



Identification of Online Statistical Translation and Text Issues in Communication Technologies

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ABSTRACT

Now-a-days Artificial Intelligence growing fast towards new communication technologies and it provide easiness to the users as per there demand. Mobile/cell phone is one of the most reliable examples of latest technologies. It is easy to communicate with peoples of different countries and also in different languages. For the communications different technologies were used to solve this major issue around the globe. Translation is one of them to translate the one language to another language. The research methodology is based on the five phases. In this research study, analysis of the text by process on online translator, bilingual corpus (English and Sindhi) were used. After the translation from English to Sindhi and Translation from Sindhi to English many issues were faced at the various communication technologies. When input data of large sentence to the translator it takes more time for the translation, but mostly this issue came in translation of text from English to Sindhi. Moreover, the results are based on translated text of English Languages and total three hundred fifty two words (352) were used.

Key words: Artificial Intelligence, Communication Technologies, English text, Mobile phone, Sindhi Text, Translation,

1. INTRODUCTION

1.1 Artificial Intelligence

Artificial intelligence used in every domain of field. The translators are digital in AI that not only used for translation but different meaning of word and also help for analysis of sentiments from word. Sentiments analysis is the task of Artificial intelligence[1] [2]. Now a day's Artificial intelligence mostly used in portable devices. Machine learning is a structure of artificial intelligence that include

programming to perform task by using programming and measure the machines how to think and process data as input by using algorithms, and get best results from machines[3]. AI used in almost all social media applications, online shopping, hotels and other devices [4][5][6].

1.1.1 Types of the AI

- i. Reactive Machines
- ii. Limited Memory
- iii. Theory of mind
- iv. Self-awareness

1.1.2 Applications of the AI

- i. Natural Language Processing
- ii. Speech Recognition
- iii. Machine Learning
- iv. Deep Learning Platforms
- v. Text Analytics and NLP

1.2 AI in Communication Technologies (Cell Phones)

Now-a-days AI growing fast towards new communication technologies and it provide easiness to the users as per there demand. Mobile/cell phone is one of the most reliable examples of latest technologies. Cell phone is most commonly used in anywhere and everywhere either ordinary cell phone, smart cell phone and android based phones. These cell phones are mostly used by users. These cell phones different applications and lot of features were introduced and provide easiness to the users for communications [7][8][9]. The most important feature of Artificial intelligence face recognition used in smart phones as security purposes to unlock their smart phones. Face recognition uses in AI and Machine learning algorithms to accurate identify the faces of smart phone owners to unlock their phones. AI improves and add feature in cell phones [10][11][12].

1.3 AI in Translation of Text

Now-a-days, it is easy to communicate with peoples of different countries and in different languages[13]. For the communications different technologies were used to solve this major issue around the globe. Translation is one of them to translate the one language to another language [14]. This translation system is the part of AI and in AI translation is divided into two different types of translation; one is machine translation and neural network translation. Simply translation is the way of to connect two persons/peoples by using through translator, when both users used different languages. Translation is very helpful for almost every person who uses social media applications [15]. In social media application people used different language everyone cannot understand that's why immediately need of translator, that time very helpful and provide way of communication with almost every person. Translator reduces the gap of communication. Talk about translation two languages are used in between used translator. Language structure and grammar is different[16][17].

1.4 Data Set

In this research study two different languages (Sindhi and English) were used. Sindhi language has fifty two letters to form a variety of words as shown in Figure 1(b)[12][18]. Sindhi is morphological rich because contains huge number of letters [12]. In English language twenty six alphabetical letters to form words as shown in Figure 1(a). Now-a-days it is an easy to translate different languages to English and same way to other languages, but for the translation different communication platforms was used.

A	B	C	D	E	F	G
H	I	J	K	L	M	N
O	P	Q	R	S	T	U
V	W	X	Y	Z		

(a) English Alphabet

Sindhi Alphabet											
ا	ب	پ	ت	ٺ	ٺ	ڻ	ڻ	ڻ	ڻ	ڻ	ڻ
چ	چ	چ	ڇ	ڇ	ڇ	ڇ	ڇ	ڇ	ڇ	ڇ	ڇ
ز	س	س	ص	ض	ط	ظ	ع	غ	ف	ق	ڪ
گ	گ	گ	گ	گ	ل	م	ن	ڻ	و	ھ	ي

(b) Sindhi Alphabet [10]

Figure 1: English and Sindhi Alphabet

2. RESEARCH METHODOLOGY

The research methodology is based on the six phases; first one is the Input data. Input data is collected from different sources. Second phase of this research methodology is arranges the suitable data in proper sequence which is required for the fourth phase of the research. Third part of research is the most important part in which selection of tools/translators/communication technologies were decided[19]. In this phase selected data were translated into required target and in this target issues related to the communication technologies are identified and discussed and this phase of issues is the last phase of the research as shown in Figure 2. This research works is depends on textual analysis of terms, resource of language used as translation to other language. In this research study, analysis of the text by process on online translator, bilingual corpus (English and Sindhi) were used. The corpus of this research based on English and Sindhi, the text related about two famous politicians of two different countries. The main of this research methodology is to translate the text of English language to Sindhi language. During translation many issues were identified and discussed in brief[20][21].

This research methodology depends on three steps such as: first is input text used as English by taking from online Dawn newspaper¹ retrieved on dated 14 February 2020. Total number of English words used in this research work was two hundred forty one (241). The second step is process text on online translator² by using English input text to translate into Sindhi output text and T shows as text used in methodology. Third step is output in the form of other language after translation.

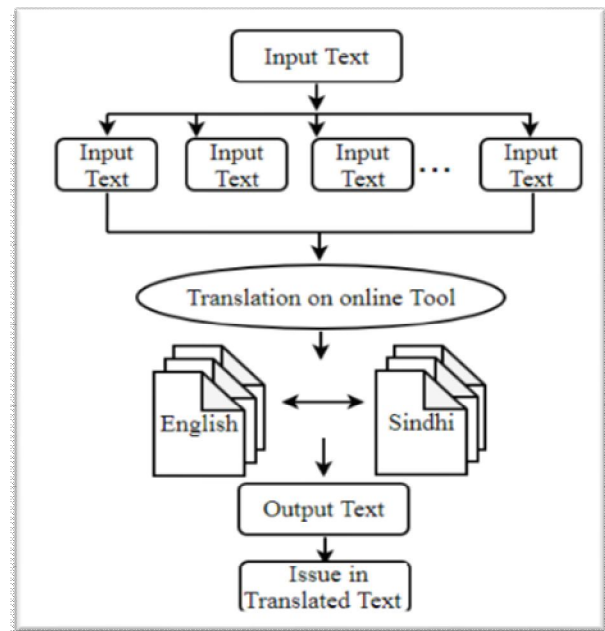


Figure 2: Research Methodology

¹ Dawn Newspaper <https://www.dawn.com/news/1532819/turkish-president-to-address-joint-sitting-of-parliament-on-feb-14>

² Translator <https://www.stars21.com/translator/english/sindhi/>

3. TRANSLATED TEXT

Translation is the easy way of communication with one language to another language by using different communication technologies (translators). Many translators are not working properly and still they have lot of issues when translate source language to targeted language. After translation number of count should be variable before and after translation. Grammar and syntax issue, but mostly syntax issues comes when translation task were performed or machine learning task on text. The source text and targeted text shows in Table 1 and Table 2. Source text is English text and the targeted text is Sindh and also from Sindhi to English.

3.1 Issues in Translated Text

After the translation from English to Sindh and Translation from Sindhi to English many issues were faced at the various communication technologies. These issues were highlighted in below Table 5. When input data of large sentence to the translator it takes more time for the translation, but mostly this issue came in translation of text from English to Sindhi. Same many other issues were addressed in the table. In below table all issues were defined and highlighted with their examples.

Table 1: English text with Translated into Sindhi text

Text	Original English Text	Translated Sindhi Text
T1	Turkish President Recep Tayyip Erdogan will address the joint sitting of parliament on February 14, announced National Assembly Speaker Asad Qaiser on Thursday.	ترڪ صدر آصف علي زرداري 14 فيبروري تي پارليامينٽ جي گڏيل ويٺي کي خطاب ڪندي چيو ته قومي اسيمبلي اسپيڪر اسد قيسر اعلان ڪيو آهي
T2	This will be the fourth time that Erdogan addresses the Pakistani parliament.	هيءَ چوٿين وقت ٿيندو جيڪا ترڪيءَ واري پاڪستاني پارليامينٽ کي خطاب ڪندي
T3	The speaker, during today's NA session, said that he will hold consultations with all the parliamentary leaders on the matter, reported Radio Pakistan.	اسپيڪر، اڄ اين اين جي سيشن جي دوران، چيو آهي ته کيس معاملي ۾ سڀني پارلياماني اڳواڻن سان صلاح مشورو رکندي، ريڊيو پاڪستان ٻڌايو
T4	Erdogan is expected to arrive in Pakistan for a two-day visit on February 13.	ترڪيءَ جي توقع ڪئي آهي ته 13 فيبروري تي ٻن ڏينهن جي دوري لاءِ پاڪستان ۾ پهچي ويندي
T5	The Turkish president was scheduled to pay an official visit to Pakistan on October 23 last year to cement relations between the two countries and to extend full support to Pakistan's stance on the Kashmir issue. The visit, however, was postponed after Turkey's involvement with a military offensive against Kurdish militants in Syria that raised tensions with Washington and other Western nations.	ترڪ صدر کي ٻنهي ملڪن جي وچ ۾ لاڳاپا کي ختم ڪرڻ ۽ ڪشمير جي مسئلي تي پاڪستان جي موقعي تي مڪمل حمايت وٺائڻ لاءِ گذريل سال 23 آڪٽوبر تي پاڪستان جي سرڪاري دور جو طئي ڪيو ويو. ان کان پوءِ، ترڪ شام شام ۾ ڪردش عسڪريت پسندن خلاف فوجي آپريشن سان ترڪيب ٿيڻ کانپوءِ واشنگٽن ۽ ٻين مغربي قومن سان تنقيد بلند ٿيڻ کانپوءِ ملتوي ڪئي وئي
T6	Ahead of the October visit, Prime Minister Imran Khan had said: "The government and the people of Pakistan are looking forward to accord a warm welcome to President Erdogan."	آڪٽوبر جي دوري جو دورو ڪري، وزيراعظم عمران خان چيو هو ته: "پاڪستان ۽ حڪومت جا ماڻهو اڳتي ترڪيءَ جي صدر کي گرم گرم جي خوشحالي جي منظوري لاءِ منتظر آهن"
T7	Erodgan last visited Pakistan in 2016, during the PML-N-led government, during which he also addressed the parliament. He was accompanied by his wife Emine and a high-level delegation. They were received at the Nur Khan Airbase by then-Prime Minister Nawaz Sharif, his cabinet members and senior officials, first lady Kulsoom Nawaz, his daughter Maryam Nawaz and his younger brother Shehbaz Sharif.	ايروڊگن آخري ڀيرو پاڪستان 2016 ۾ پاڪستان جو دورو ڪيو، مسلم ليگ ن جي اڳواڻي واري حڪومت دوران، جنهن دوران هن پارليامينٽ کي خطاب ڪيو. هو پنهنجي زال ايمين ۽ هڪ اعليٰ سطحي وفد سان گڏ هو. ان کان پوءِ وزيراعظم نواز شريف پاران نور نور خان اينر بيس، سندس ڪابينه جي ميمبرن ۽ سينئر عملدارن، پهرين خاتون ڪولوم نواز، سندس ڌيءَ مريم نواز ۽ سندس ڀاءُ شهباز شريف پاران مليل هئي
T8	Pakistan Tehreek-i-Insaaf (PTI) lawmakers had boycotted the session to protest against Nawaz Sharif for his alleged corruption.	پاڪستان تحريڪ انصاف انيسف (ع آنيوز) مسلم ليگ خلاف احتجاجي مظاهرو ڪرڻ لاءِ اسيمبلي جي ميمبرن کي خطاب ڪندي ڪيو هو
T9	eLearning is simple. eLearning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.	هڪ روايتي ڪلاس روم eLearning سادو آهي. eLearning جي رسائي تعليمي نصاب کان ٻاهر ڪرڻ لاءِ برقي ٽيڪنالاجيون استعمال ڪيا آهن. اڪثر حالتن ۾، اها هڪ حقيقت کي وهم، پروگرام يا ڊگري مڪمل طور تي آن لائن پهچائي ٿو

Table 2: Sindhi text with Translated into English Text

Text	Translated Sindhi Text	Translated English Text
T1	ترڪ صدر آصف علي زرداري 14 فيبروري تي پارليامينٽ جي گڏيل ويڻي کي خطاب ڪندي چيو ته قومي اسيمبلي اسپيڪر اسد قيصر اعلان ڪيو آهي	Addressing a joint sitting of parliament on February 14, Turkish President Asif Ali Zardari said that National Assembly Speaker Assad Qaiser has announced
T2	هيءَ چوٿين وقت ٿيندو جيڪا ترڪيءَ واري پاڪستاني پارليامينٽ کي خطاب ڪندي	This will be the fourth time that Turkey will address the Pakistani parliament
T3	اسپيڪر، اڄ اين اين جي سيشن جي دوران، چيو آهي ته کيس معاملي ۾ سڀني پارلياماني اڳواڻن سان صلاح مشورو رکندي، ريڊيو پاڪستان ٻڌايو	Speaker, during today's NNG session, said that he would consult with all parliamentary leaders in the matter, Radio Pakistan reported
T4	ترڪيءَ جي توقع ڪئي آهي ته 13 فيبروري تي ٻن ڏينهن جي دوري لاءِ پاڪستان ۾ پهچي ويندي	Turkey is expected to arrive in Pakistan on February 13 for a two-day visit
T5	ترڪ صدر کي ٻنهي ملڪن جي وچ ۾ لاڳاپا کي ختم ڪرڻ ۽ ڪشمير جي مسئلي تي پاڪستان جي موقعي تي مڪمل حمايت وڌائڻ لاءِ گذريل سال 23 آڪٽوبر تي پاڪستان جي سرڪاري دور جو طئي ڪيو ويو. ان کان پوءِ، ترڪ شام شام ۾ ڪردش عسڪريت پسندن خلاف فوجي آپريشن سان ترڪيب ٿيڻ کانپوءِ واشنگٽن ۽ ٻين مغربي قومن سان تنقيد بلند ٿيڻ کانپوءِ ملتوي ڪئي وئي	The Turkish President was scheduled for an official visit to Pakistan on October 23 last year to end relations between the two countries and to extend full support to Pakistan's stand on the Kashmir issue. Then, Turkey was postponed after a series of military operations against Kurdish militants in Syria, raising tensions with Washington and other Western nations.
T6	آڪٽوبر جي دوري جو دورو ڪري، وزيراعظم عمران خان چيو هو ته: "پاڪستان ۽ حڪومت جا ماڻهو اڳتي ترڪيءَ جي "صدر کي گرم گرم جي خوشحالي جي منظوري لاءِ منتظر آهن"	During an October visit, Prime Minister Imran Khan said: "People of Pakistan and the government are looking forward to Turkey's President's warm welcome.
T7	ايرودگن آخري ڀيرو پاڪستان 2016 ۾ پاڪستان جو دورو ڪيو، مسلم ليگ ن جي اڳواڻي واري حڪومت دوران، جنهن دوران هن پارليامينٽ کي خطاب ڪيو. هو پنهنجي زال ايمين ۽ هڪ اعليٰ سطحي وفد سان گڏ هو. ان کان پوءِ وزيراعظم نواز شريف پاران نور نور خان اينر بيس، سندس ڪابينه جي ميمبرن ۽ سينئر عملدارن، پهرين خاتون ڪولوم نواز، سندس ڌيءَ مريم نواز ۽ سندس ڀاءُ شهباز شريف پاران مليل هئي	Erdogan last visited Pakistan in 2016, during the PML-N government, during which he addressed the parliament. He was accompanied by his wife Eminem and a high-level delegation. Then Prime Minister Nawaz Sharif was received by Noor Khan Airbase, his cabinet members and senior officials, first lady Kolom Nawaz, his daughter Maryam Nawaz and his brother Shahbaz Sharif.
T8	پاڪستان تحريڪ انصاف (ع آنيوز) مسلم ليگ خلاف احتجاجي مظاهرو ڪرڻ لاءِ اسيمبلي جي ميمبرن کي خطاب ڪندي ڪيو هو	Pakistan Tehreek-e-Insaf (UN News) addressed members of the Assembly to protest the Muslim League
T9	هڪ روايتي ڪلاس eLearning سادو آهي eLearning روم جي رسائي تعليمي نصاب کان ٻاهر ڪرڻ لاءِ برقي ٽيڪنالاجيون استعمال ڪيا آهن. اڪثر حالتن ۾، اها هڪ حقيقت کي وهم، پروگرام يا ڊگري مڪمل طور تي آن لائن پهچائي ٿو	eLearning is simple. eLearning a traditional classroom curriculum out of access to electronic learning technologies use hy.aksr conditions, a fact that vhm, or degree program completely online delivered.

Table 3: Processing English to Sindhi

Text	Total No: of Words	Total No: of Characters	Processing Time (seconds)
T1	23	160	26.822
T2	12	77	27.614
T3	24	151	21.451
T4	15	77	11.789
T5	63	398	2.767
T6	30	174	2.709
T7	65	398	3.268
T8	19	127	2.748
T9	101	643	39.895

Table 4: Processing Sindhi to English

Text	Total No: of Words	Total No: of Characters	Processing Time (seconds)
T1	25	123	6.373
T2	12	68	3.648
T3	24	125	2.619
T4	18	80	3.237
T5	68	315	4.198
T6	31	147	4.393
T7	72	358	3.237
T8	22	111	6.265
T9	39	200	3.229

Table 5: Issues in Transliteration

S.NO	Issues in Transliteration
1	Input of the large sentence of text in translator, it takes time to translate.
2	<p>Difficult words did not translate in translator and it omits the words after translation.</p> <p>For Example: English Sentence: This will be the fourth time that Erdogan addresses the Pakistani parliament.</p> <p>Translated Sentence in Sindhi: هيءَ چوٿين وقت ٿيندو جيڪا ترڪيءَ واري پاڪستاني پارليامينٽ کي خطاب ڪندي. In this sentence omit the Erdogan word from text.</p>
3	<p>Text was not translated properly and also many words of English after translation were same as the word was written in English.</p> <p>For Example: English Sentence: eLearning is simple. eLearning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.</p> <p>Translated Sentence in Sindhi eLearning سادي آهي. ايلينرننگ تعليمي نصاب جي رسائي کان روايتي طبقي جي ٻاهران تائين پهچڻ لاءِ اليڪٽرانڪ ٽيڪنالاجيز استعمال ڪندي رهيو آهي. اڪثر ڪيسن ۾، اهو هڪ طريقو آهي، پروگرام يا ڊيگري مڪمل طور تي آنلائن پهچائي ٿي.</p>
4	<p>The input of 32 words gives to the translator its results after translation is 38 words, It means increase the words after translation.</p> <p>For Example: English Sentence: eLearning is simple. eLearning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.</p> <p>Translated Sentence in Sindhi eLearning سادي آهي. ايلينرننگ تعليمي نصاب جي رسائي کان روايتي طبقي جي ٻاهران تائين پهچڻ لاءِ اليڪٽرانڪ ٽيڪنالاجيز استعمال ڪندي رهيو آهي. اڪثر ڪيسن ۾، اهو هڪ طريقو آهي، پروگرام يا ڊيگري مڪمل طور تي آنلائن پهچائي ٿي.</p>
5	<p>Word count is different when translate from English to Sindhi and translate from Sindhi to English.</p> <p>For Example: Original Sentence: This will be the fourth time that Erdogan addresses the Pakistani parliament.</p> <p>Translated Sentence in Sindhi: هيءَ چوٿين وقت ٿيندو جيڪا ترڪيءَ واري پاڪستاني پارليامينٽ کي خطاب ڪندي</p> <p>Translated Sentence in English: eLearning is simple. eLearning a traditional classroom curriculum out of access to electronic learning technologies use hy.aksr conditions, a fact that vhm, or degree program completely online delivered</p>

4. RESULTS AND DISCUSSIONS

In this research study used nine sentence of original text containing total three hundred fifty two words based on translation as shown in Table 1 and Table 2. Table 1 shows the result of translation perform from original English text to Sindhi text and same way other table 2 is translated from Sindhi text to English text. Number of word counts is different before and after translation of text. The whole statistical results are present in Table 3 and Table 4. In both tables four parameters that is: Text (T), total number of words, total number of characters and processing time were studied. The processing is performed on English to Sindhi and the result of T1 contains twenty three words, total numbers of characters are one hundred sixty and processing time was 26.822 seconds. T2 contains (twelve words, total number of characters seventy seven and processing time 27.614 seconds). Same procedure was adopted for the T3 contains twenty words, total number of characters seventy one hundred fifty one and processing time was measured 21.451 seconds. T4 contains fifteen words, total number of characters seventy seven and processing time was recorded 11.789 seconds. T5 contains sixty three words, total number of characters three hundred ninety eight and processing time was counted 2.767 seconds. T6 contains thirty words, total number of characters one hundred seventy four and processing time was measured 2.709 seconds. T7 contains sixty five words, total number of characters three hundred ninety eight and processing time was 3.268 seconds. T8 contains nineteen words, total number of characters one hundred twenty seven and processing time was 2.748 seconds. T9 contains one hundred one words, total number of characters six hundred forty three and processing time was obtained 39.895 seconds.

In Table 4 processing time for sentence is performed English to Sindhi the results are T1 contains twenty five words, total numbers of characters are one hundred twenty three and processing time was recorded 6.373 seconds. T2 contains twelve words, total number of characters sixty eight and processing time was 3.648 seconds. T3 contains twenty four words, total number of characters one hundred twenty five and processing time was obtained 2.619 seconds. T4 contains eighteen words, total number of characters eighty and processing time was measured 3.237 seconds. T5 contains sixty eight words, total number of characters three hundred fifteen and processing time was 4.198 seconds. T6 contains thirty one words, total number of characters one hundred forty seven and processing time was 4.393 seconds. T7 contains seventy two words, total number of characters three hundred fifty eight and processing time was 3.237 seconds. T8 contains twenty two words, total number of characters one hundred eleven and processing time was 6.265 seconds. T9 contains thirty nine words, total number of characters two hundred and processing time was 3.229 seconds. These statistical results of translation based on online translator. A graphical result of total number of words in sentence is shown in Figure 3. This figure is gives us comparison between

the sentences translated from English to Sindhi and Sindhi to English. Same way a graphical result of total number of characters in sentence is shown in Figure 4. This figure is gives us comparison between the sentences translated from English to Sindhi and Sindhi to English. Also, graphical result of total processing time for English to Sindhi and Sindhi to English sentences is shown in Figure 5. This figure is gives us comparison between the sentences translated from English to Sindhi and Sindhi to English.

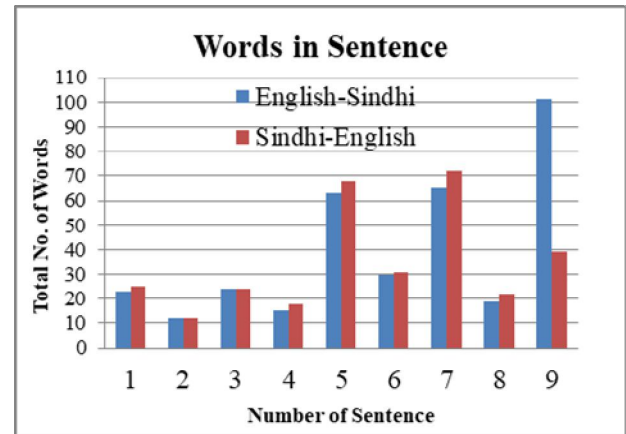


Figure 3: Total Numbers of Words in Sentence

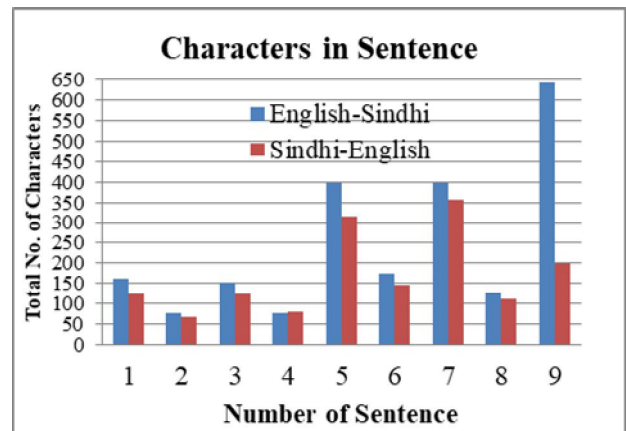


Figure 4: Total Numbers of Characters in Sentence

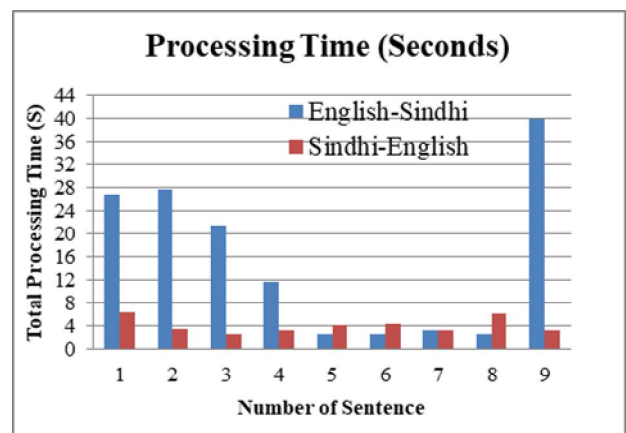


Figure 5: Total Processing Times in Sentence

5. CONCLUSION AND FUTURE WORK

This research is focused on the identification of issues in communication technologies and it based on the online translation of two languages English and Sindhi. English is translated to Sindhi and Sindhi translated to English language. The main aim of the study to highlight the issues in communication and Sindhi Text creates a summary of statistical translated text from original text of English translated to the Sindhi text and translated to English text. When the translators run on different communication platforms (browsers and cell phones) and it may face some issues regarding translation of different languages. Moreover, the results are based on translated text of English Languages and total three hundred fifty two words (352) were used. However, the translated result shows that the translation from English to Sindhi Language takes more time then text translated from Sindhi to English and translation from English to Sindhi Language takes more characters and words then text translated from Sindhi to English. Future work of this research work to translate huge amount of text in different area of fields by using different supervised and unsupervised techniques for the appropriate results and provide easiness to the users at different communication technologies.

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