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## The Challenges of Machine Translation from Telugu Literary Text to English: Textual and Contextual Analysis

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Abstract: Translation from one language to another is both an art and science. Machine Translation (MT) has been in existence since 1940s and has flourished in recent times due to the proliferation of the web. MT plays predominant role by enabling faster access in getting required translation. However, it is difficult to accept the reality that translation is effective when it comes to literature. Literature is not just a text; it is a collection of expressions, emotions and feelings. Although artificial intelligence is a lead for MT and referred as an intrinsic human quality, it is seldom capable of defining or analysing. Consequently, machine translation particularly for literature facess several challenges. The current paper aims to explore the challenges of MT as an aid used to translate Telugu modern short fiction (Source Language) into English language (Target Language) by online Google Translator (GT). Similarly, the study focusses on various types of language efficacies and textual related hitches such as: semantics, syntax, cohesion and coherence followed by semantics extractions and discourse resolutions. This analysis delves critically into the specific hurdles faced by MT in the context of parsing difference between standard text and machine generated translation.

Key words: Machine Translation, Challenges, Google Translator, Syntax, Semantics, Cohesion, Coherence.

#### 1. Introduction:

Education system is encompassed by advanced innovative technologies and techniques. Machine translation is a trendy term in the present education system. Computers have become more dominant in the translation craft. Currently Neural Machine Translation (NMT) data base model is predominantly using in the translations and stands at evolved version. The research article emphases on Neural Machine Translation of select text and testing the NMT performance has significant role in the connotations of semantics, syntax, cohesion and coherence in language translation. These are the essential and critical elements in the language. When the elements are translated successfully, then only the translation will be creative, readable, and meaningful. The research article discusses on these areas

of selected text and how far NMT is successful with them.

Google Translator is taken to test and compare the accuracy of retrieved information. The paper displays the Source Language Telugu (SL) sentences and its translation into Target Language, English (TL). The SL sentences are also shown in the transliterated form which is produced by the machine. The modern Telugu short fiction, "Metilda", written by Gurujada Apparao has been chosen for the research.

#### 2. Grammar is Part and Parcel of Language:

Any language is a system of meaningful sounds. In fact, it is an intervened system of many systems. That means a language operates in a systematic way, according to established rules. Hence, grammar is the complete bunch of governing rules. Language constitutions are flexible as well as grammar rules are also flexible. The dialect of a language might differ from one language to another in terms of vocabulary, grammar and pronunciation. "Language in all its forms and manifestations, that is all languages of the world and all the different uses to which in the various circumstances of mankind they are put, constitutes the field of linguistics". (R.H. Robins' General Linguistics, 2023)

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This article concentrates on the language subjects' semantics, syntax, cohesion and coherence of translated discourse.

#### 3. Semantical Interpretation:

In the language, semantics are basic units in the sentence and play important role to make sentence meaningful. Sentence provides information of who is doing, what to whom, when action is done, place of action, manner of action etc. For example, "Metilda is a married woman" in this sentence each word has meaning and talks about the subject. Here 'Metilda' is an agent word, 'is a married woman' is a predicate, which tells about state of the subject or gives information about who is Metilda. Semantic refers specific function or meaning of the word or phrase in the Coming to the framework of machine translation, semantic role refers to the specific function, that a word or phrase plays within a sentence.

In machine translation, recognizing and properly translating these semantic roles are crucial for producing accurate and natural translations. It is a big challenge to choose appropriate words in the place of SL text with suitable vocabulary: synonyms, antonyms, homophones, homographs and homonyms. Vocabulary words are varied from language to language, place to place, region to region, religion to religion and continent to content.

MT has to recognize the connections between the words and translating correctly without changing the original meaning. This is important to retrieve accurate The study focused primarily on the information. semantic examination from the source text. There are some vocabulary errors and inappropriate words found in the translation.

#### Example 1:

SL: తోవంట పెళ్లేటప్పుడు రోజు,..... ('Tōvaṇṭa veḷlēṭappuḍu rōjū,....')

TL: 'Every day when I go to dinner,'

If we observe the above translation, MT takes words in the form of sounds or verbs. In SL, Telugu word 'తోవంట' is translated as 'the dinner,', machine did not get the similar word in data base. Finally, it is crosschecked with other words and replaced by a

familiar word which suits to that particular word. So

that, for the word 'తోవంట', machine knew only 'వంట' so that it has been translated as 'dinner'. ్లో వ' means way, 'route' or 'road' 'in that way' is the meaning. As a result, the semantical word is wrongly translated and it leads to provide wrong information. Semantical error noticed under predicate of the sentence.

#### Example 2:

SL: 'మంచయితే మనకేలా?. ('Mañcayitē manakēlā?.)

TL: 'What if we have a bed?'

In another example sentence identified a semantical error, 'మంచయితే' is translated into 'bed'. Here also machine took the word which it knows. In the data model it has a similar word 'మంచం', so that is translated into 'bed', which is not equal word as well as not suitable to the sentence. The meaning of it is 'if good'.

Likewise, 'శ్రీరంగనీతులు' and 'కన్పుల కట్టినట్లు' words express idiomatic meanings. Those are not translated into TL and left in transliterative script. Machines are unable to recognize such texts. So that they transliterated as it is. As a result, the complete sentence became meaningless.

SL: 'నీలా శ్రీరంగనీతులు చెప్పిన వాళ్లని చాలామందిని చూశాను.

'Nīlā śrīranganītulu ceppina vāļlani cālāmandini cūśānu

TL: I have seen many people like you, as Sriranganeethulu said.

In the same way, SL word, పెరటిపేపు is

translated into 'wedding'. With these we can understand that Nouns are replacing with different words which are

translated in TL SL: మోము అందమూ నా కన్ను ల కట్టినట్టు వుండి మరుతునన్న మరపురాకపాయను. as 'neem tree'

not related to the context.

Example 5:

and 'పెళ్ళాం' is

Mōmu andamū nā kannula kaṭṭinaṭṭu vuṇḍi marutunanna marapurākapāyanu. TL: The beauty of the wax is like a veil to my eyes, and I am afraid of forgetting.

SL: ఇంటి పెరటిపేపు వున్న డాబా ఏొంతకు పెళ్లలేదు కొన్నాళ్ళు.

Perațivēpu vunna dābā pontaku veļlalēdu konnāļļu

IL: Have not gone to the terrace where the neem tree is in the backyard

 $\mathrm{SL}$ : 'నా పెళ్ళాం పైపు చూస్తున్నా వా?'

Nā peļļām vaipu cūstunnāvā?

TL: Are you looking at my wedding?

Some more semantical errors can be observed from the following table:

Sentence is a group of words. These group of words will be Parts of speech. POS are the different kinds of words in English which are essential in language. Meanings and words are formed with their etymology, form, suffix, prefixes, collocations etc,. Such word and meaning related errors can be noticed from the above table. The words, 'పెళ్ళాం', 'బుద్ధిమంతురాలు',

clauses and sentences. The syntax deals with the construction of sentence with case, predicate, phrase and clause. Lexical and Syntax cohesion is one of the essential elements in linguistics that make sentences in a text relate to one another (Baker, 2018). Furthermore, Billy and Chunyu (2012) found that the quality of MT output increases with the number of lexical cohesion devices used. Thus, lexical cohesion devices can be used

Source Language (Telugu)	Target Language (English)	Error
'నా పెళ్ళాం పైపు చూస్తున్నా వా?'	'Are you looking at my wedding?'	Noun
('Nā peļļām vaipu cūstunnāvā?')		
నా పెళ్ళాం బహు బుద్ధిమంతురాలు.	my wife is worthy	Adjective
(Nā peļļām bahu bud'dhimanturālu)		
మొగుడు అప్ప ఒక ముదుసలి	Mogu was a stubborn person	Noun
(Moguḍu appa oka mudusali)		
మెటిల్దా ఇంటి ఎదుట జాలంగా నడుస్తూ ఉంటిని	I was walking in front of Matilda's	Adverb
(Meţildā iṇţi eduţa jālaṅgā naḍustū uṇţini )	house, like a net.	
పెద్ద కళ్ళూ, <mark>కోర</mark> మీసాలూ.	Big eyes and a mustache.	Adjective
(Pedda kaļļū, kōra mīsālū)		is missing

'మొగుడు' 'జాలంగా', and 'కోర' translated as 'wedding',

'worthy', 'Mogu', 'like a net' and 'a' respectively which are not suitable semantically in the sentences.

#### **Syntactical Interpretation:**

Syntax is a set of rules that govern structure of a sentence. It is a branch of linguistics in language, which deals with the organization of words into phrase,

assess the results of MT. (The Use of Lexical..2016)

Moreover, to make meaningful sentence elements are important. They are word order and subject verb agreement. The present study explores the quality of translation in order from SL text to TL text by Google Translator.

Word order (structure) in a sentence is different from one language to another language. Telugu language is a highly structured, disciplined, polished and rich in terms of its expression's constructions and style.

NMT is translating simply one language to another language by following data model like direct method, sentence translation method, example method, phrase method and Nueral method with appropriate structures without taking much time. But the quality of information that we retrieve is not up to the mark. As like as word order agreement accurate translation is also significant in a sentence. The words in a sentence has to agree with the other terms like, number of persons, subject etc,. The study has noticed some sentences which are not translated into Target Language with the apt meaning.

In English the structure of the sentence is 'Subject + Verb + Object (SVO)' where as in Telugu it is 'Subject + Object + Verb (SOV)'.

The SL example sentence, 'ఆ రోజుల్లో రెండు మార్లే పని మీద పెరట్లోకి వచ్చి పెంటనే ఇంట్లోకి పెళ్ళిపోతూ వచ్చింది'

is composed about Metilda who is the central character in the short fiction. Regarding to this context the sentence has been befallen. But in TL sentence, 'In those days, Marley came into the yard twice after work and immediately went home.' here was no gender identification. Even in a paragraph which is taken as whole, the MT is unable to extract the meaning and link but were the sentence and the cohesion of the text.

Example 1:

SL: ఆ రోజుల్లో రెండు మార్లే పని మీద పెరట్లోకి వచ్చి వెంటసే ఇంట్లోకి వెళ్ళిపోతూ వచ్చింది.

Ā rōjullō reṇḍu mārlē pani mīda peraṭlōki vacci veṇṭanē iṇṭlōki veḷḷipōtū vaccindi TL: In those days, Marley came into the yard twice after work and immediately went home

In the above sentence 'వచ్చింది' is a verb indicating the female, which is about Metilda. In the TL there is no mentioning word of the gender. Who does come and go? is questionable. Likewise, 'పెళ్ళిపోతూ' is

telling about routine and repeated action of Metilda. But in the TL it has shown as past action. So, the tense is also not conveying proper meaning in the sentence. The word 'came' has to be replaced by 'she comes'. Syntactical corrections found in the sentence are: no subject and verb agreement and also different usages of main verb. *Example 2*:

While translating another sentence, 'మరి యెన్నడూ ఇటు కన్ను తిప్పకు' ('Mari yennaḍū iṭu kannu tippaku') is translated into TL as "Never look back again." In this sentence there is no figurative meaning. Regarding to the context it is about Metilda. In this sentence the word 'ఇటు' (itu) is 'this' or 'this side' is missed. If we do post editing to the context, Metilda's husband warns to the tenant boy that 'do not look at Metilda ever.' But the TL translation has shown differently which gives exactly opposite meaning.

Example 3:

SL: మరి యెన్నడూ ఇటు కన్సు తిప్పకు

Mari yennaḍū iṭu kannu tippaku TL: "Never look back again."

While translating the SL sentence ''చూశాను, ఎదుట నిలిచుంటే కనపడరా,' (Cūśānu, eduṭa nilicuṇṭē kanapaḍarā,) is translated as 'I saw it, can't you see it if 'you' stand in front of it,'. In this 'you' is a second personal pronoun occurred unnecessarily. But in SL text there is no discussion about that. Rather than 'you', 'any one' is quite suitable. Here also structure of the sentence is missing. Structural words can make connection between or among the words in a sentence and finally

makes meaningful sentences. Where in MT is not effectively using the closed words: pronouns, prepositions, conjunctions etc., consequently syntactical errors are augmented. As a result, the sentence description has changed. So that there is logical and syntactical connection missing.

#### 5. Cohesion in Translation:

Cohesion means the action or fact of forming a united whole or sticking together. A sentence which has cohesion it expresses or conveys the meaning accurately. Where there are no grammatical and lexical connections there the sentence does not give thoughtful and senseful meaning. To make a sentence meaningful, structural words are important. Similarly, while translating text suitable structural and linking words should be used. Then only one can retrieve information without changing the context meaning. With the following example that can be understood.

#### Example 1:

 $\mathrm{SL}$ : '....మెటిల్దా పైపు చూడవలెననీ తిరిగి ఎన్నడైనా చూస్తివా నీకు నాకు సేస్తం సరి' అన్నాడు.

(...Metildā vaipu cūdavalenani tirigi ennadainā cūstivā nīku nāku nēstam sari' annādu.)

TL: "...I want to look at Matilda and see if she ever looks back," he said. "You and I are friends."

Here, the NMT system uses pronouns in an unrelated manner. 'I' is the wrong pronoun instead of 'I" there has to be 'you' which is the correct usage. Similarly in the TL sentence 'she' is the suitable one. As

a result, the complete piece of English sentence has been translated meaninglessly. This shows lack of consistency. The study identified that some times MT is getting confused in maintaining cohesion in the TL text.

Example 2:

SL: రామారావు నన్స్టు సౌజ్ఞు చేసి పిలిచి రహస్యంగా 'మెటిల్గాను చూశావా?' అని అడిగాను.

(Rāmārāvu nannu saujña cēsi pilici rahasyangā'meţildānu cūśāvā?' Ani aḍigānu.)

TL: Rama Rao politely called me and asked me secretly, 'Have you seen Metilda?'

With the above example sentence non-verbal sign 'పాజ్ఞ చేసి' has been used which is very important in the sentence. That says how narrator is calling the tenant boy with sign. But in the translation that is not mentioned. Therefore, the meaning of the hidden expression of the entire sentence is not completely articulated. To derive cohesion in translation of a creative work seems to be tough for NMT.

The study also tested cohesion on rhetorical aspects of selected text. It has analysed literary figures and terms of the language which are effectively applied by using similes and metaphors. The descriptive theory of the text is organized based on the intention of the speaker. This carries a relation between text in the sentence and with the rhetoric expressions. Figures of speech are very important in creative literature. They emphasise the aesthetic beaty of the literary text. The parallel sentence, which are translated by MT are good. But it is not justified to showcase the beauty of literariness effectively. From SL to TL text MT has applied NMT based method to translate. The following table illustrates the differences between SL and TL text which are translated by Google Translator.

	stated by Google Translator.
SL Text	TL Text
సెమలీ పింఛము వలె ఒడలును	Like a peacock's feather,
Nemali piñchamu vale oḍalunu	
చిత్తరవు చట్రంలో ప్రతిమలాగ మెటిల్దా యింటి ఎదుట చీమ లాగా నిమ్మ లంగా	Like a statue in a picture frame, like a silent ant in front of the house.
Cittaravu caṭranlō pratimalāga meṭildā yiṇṭi eduṭa cīma lāgā nim'malaṅgā	
మల్లీపువ్పు లాంటి బట్టలు కట్టి బడికి పోతూ,మెటిల్దా ఇంటిఎదుట జాలంగా నడుస్తూ ఉంటిని	I used to walk in front of Metilda's house, dressed like a jasmine flower, going to school.
Mallīpuvvu lāṇṭi baṭṭalu kaṭṭi baḍiki pōtū కీలుబొమ్మల్లాగా మెటిల్దా ప్రవేశించి గుమ్మం లోపున నిలబడింది	Matilda entered like a puppet and stood at the door.

Kīlubom'mallāgā meţildā pravēśinci gum'mam lōpuna nilabaḍindi

From the above table we can notice that there are more figurative words used by applying in SL ఉపమ అలంకారాలు (similes) by the speaker with some comparisons to elevate his intention of expressions. These are adding additional exquisiteness to the text. These are translated into TL as similes (literary figures). For example, 'పించము వలె', 'చిత్తరవు చట్రంలో ప్రతిమలాగ', 'మల్లీపువ్వు లాంటి బట్టలు కట్టి', 'ఇంటిఎదుట జాలంగా నడుస్తూ' and 'కీలుటొమ్మల్లాగా'. Which are translated in TL as it is. But the literariness of the expression is not that much effective as like as Source Text.

#### 6. Coherence in Translation:

Coherence is a logical flow of ideas and the overall meaning in the text or on context. It makes sense to the reader to understand the written text fully. In translation also coherence has to make connection with the context then only the whole meaning will be conveyed without changing. It constructs link between the sentence and among the sentences. So that only the main aim of the source's theme, moral, idea and message is conveyed properly. Coming to the role of NMT, coherence is very crucial. NMT has to work on the context but not on words. To work on this machine takes data from the large -scale corpus from the deeper to get this element level. The study analyses coherence by taking a small paragraph from the selected short fiction.

#### Source Language (Telugu)

' నాకు నీవూ, నీ స్నేహితుడు రామారావూ మరొక గొప్ప ఉపకారం చేశారు. మీ మాటలవల్లా, చేష్టలవల్లా <mark>నా</mark> భార్య <mark>యోగ్యురాలని</mark> తెలుసుకొన్నాను. ఆలోచించుకోగా ఆనాటి నుంచి కళ్లెం వదిలేసాను. నా పెళ్ళాం బహు <mark>బుద్ధిమంతురాలు</mark>. ఇచ్చిన స్వీచ్ఛసైనా పుచ్చుకోలే<mark>దు</mark>. ఎక్కడికి కావలిస్తే అక్కడికీ పెళ్ళమన్నా<mark>ను</mark>. ఎవరిని కావలిస్తే వారిని చూడమన్నా<mark>ను</mark>. ఎక్కడికి పెళ్ళ కోరల<mark>ేదు</mark>. ఎవరిని చూడకోరలేదు. <u>నాకు నీతో</u> లోకం మరి ఎవరితో ఏం పనంది. అలాగే <mark>సంచరించింది...</mark>

(' Nāku nīvū, nī snēhituḍu rāmārāvū maroka goppa upakāram cēśāru. Mī māṭalavallā, cēṣṭalavallā nā bhārya yōgyurālani telusukonnānu. Ālōcincukōgā ānāṭi nunci kaļlem vadilēsānu. Nā pelļām bahu bud'dhimanturālu. Iccina svēcchanainā puccukōlēdu. Ekkaḍiki kāvalistē akkaḍikī veļļamannānu. Evarini kāvalistē vārini cūḍamannānu. Ekkaḍiki veļļa kōralēdu. Evarini cūḍakōralēdu. Nāku nītō lōkam mari evaritō ēm panandi. Alāgē sancarincindi...')

#### Target Language (English)

'You and your friend Rama Rao have done me another great favour. I have come to know that my wife is worthy of me by your words and actions. Thinking about it, I have abandoned my wife since that day. My wife is very intelligent. I have not taken away any of the freedom she has given me. I have asked her to go wherever she wants. I have asked her to see whoever she wants. I have not asked her to go anywhere. I have not asked her to see anyone. What is the world to me with you or anyone else? That is how she has wandered...

While translating SL paragraph into TL paragraph the study has found some coherence related hitches. For instance, observation shifts on adjectives which are translated by MT. TL adjectives are not suitable to the context. Verbs are translated as verbs but not chosen apt and appropriate verbs. For example 'యాగ్యురాలని' is used as 'worthy', which does not suit.

As well, the SL word 'కళ్లెం వదిలేసాను' ' is shown as 'abandoned' in TL, which gives different meaning.

Narrator is expressing that he gave complete freedom to her wife. From the above paragraph we can notice more pronoun errors occurred by NMT. Such as: in SL '. ఇచ్చిన స్వేచ్ఛనైనా పుచ్చుకోలేదు.' It is translated into TL as ' have not taken away any of the freedom'. By this

as a nave not taken away any of the freedom. By this sentence we can understand that NMT is hardly successful in the showcasing the coherence between sentences. The selected paragraph is about narrator's wife, Metilda. By the word, 'పుచ్చుకోలేదు' denotes the

female gender(な). But the TL text is shown the narrator

('I'). As a result, the narration of the context is changed. Another sentence 'ఎక్కడికి పెళ్ళ కోరల<mark>ోదు</mark>. ఎవరిని

చూడకోరలేదు' is for Metilda. However, this has translated as "I have not asked her 'to go anywhere'. I have not asked her 'to see anyone'", which are expressed completely in opposite meaning. 'సంచరించింది' is a verb

which tells about Metilda's actions. To the context that word is describing about Metilda's living style. In TL it is shown as 'wandered' which is not suitable.

When the narration shifts from one person, to another person the NMT is unable to catch the connection. Even gender is also not being caught properly. Hence, more gender and pronouns related errors occurred. The study observed from the above paragraph is, in the place of first-person MT used third person reference and in the place of third person narration, first person is used. This confusion has raised up due to lack of SL's structure. Choice of the words are also not correctly fit for the passage. Consequently, MT is partially successful in attaining the coherence.

Grammatical accuracy, cohesion and coherence play a crucial role on any language translation. It should be observed meticulously even in MT. NMT is been improving its ability to produce translations that are natural, logical and faithful to the source text to enhance the overall quality of communication in the Target language and beyond.

### 7. Challenges for NMT in Maintaining semantic, syntactic, Cohesion and Coherence:

Despite upgrading and advancements in NMT, still some advances are required. With the above analysis the study has come with some interpretations of errors. They are grouped as textual and contextual errors.

7.A. Semantical and syntactical Errors: Different Semantical and Syntactical errors are found within the sentences. MT system needs to understand the underlying meanings, idiomatic expressions, expressions of SL in the sentences to provide contextually appropriate translations. By identifying the semantic role in the SL, the system can ensure that TL retains the same meaning with structure. These are not successfully carried by Google Translator. As a result, ambiguity and confusion occurred in handling semantical and syntactical errors. Therefore, incorrect modifications and lack of contextual understanding happened on labelling the suitable words.

**7.B.** Coherence and Cohesion Errors: Cohesion and Coherence errors are found between the sentence and among the sentences. In certain cases, MT is struggling

with choosing suitable pronoun references in the sentences. Consequently, NMT fails to notice correct relationship between subject and object; subject and verb in the sentences or in the paragraph. Certainly, NMT is successfully conveyed the meaning of a sentence when they are simple sentences, even when adjusting for differences in the structures or cultural context. But when it comes to translating a complex sentence with multiple ideas, NMT is unable to break down the text and in generating the sense of it into English version. These are clearly noticed with extracted example sentences. In TL text MT is incapable to follow the logical order and ideas of the discourse. Even the sentence structure in the target language is quite different as a result corrections and meaninglessness are happening. Consequently, MT is struggling to translate effectively, to ensure the cohesion and coherence to the context and rarely succeeded.

NMT fails to translate complex texts which are with idiomatic and phrasal verb expressions. It is unable to catch out with cultural reference related linkers, logical and interjection situations in the context. As a result, many grammatical errors occurred. The study also identified rhetorical text corrections also. The NMT is unable to catch figurative meanings successfully. Hence, lack of the coherence observed in the literary text where translation has done directly by text to text.

Recent advancements in NMT, such as Transformer models (like Open AI's GPT or Google's BERT), have greatly improved both cohesion and coherence. These model uses certain mechanisms to understand the relationship between words and concepts, making them more effective at producing translations that flow smoothly and make sense contextually. Additionally, post-editing by human translators is often employed to correct any lingering issues with cohesion or coherence, especially in more complex or creative text types.

#### 8. Conclusion:

In this research article, we critically analysed selected short fiction text by machine translation. It Endeavoured to give an outline of the complexities involved in linguistic and language grammar. The real factor of MT is forcing function of AI. It has to work eminently by the instructions which works on data-driven approach of Neural Machine Translation. The selected SL text is translated by given intuition of what is involved or stored in data-driven MT. The mapping of words, meanings, segments of phrasal sentences from SL to TL is the crux of the matter. These translated segments are combined to produce the output. The main objective of the research is to analyse and identify the errors on semantics, syntax, cohesion and coherence. That has been done successfully by tracing different

errors respectively. These errors are interpretated critically and came with suitable suggestions under each segment. The source text, 'Metilda' under gone with comprehensive study and identified certain challenges of MT. Two types of language divergencies are identified. They are discussed under semanticsyntactical errors and cohesion-coherence errors. Coming to the translation, the quality of MT is unparalleled and effective with all the texts except creative text or literature. As a result, it shows the lowest indexes as expected result. There is no emotional engagement and narrative presence. One should not and cannot take MT results as final. Despite development and upgradations, MT is still under experimental mode. As a result, machine translating the semantics, syntax, cohesion and coherence segmentations in the language are uncertain to give hundred percent results. Post editing by human supervision is inevitable. NMT yet to improve in terms of fluency, accuracy and overall quality of the translation.

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