Researching Etiquette Figures of Hercule Poirot's Character Using Javascript Libraries React and Node.Js

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Abstract

The article examines the main linguistic features of Hercule Poirot's speech etiquette figures, particularly the French phrases, as well as the speciality of translation in the detective genre of literature using computer linguistics, as computer linguistics and machine translation issues and problems become more relevant as scientific and technological progress accelerates in the modern world. Users' needs for speedy, accurate translation of varied information delivered electronically drive the development of translation programs. The article discusses the aspects of combining Java-Script-Libraries React and Node.js to construct a project for software products, as well as the process of creating a translation program, and highlights the key responsibilities of machine translation, as well as its benefits and drawbacks.

IT project management is the process of planning, organizing, and delineating responsibility for the completion of a specific information technology goals. We have learned about computational linguistics, machine translation, and artificial intelligence systems before starting this project. Computational linguistics is thought to be a fringe area of linguistics concerned with developing automated systems for storing, processing, and using linguistic knowledge and information represented by natural language signs. Computational linguistics aims to recreate information about and in language, allowing for the automation of human intellectual functions and cognitive activity, as well as automated voice generation and computer processing and recognition. Computational linguistics is a broad field that includes the use of computer tools, such as programs, computer technologies for organization and data processing, to model the functioning of language in specific situations and problem areas, as well as the use of computer models of language in linguistics and related disciplines. Because computer modeling of language is regarded a field of programming theory in the discipline of linguistics, it only concerns applied linguistics in the latter sense. As a result, computational linguistics, like applied linguistics, is a linguistic science that combines several scientific domains, and its applied direction dictates how its work is applied to solve real-world problems.

Keywords 1

IT project management, Javascript libraries, React, Node.js, computational linguistics, machine translation, artificial intelligence systems

1. Introduction

The structure of the issue. Our research is both scientific and practical, because we researched etiquette speech formulas in French and developed an automated online translator to make the translation process easier. Machine translation is a complicated issue that has yet to be fully grasped. Its findings are important, first and foremost, in terms of improving the translation process. The study

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also underlines the unique characteristics of French word interpretation. It is important to remember that detective fiction has its own distinct style, thus the translator should take care to preserve the genre's quirks when using computational linguistics to translate.

Analysis of recent studies and publications. O. Baranov, A. Biletsky, M. Karp, E. Karpilovska, N. Kunanets, O. Selivanova and others have worked on computational linguistics research [1, 2, 3, 5, 10, 11, 12].

Computational linguistics, according to O. Selivanova, is "a fringe area of linguistics devoted to developing automated systems for storing, analyzing, adapting, and using linguistic knowledge and information represented by natural language signs." Computational linguistics aims to recreate information about and in language in order to automate intellectual operations and human cognitive activity, as well as automated voice synthesis and computer processing and recognition [5].

Parts of the overall problem that have yet to be solved. The method of developing software for the examination of Hercule Poirot's speech etiquette figures is described in this article for the first time.

The goal of the paper is to demonstrate how computational linguistics can be used to investigate the speech etiquette figures of Hercule Poirot, the protagonist in the works of English author Agatha Christie. The study's major goal was to create software that could translate phrases from French to Ukrainian.

2. Presentation of the key material

Computational linguistics is a scientific and engineering study concerned with the computational interpretation of written and spoken language, as well as the construction of artifacts that may be used to process and create language in large groups and in discourse. Computational comprehension of language also provides an understanding of thinking and intelligence because language is a mirror of the mind. Because language is our most natural and versatile mode of communication, linguistically competent computers make it considerably easier for us to engage with machines and software of all types, as well as helping us meet our requirements by processing massive volumes of textual data on the Internet. The research was based on the work of renowned linguists A.O. Biletsky, E.A. Karpilovskaya, and V.I. Perebyinis [2, 3, 4]. Computational linguistics aims to create software that can understand natural language, or the language we use on a daily basis.

2.1. Using computational linguistics to prove and describe the problem's solution

According to the analysis of the dialogues with Hercule Poirot, we have compiled a glossary of his most frequent phrases and translated them from French into Ukrainian (see Table 1). So, we can observe that the protagonist, Hercule Poirot, uses in his speech a range of different French phrases. In the dialogues, there are comparisons, epithets, metaphors, etc. Analyzing the main character's speech etiquette, we are able to deduce that etiquette is represented by three types: intracultural, subcultural, and intercultural. The whole set of national traditions and norms of behavior form the etiquette of national speech. The following criteria are always needed to evaluate the rules of etiquette: degree of formality / informality of communication; language passport of the partner (i.e., typical personality parameters determined by speech – gender, age, social origin, occupation, profession, level of culture, etc.); degree of relationship / acquaintance; communication; situation; genre and the whole genre of speech; and the level of culture of the partner. The key category of etiquette seems to us to be the category of politeness, i.e., the focus of communication on maintaining the dignity of the partner and respecting the recipient. The personal factor has a significant impact on the level of ethical communication. As a result, inner self-control and self-discipline, especially for people who are self-centered, brutal, and inflammatory, minimize errors in etiquette and cultural traditions.

Table 1
List of speech etiquette figures used by Hercule Poirot's character in French and their translation into Ukrainian

Numeration	Phrases in French	Translation of phrases into Ukrainian
A	Mon cher / Ah! Mon cher!	Мій дорогий
B	Mais oui	Саме так/ Так. Звичайно
C	comme ça	От-от
D	La Sante Sophie	Собор Святої Софії
E	Eh bien	По вагонах, мсьє
F	Envoiture, Monsieur	Ну
G	Enfin!	Нарешті
H	Voila, Monsieur	От, мсьє
I	Merci, Monsieur	Дякую, мсьє
J	Jolie femme	Красива жінка
K	Voilà ce qui est embêtant	А це вже дратує
L	Très bien, Monsieur	Чудово
M	Eh bien/ehbien/Bien	Добре; звичайно
N	Mon vieux!	Старий
O	Les affaires – les affaires!	Справи…справи!
P	Précisément!	Точно!
Q	Comment?	Як? Чому?
R	Là- là	Ну й ну
S	Tout à fait au bout, Monsieur	Аж у кінець, мсьє
T	Je crois qua vous avez un erreur	Гадаю, ви помилилися
U	En voiture!	Автомобілем!
V	Elle est jolie—et chic	Вона красива й елегантна
W	Clientèle	Клієнтура
X	Ce n'est rien. Je me suis trompé	Нічого. Я помилився
Y	De l'eau minérale, s'il vous Plaît	Мінеральної води, будь ласка
Z	Bonne nuit, Madame	На добраніч, мадам
A	La dame américaine	Та американська леді
B	Bon soir, Monsieur	Доброго вечора, мсьє
C	Vous êtes un directeur de la ligne, je crois, Monsieur. Vous pouvez nous dire	Оскільки ви – директор цієї компанії, гадаю, ви зможете нам сказати
D	Pardon, Monsieur	Вибачте, мсьє
E	Chef de train	Кондуктор
F	Déjeuner	Обід
G	Ah! c'était terrible!	О! То було жахливо!
H	C'est une femme	Це жінка

I	Oui, Monsieur	Так, мсьє
J	C’est entendu	Домовлено
K	Le docteur	Лікар
L	“Qu’est-ce qu’il y a? Pourquoi?	У чому річ? Чому?
M	Précisément	Точно
N	Que pensez-vous de ça?	Що ви думаєте про це?
O	Ah! c’est rigolo, tout ça!	Ах! Це просто смішно!
P	Mon Dieu	Боже мій
Q	Ah! quel animal!	Ну й тварина!
R	Tout de même	Тим не менш
S	Après vous, Monsieur	Після вас, мсьє
T	Mais non, après vous	Ні, після вас
U	Ce n’est rien. Je me suis trompé.	Не хвилюйтеся. Я помилився
V	Cauchemar	Страшний сон
W	Voilà une grande dame	Оце справжня леді
X	Elle est jolie femme	Вона красива жінка
Y	En permission	У відпустку
Z	Ça se voit	Це й видно
A	Vous n’éprouvez pas d’émotion	Ви не відчуваєте емоції
B	Encore un peu, Madame?	Ще трохи, мадам?
C	Mais il n’y a rien à voir	Там нічого такого немає
D	Ma foi	О Господи!
E	Tout de même,	Все-таки
F	Dans son caractère,	Не в його характері
G	Entrez	Увійдіть
H	C’est impayable	Безцінна
I	Chic	Ефектний
J	Canaille	Негідник
K	Vous êtes bien aimable, Madame	Ви дуже люб’язні, мадам
L	Diable!	Хай йому грець!
M	Grande dame	Великосвітська дама
N	Qui s’excuse s’accuse	Хто вибачається, звинувачує
O	Mademoiselle	Мадмуазель
P	Pardon, Monsieur le Comte	Вибачте, пане графе
Q	Précis	Перелік
R	Métier	Професія
S	Objet de luxe	Предмет розкоші
T	Premier service. Le dîner est servi. Premier dîner	Обслуговування першого класу. Вечерю подано. Вечеря для першого класу
U	Hors de combat	Поза грою

V	Mon cher, vous êtes épatant! C’est formidable	Мій дорогий, ви – ви дивовіжні! Це чудово
W	Per Dio	На Бога
X	Roman policier	Детективний роман
Y	C’est rigolo	Це дивно
Z	Messieurs et mesdames	Мадам та мсьє
A	C’est possible	Це можливо
B	Protégée	улюбленець; ставленик
C	Fête	вечірка; свято
D	Flair	стиль; відчуття; інтуїція
E	Revivit	відродитись
F	mon ami	Мій друже
G	Quel horreur!	Який жах!
H	N’est ce pas?	Це не воно?
I	C’est vrai	Це правда
J	Pas mal	Непогано
K	Recherche	Дослідження
L	Pas encore	Ще ні
M	Comment?	Як?
N	Merci	Дякую
O	Pardon?	Перепрошую
P	Précisément	точно
Q	hors d’oeuvres	закуски
R	Mais oui…	Ну так
S	A tout à l’heure	Побачимось (пізніше)
T	Pauvre femme	Бідна жінка
U	Oui, c’est peut-être là	Так, можливо
V	Parbleu	Чорт забирай
W	Quelconque	Будь-який
X	Le type	Хлопець, вид, чоловік
Y	Faites attention	Будьте обережні
Z	Pas ça	Нічого такого
A	pour une femme	Для жінки
B	Du tout	Зовсім,цілком
C	A la bonne heure	В потрібний час
D	un peu	трішки
E	Ça, oui	Так, так
F	Bon Dieu	Боже мій, заради Бога
G	Mon Dieu!	Боже мій! Господи!
H	C’est trop tard	Уже занадто пізно
I	Mais qu’est ce que vous faites là?	Що ти тут робиш?
J	Vous éprouvez trop d’émotion	У вас занадто багато емоцій
K	Ah, c’est ingénieux, ça!	Ах, ось це геніально!

L	Eh bien	І так, отже, ну
M	crime intime	Особистий злочин
N	au courant	В курсі
O	Vous croyez	Ви думаєте
P	ces gens là!	Такі люди, як він
Q	Encore!	Все ще! Досі!
R	la chance	Шанс, успіх,удача
S	Inconnu	Невідомий, незнайомець
T	Et alors, je vais à la pêche	А потім я йду рибалити
U	Inutile	Немає потреби
V	Une bonne idée.	Гарна ідея
W	Enfin	Нарешті
X	au fond	На дні, на глибині
Y	mise en scène	інсценування
Z	Tout de même	Все одно
A	tout à fait à part	Абсолютно окремо
B	C’est tout naturel	Це цілком природньо
C	dernier cri	Останній крик моди, сучасний
D	Du tout	Зовсім, взагалі
E	Bêtises	Дурниці, нісенітниці
F	bien entendu	Само собою, зрозуміло, звичайно
G	C’est ingénieux. Tout de même c’est bien imaginé, ça.	Це геніально. Але це добре продумано.
H	Mes enfants	Мої діти
I	Motif	Мотив, причина
J	A vous la parole!	Цей поверх – твій!
K	Mieux que ça, mademoiselle.	Навіть краще, ніж це, міс
L	Petite	Маленький, невеличкий
M	Du tout!	Зовсім! Взагалі! В порядку!
N	Rouge	Червоний
O	modus operandi	Спосіб дій, методи
P	bona fides	добросовісно
Q	Mon cher	Мій дорогий
R	Voilà	Ось
S	Bon	Правильний, хороший, відмінний, добрий
T	Mademoiselle	Мадмуазель, міс
U	mon enfant	Моя дитина
V	Alors c’est bien, mon enfant.	Тоді це добре, дитя.
W	Tout de même	Все ж, тим не менш
X	Quelle idée!	Що за ідея! Чим я тільки

		думав!
Y	Mais si!	Але! Та ну!
Z	Rouge, impair, manque!	Червоний, непарний, відсутній!
A	le sport	спорт
B	un coeur magnifique!	Прекрасне серце!
C	Vive le sport!	Нехай живе спорт!

The study of ten Agatha Christie books served as the foundation for the practical portion of our work. We produced phrases in French and translated them into Ukrainian for a full investigation of the roles of the speech etiquette elements (hereinafter SE) of the Hercule Poirot character. Following that, a tool for automating the translation of phrases from French to Ukrainian was created. We learned about computer linguistics, machine translation, and artificial intelligence systems before finishing this research.

Computational linguistics, according to A. Baranov, is a broad field that includes the use of computer tools such as programs, computer technologies for organization and data processing, and the use of computer models of language to model the functioning of language in specific situations and problem areas, not only in the field of linguistics, but also in allied fields. It is only about applied linguistics in the latter sense, because computer modeling of language can be considered a branch of programming theory in the discipline of linguistics. As a result, computational linguistics, like applied linguistics, is a linguistic science that incorporates other scientific domains, and its applied direction dictates how its work is applied to tackle real-world problems [1].

The most important tasks of machine translation. It has long been a goal of computer science to utilize computers to translate text from one language to another. Machine translation, on the other hand, has only recently become a viable tool for a larger range of applications. This valuable technology is made possible by advances in natural language processing, artificial intelligence, and computing power. The practice of employing artificial intelligence (AI) to automatically translate text from one language (source) to another (target) without the need for human interaction is known as machine translation.

Since the 1950s, one of the first applications of computing power has been translation. Unfortunately, the task's complexity exceeded early programmers' estimations, necessitating a massive capacity for data processing and storage that far outstripped the capabilities of the earliest computers. Basic machine translation was not possible until the early 2000s, when software, data, and the necessary hardware became available. To "train" computers to translate text, the initial developers used statistical language databases [7].

In 2016, Google performed an experiment to see if neural learning and artificial intelligence models might be used to teach translation procedures. In several languages, the small team methodology proved to be faster and more efficient when compared to Google's basic statistical machine translation system.

Google altered direction and selected neural machine translation as its primary development paradigm because it proved to be so effective. Other big manufacturers quickly followed suit, including Microsoft and Amazon, and modern machine translation has emerged as a viable supplement to translation technology. Machine translation is currently included in many translation management systems' workflow solutions for their users. Any automation integrated into a traditional computer translation tool (CAT tool) or a modern translation management system to automatically undertake repetitive translation chores is referred to as automated translation. Content contains triggers that alert the system that it can be automated. Inserting commonly used language, such as legal notifications, into database documents, such as content management systems [7], is one example of this.

Rule-based machine translation is one of the three most popular methods of machine translation. The original version of rule-based machine translation had a number of fundamental flaws, including the necessity for extensive human editing, the need to manually add languages, and low overall quality. It is utilized in fairly simple situations where the meaning must be grasped quickly.

A statistical model of the associations between words, phrases, and sentences in a text is created via statistical machine translation. It applies the model to the second language to transform these elements into a new language. As a result, it improves rule-based machine translation while still having many of the same issues. Neural machine translation is another sort of machine translation. As previously stated, the neural model of machine translation, like neural networks in the human brain, uses artificial intelligence to learn languages and continuously enhance this information. Neural machine translation is fast becoming the standard in the development of the machine translation engine in general [10].

Machine translation programs provide the following advantages:

1. Quick access and fast speed. Working with a translation firm frequently involves extra time and effort, and the translation program is always available. We get a comprehensive translation of the entire text in only a few seconds. This allows a person to rapidly grasp the overall message, and if the application is set up to translate texts on the required themes, only minor tweaking is required.

2. Efficiency in terms of costs. If we hire professional translators, we will have to pay them based on the number of pages they translate. You do not need to pay to use the online machine translation system; all you need is internet access.

3. Information security and protection. Any information, including personal information, can be trusted to the machine translation system (ie business correspondence, financial reports). Confidentiality is guaranteed by the translation program.

4. Versatility and flexibility. The capacity to modify a certain topic area (specialist dictionaries) or a single book or text is referred to as flexibility (user-created dictionaries). When a customer changes the subject from fiction to scientific and technical materials, the translator usually specializes in that field, thus mistakes are unavoidable. As a result, the machine translation system is widely used. The user merely needs to connect the vocabulary that is focused on the appropriate themes correctly [10].

Machine translation programs, on the other hand, have a number of drawbacks:

1. Electronic translation algorithms can successfully translate simple portions of speech, but they can’t always handle terminology, sentences, or colloquial speech.

2. Some electronic translation tools do not actually translate words; instead, they transliterate them. In such circumstances, synonyms must be chosen and the sentence’s structure must be rearranged. As a result, the translation is frequently revised or edited. And it’s a lot of labor that takes a lot of time and effort [10].

In terms of machine translation system development in Ukraine, two systems have been well-known since 2014: Ruta plaj (ProLing Office) and Pragma by Trident Software.

The creation of a project for a software product using the JavaScript libraries React and Node.js. In the practical portion of our research, we designed a tool that allows a translator to search for words and phrases in French in PDF files and translate them into Ukrainian using JavaScript programming abilities and knowledge of JavaScript libraries. PDF files (works by Agatha Christie) are converted during processing so that the application may read them as a line of code. After then, the text is broken down into individual words. The words are then “filtered”. If the words compared by the computer match the array of terms in the library’s dictionary, they are classified as French. After that, a single word is translated. It’s worth mentioning that the application doesn’t only translate single words; it also translates entire statements. There are various limitations to machine translation, like with any other technology. Because a perfect translation requires the computer to be improved to the point where it can differentiate French prefixes, suffixes, and affixes. Because some terms in French are of English origin, the program incorrectly labels them as French, resulting in an incorrect search. However, we want to develop the software product in the future and focus on resolving issues that surfaced throughout the research (see Figures 1-3).

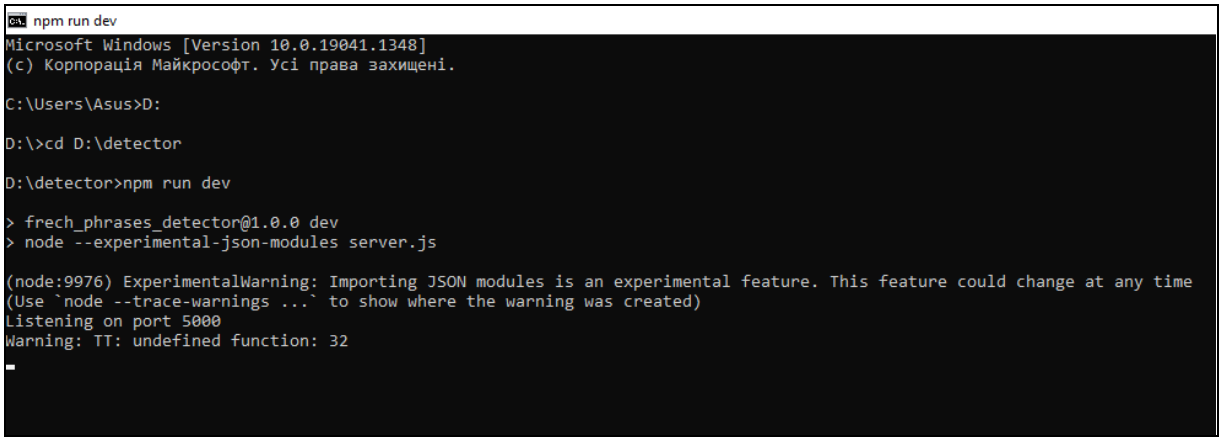

Figure 1: The commands to execute the application from the command line

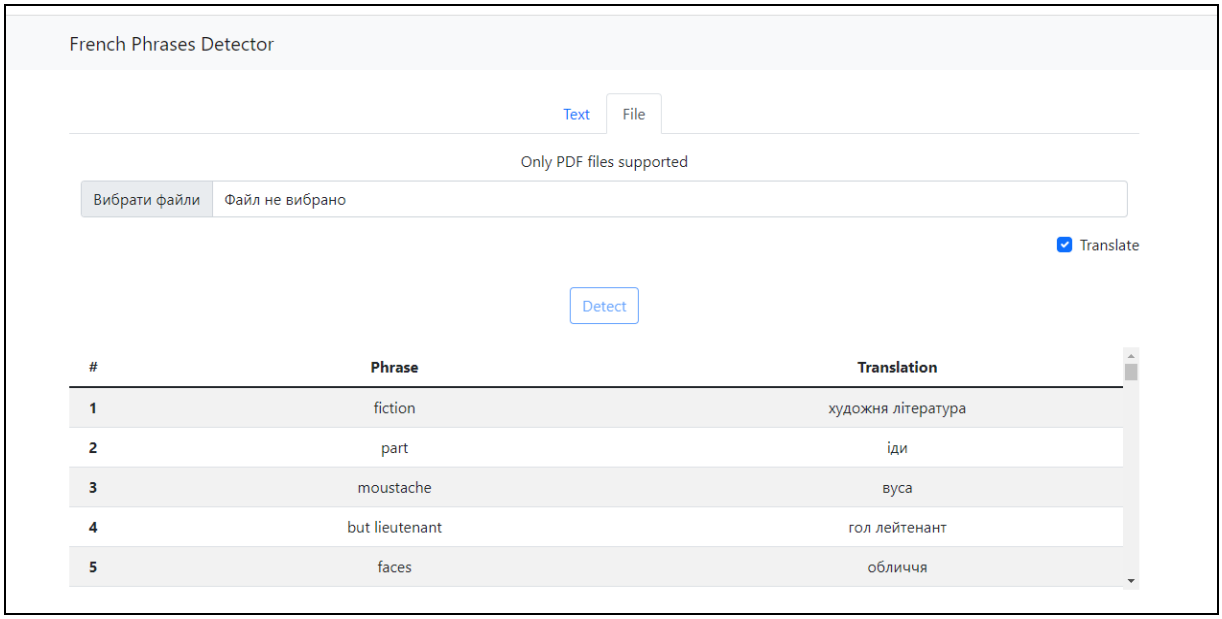

Figure 2: The built website features an online translator with a demonstration of the translation process using a selected work as an example

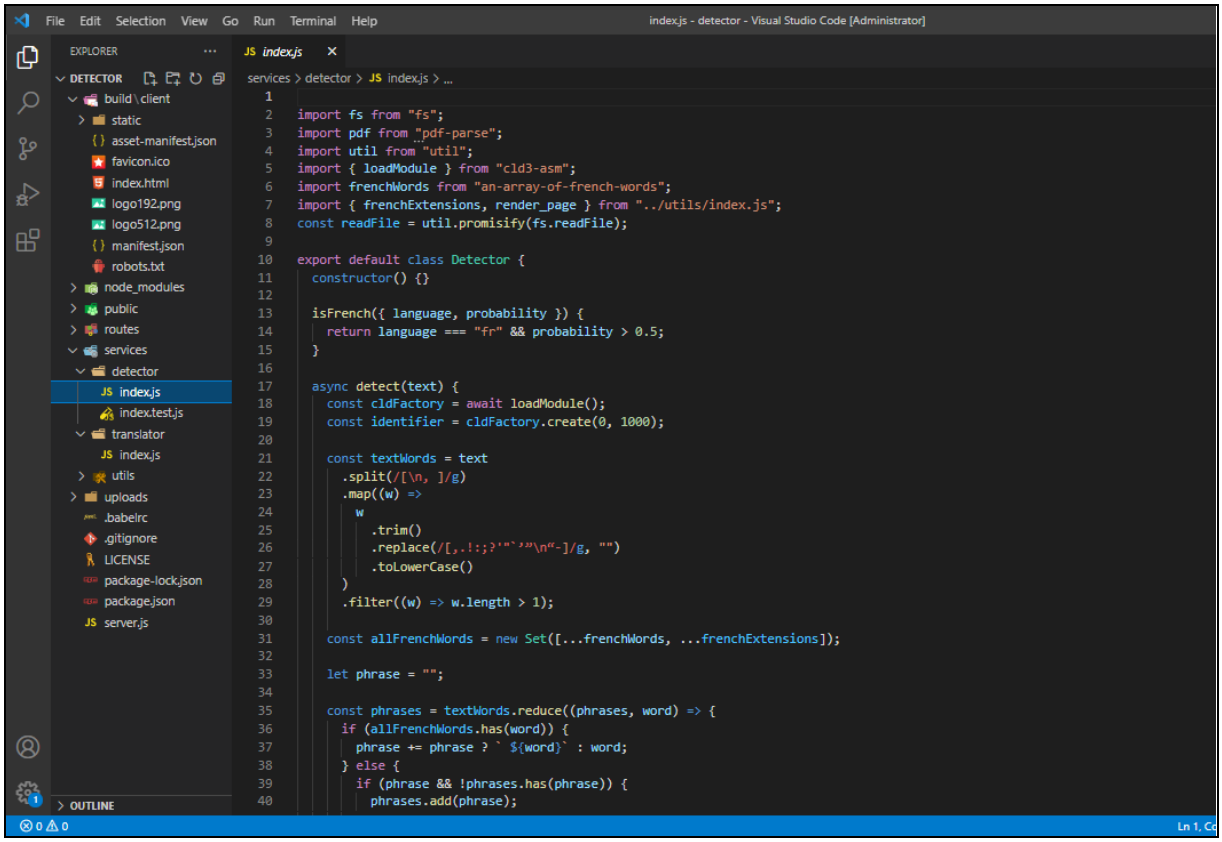

Figure 3: A portion of the computer code in the VSCode environment

The French Phrases Detector algorithm was created using the JavaScript programming language. JavaScript is a text-based computer language that is used to make web pages interactive on both the client and server sides. If HTML and CSS are the languages that provide web sites structure and style, JavaScript adds interactive components that keep the user engaged. An Amazon search box, a news summary video embedded in The New York Times, or an update to your Twitter feed are all instances of JavaScript that you can use every day. By converting a static page into an interactive one, JavaScript enhances the performance of a web page. As a result, JavaScript provides functionality to web pages.

JavaScript is mostly used in web browsers and web applications. However, this programming language is also utilized in software, servers, and embedded hardware controllers outside of the Internet. Here are some of the most important JavaScript tasks: Web page interactivity; web and mobile application development; web server development and server application development; game development [8].

JavaScript is a scripting language used by many browsers to execute dynamic tasks on the Internet. The impacts of JavaScript can be seen in the “Show on Click” drop-down menu, additional content provided to the page, and dynamically changing colors of components on the page, including some features. There would only be HTML and CSS on the web if JavaScript didn’t exist. They confine you to a few web page implementations. 90% (if not more) of online sites would be static, with only dynamic updates such as CSS-based animations [9] being used.

We chose JavaScript as our programming language due to its numerous benefits. There is less contact with the server when using JavaScript, because you may examine the user’s input before sending the page to the server. This reduces server traffic, resulting in a lower stress on your server. Visitors don’t have to wait for the page to reload to check whether they forgot to type something because they get immediate feedback. This programming language’s improved interactivity allows for the creation of interfaces that respond when the user hovers over them or activates them with the keyboard. Advanced interfaces let you utilize JavaScript to add features like drag-and-drop sliders to give your site visitors a more appealing experience.

However, several faults in the program's development were caused by a number of flaws in the JavaScript programming language. The following are some of JavaScript's limitations: JavaScript cannot be considered a full-fledged programming language because it lacks key JavaScript features. Because such functionality is not available, JavaScript cannot be utilized in network applications. JavaScript has no support for multithreading or multiprocessing. JavaScript is a lightweight, interpreted programming language for embedding interactivity into static HTML pages.

The developed program is built on top of popular JavaScript libraries like React and Node.js. The first is used to create a back-end site, while the second is used to create a front-end site. React is a user interface development library. React isn't a framework, and it wasn't even created with the web in mind. It is used for visualization as well as collaborating with other libraries. React Native, for example, can be used to make mobile apps, while React 360 can be used to make virtual reality programs. There are many additional possibilities.

Developers use React in conjunction with ReactDOM to construct web applications. React and ReactDOM are frequently discussed in the same context as other real-world web development frameworks and are used to tackle the same problems.

The fundamental goal of React is to reduce the number of mistakes made when creating user interfaces. This is accomplished by employing stand-alone logical code components that explain various aspects of the user interface. These elements are then integrated to form a complete user interface. The majority of the visualization effort is abstracted by React, allowing you to focus on the design. React is a package that aids developers in the creation of user interfaces in the form of a tree of individual components known as components. A component is a collection of HTML and JavaScript that contains all of the code required to display a tiny portion of a bigger user interface. Each of these elements can be mixed and matched to create increasingly sophisticated aspects of the program. The rest is merely information.

Node.js (Node) is a server-side JavaScript execution platform that is open source. Node is ideal for constructing real-time apps like chat, news feeds, and web messaging that require a continual browser connection to the server.

Node.js is designed to run on a dedicated HTTP server with only one thread and one process active at any given moment. Programs written with Node.js are event-driven and run asynchronously. The Node platform generates code that does not follow the usual approach of receiving, processing, sending, waiting, and receiving. Instead, Node sends small requests one after the other without waiting for answers, processing incoming requests in a continuous stack of events. This is in contrast to traditional models, which execute larger, more sophisticated processes and numerous threads at the same time, with each thread waiting for a suitable response before proceeding.

According to Node.js author Ryan Dahl, one of the key advantages is that it does not impede input/output. Some developers criticize Node.js, claiming that if a process demands a large number of cycles, the application will be stalled, which can lead to program failure [6]. Because of the vast number of tiny processes on which the Node code is based, proponents of the Node.js approach say that CPU processing time is less of an issue.

The combination of these two frameworks served as the foundation for the creation of our program project. The primary distinction is that Node.js is a server framework, whereas React.js is a user interface framework. Both frameworks are widely used and have their own set of benefits and drawbacks. When creating a server-side web application, such as an online streaming platform, Node.js is the framework to use. When you need to construct a project with changing states, such as dynamic inputs, buttons, and more, React.js is the way to go. Both frameworks can be used in the same project. The Node.js framework may be used to create a backend, and React.js can be used to create an interface. Netflix is the best example of framework integration. Both frameworks are backed by a large and active community. It is up to you to decide which one is best for you based on your needs and requirements.

3. Conclusions

To summarize, it is impossible to translate detective literature without taking into account the genre peculiarities of the features in such works, especially when automated translation is used. The accuracy and precision of the text content are the main challenges of machine translation. After all, understanding the sequence of events in detective works necessitates a high-quality translation from the original language. To understand the transfer concept processes, the translator must adhere to the stylistic demands of this genre and remain detailed.

A solid understanding of JavaScript has been a prerequisite for developing our application. We have also drawn on our understanding of Node.js, React, and machine learning principles. The findings could aid in the advancement of knowledge in the field of natural language processing. Reading through theoretical information in the topic frequently frustrates people, leading them to abandon it before realizing its actual potential. However, we have attempted to describe the action algorithms in a concise manner utilizing the frameworks and packages indicated. Learning about React and Node.js provides a new set of abilities that makes working on web AI much easier.

A text can be translated into French using the automated translator we developed during our research. The program project, on the other hand, still needs to be developed and refined. We want to improve the program so that it can translate complete paragraphs of text rather than just individual words and phrases.

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