the accuracy and coverage of sentiment analysis and opinion mining.
2. Rule-based approach: NOOJ primarily employs a rule-based approach for sentiment analysis and opinion mining. Rule-based systems heavily depend on predefined rules and patterns, which may not capture all nuances and variations in language. Creating comprehensive and accurate linguistic rules can be time-consuming and challenging.
3. Contextual understanding: Sentiment analysis and opinion mining often require a deep understanding of contextual cues, idiomatic expressions, sarcasm, and other nuances in

language. While NOOJ can handle some level of context through linguistic rules, it may struggle with complex or subtle contextual variations.

4. Limited training capabilities: Unlike machine learning models, NOOJ does not have built-in training capabilities to learn from data. It relies on manually defined linguistic rules and patterns, which may limit its ability to adapt to new domains or datasets without extensive rule modification.
5. Subjectivity and ambiguity: Sentiment analysis and opinion mining inherently involve subjective and ambiguous aspects. Different individuals may interpret and express sentiments and opinions differently. NOOJ's rule-based approach may not fully capture the diverse range of subjective expressions and opinions.
6. Scalability: NOOJ's performance may be impacted when dealing with large volumes of text data. Processing large corpora can be time-consuming, and the efficiency of sentiment analysis and opinion mining using NOOJ may decrease as the dataset size increases.
7. Lack of real-time analysis: NOOJ is a standalone software tool, and it may not provide real-time analysis capabilities for sentiment analysis and opinion mining. The analysis process typically requires preprocessing and annotation steps, which can be time-consuming for real-time applications.

When using NOOJ for sentiment analysis and opinion mining, it's important to be aware of these limitations and consider them in the interpretation of results. Supplementing NOOJ with other approaches, such as machine learning models or incorporating human judgment, can help mitigate some of these limitations and improve the overall analysis.

References

Abbas, R. (2004). La conception et la réalisation d‘un concordancier électronique pour l’arabe. Thèse de doctorat en Science de l'information. Soutenue en 2004 à Lyon, INSA.

Al-Jarrah, O. Y., Dwaikat, L. N., Al-Qudah, D. M., & Al-Madi, N. M. (2018). A novel approach for Arabic sentiment analysis based on syntactic and semantic features. International Journal of Advanced Computer Science and Applications, 9(10), 464-471.

Al-Hezmi, A., Al-Hezmi, F., & Al-Salman, A. (2018). A Hybrid Approach for Arabic Sentiment Analysis. International Journal of Computer Science and Network Security, 18(12), 84-91.

Alhumoud, S. O., Altuwaijri, M. I., Albuhairi, T. M., & Alohaideb, W. M. (2015). Survey on arabic sentiment analysis in twitter. International Science Index, 9(1), 364-368.

Boubabous, M. (2017). Les Erreurs En Fls : Signe De Dysfonctionnement Ou Aubaine ? Didactiques, Volume 6, Numéro 1, Pages 228-250.

Chaumartin, F, R, & Pirmin. (2020), le traitement automatique des langues, comprendre les textes a l’intelligence artificielle. Dunod.

Dugain, M, et Labbe, C. (2016). l’Homme nu, la dictature invisible du numérique, éditions Plon, Robbert Laffone, Paris.

Ethnologue. (2021). Arabic. Retrieved from https://www.ethnologue.com/language/ara

Djoufak-Kengue, J. F., Euzenat, J. &, Valtchev, P. (2008). Alignement d’ontologies dirige par la structure. Actes 14e journées nationales sur langages et modèles a objets (LMO). Montréal, Canada. Actes 14e journées nationales sur langages et modèles a objets (LMO).

Hadj Taieb, M. A., Ben Aouicha, M., & Ben Hamadou, A. (2014). Ontology-based approach for measuring semantic similarity. Engineering Applications of Artificial Intelligence. Vol: 36. Pergamon. https://doi.org/10.1016/j.engappai.2014.07.015

Gross, M. (1981). Les bases empiriques de la notion de prédicat sémantique. Langages, n° 63, 1981, La rousse, Paris. https://doi.org/10.3406/lgge.1981.1875

Gross, M. (1989). La construction des dictionnaires électroniques Télécommunication : 44, n° 1 – 2. https://doi.org/10.1007/BF02999875

Laporte, E. (2006) Methodological provisions in the construction of idiom resources. *Invited talk, "Collocations and idioms 2006: linguistic, computational, and psycholinguistic perspectives", Berlin-Brandenburg Academy of Sciences and Humanities*, France. ⟨hal-00621632⟩

LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *nature*, 521, 436. https://doi.org/10.1038/nature14539

Saad, A. S., Alnajjar, K. O., & Alkhalifah, S. R. (2018). Sentiment analysis of Arabic tweets using lexical and syntactic features. International Journal of Advanced Computer Science and Applications, 9(9), 150-156.

Sarfati, G.E. & Paveau, M. A. (2003). les grandes théories de la linguistique, de la grammaire comparée à la pragmatique. s.l., Armand Colin/VUEF.

Zellig, S. H. (1951). *Methods in Structural Linguistics*. Linguistic Society of America.

Zellig, S. H. (1968). Mathematical Structures of Language. Krieger Pub Co.

Zellig, S. H. (1982). A grammar of English on mathematical principles. New York: Wiley. Pp. xvi+429.

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العبيدي ر ز، &ع غيداء ع.(2018). دراسة مقارنة لخوارزميات التنقيب في الآراء وتحليل العواطف وتطبيقاتها، (A comparative study of sentiment analysis and opinion mining algorithms and their applications.) مجلة الرافدين لعلوم الحاسوب والرياضيات المجلد 12العدد 2.

بناصر م، س. (2016). لغويات المدونة الحاسوبية، تطبيقات تحليلية على العربية الطبيعية. (Linguistics of Computer Blogging: Analytical Applications on Natural Arabic Language.). مركز الملك عبدالله بنعبد العزيز لخدمة اللغة العربية، الطبعة الأولى

بولعلام، ع. (2018). لسانيات المنصات واللغة العربية، تطبيقات حاسوبية من خلال استخدام منصة نوج (Linguistics of platforms and the Arabic language: Computer applications using NOOJ platform.) IPN، فاس، الطبعة الأولى.

بولعلام، ع. (2021). المحتوى الرقمي العربي، الهندسة اللسانية وأفق الثورة الرابعة. (Arabic Digital Content, Linguistic Engineering, and the Horizon of the Fourth Revolution)، اللسانيات العربية رؤى وآفاق، اللسانيات التطبيقية واللغة العربية الجزء الثالث.

عواج، م. (2021). بناء أنطولوجيا اللغة العربية مقاربة بالتعلم من موارد لغوية. ASJP (Building an Arabic Language Ontology: A Learning Approach from Linguistic Resource)

Appendix

The Arabic corpora:

"ذبحتني ابتسامة المَلّكين من الوريد إلى الوريد، براءة مشرقة لم تعرف ما يحاك لها في جنح الظلام، خفافيش مرعبة ووجوه كالحة اغتالت الورد والفراشات، أيّ زلزال هذا ارتجت له كل معالمي وتهاوت؟ نحر الجمال مع سبق إصرار وترصد بدم بارد ،، وكان لجسدي الطاهرتين لغة أدمت الطير والحجر والشجر، وقد غرست بأنينها وألمها وصدى صراخها خناجر في أبعد نقطة بروح شمهروش والجبل وكل من يحمل ذرة إنسان ،،وعرفت ان لأنين جسد الملائكة طنين زلزل سكون كل الأزمنة والأمكنة،،توقف الزمن هلوعا و غادر الربيع ألوانه وكل العصافير أعلنت الحداد ،،،طنين أنبت أشواكا لقنفذ مفزوع بسريري ، استحضرت كل انواع العنف التي مورست على الضحيتين بدون رحمة ودون ان يرف لها جفن العصابة ، ولمست كل الحالات النفسية المتعددة التي عايشتها بين فزع المباغتة والتهديد بالسلاح الأبيض والعزلة داخل مكان مهجور بعمق الأطلس ،،،فزعها وهي تواجه وحوش مسعورة ،،، خوفها وهي تتجرع العذاب تحت التهديد، وهي تحت سيطرة الهواجس ترقب النهاية والموت قد تكون لحظة أمل رأت فيه خلاص عذابها اللامنتهي ، ،،شلال من دموع حارقة لم تخمد حمم غضبي وألمي ،،أغمضت عيني لوهلة وتخيلت ابنتي مكانهما ،انفجر نزيف داخلي بروحي ،قفزت من هول المنظر وصرخت من ألم نفذ إلى مسام روحي تغلغل وأعلن فوزه السحيق ، لا أرى القتلة الإرهابيين سوى بقايا من أشلاء وقاذورات ومخصيين، زمرة من الفاشلين الجهل غذاؤهم التطرّف والكراهية ووهم الحور ،، ماعاذ الله ان يكونوا حيوانات فالحيوانات من أرحم الكائنات،هم بالتأكيد وحوش سريالية ،حين اعترضوا سبيل الملكين كالحظ العاثر ،،وتكالبوا عليهما بكل جبن وحقارة ،،كائنات أقفلت على رجولتها وضمائرها المحنّطة داخل درج عميق من الدناءة ورمت بالمفتاح ماوراء إنسانيتها،، انتهكوا كرامتهما، بعثروا أحلامهما واغتالوا الابتسامتين، هي أكيد جريمة قتل للروح والأمن والجمال مع سبق إصرار وترصد ،،، لم يروا بالضحيين سوى أجسادا تستباح وتنتهك خصوصياتها وحرمتها، كائنات قذرة كريهة تفوح منها ،رائحة احتراق لأدران فحولة متخيلة وتخلف ، وتطرّف مخيف، مجرد أضغاث وفقاعات من جهل وحقد هي حقيقتهم وكل الأديان والأوطان منهم براء ،،"