

AUTOMATED MULTI-LANGUAGE DOCUMENTS SUMMARIZATION USING SEMANTIC APPROACH : A SRUVEY

N.Thilagavathy

*Department of Information Technology
Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry
Email-thilagarajsanran@gmail.com*

V.Padmapriya

*Department of Information Technology
Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry
Email- priyakumars123@gmail.com*

Vobbillisetty himani

*Department of Information Technology
Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry
Email- himanivobbillisetty@gmail.com*

S.Deivayanai

*Department of Information Technology
Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry
Email- deivayani12@gmail.com*

J.Vinothini

*Department of Information Technology
Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry
Email- vinothini1171998@gmail.com*

Abstract- In the trendy age of Machine Learning , automatic strategies for making summaries of documents become more and more vital. During this paper we tend to propose a system that utilizes a mixture of applied linguistics and heuristic strategies to extract key sentences from multiple documents and summarize there by eliminating redundancies and maintaining the coherency of the chosen sentences to get the outline that works on the thought of breaking down the gathering of documents (i.e.,) clusters into topics every cluster described as a combination of topics, includes a likelihood distribution representing the importance of the subject for that cluster. The topics successively described as a combination of words, with a likelihood distribution representing the importance of the word for that topic .When redundancy elimination and sentence ordering, outline is generated in numerous views supported the question.

Keywords-text summarization, Machine Learning, Data mining, semantic similarity approach.

I. INTRODUCTION

Text summarizers mechanically construct summaries of a language document. To summarize a chunk of writing is to gift the most points in a very succinct kind. Work on machine-controlled text report began over forty years ago. The expansion of the net fresh this add recent years, and report systems are setting out to be applied in areas like tending and digital libraries . Many commercially obtainable text summarizers are currently on the market. Examples embody Capito from Semiotis, Inxight's summarizer, the Brevity summarizer from LexTek International, the Copernic summarizer, TextAnalyst from Megaputer, and Whiskey from Conver speech. These programs work by mechanically extracting elect sentences from a chunk of writing. A real outline compactly expresses the gist of a document, revealing the essence of its content. A lot of of the knowledge crucial to a corporation exists within the sort of unstructured text data. That is, the knowledge doesn't reside in a very info with well-defined strategies of organization and access, however is expressed in language and is contained among numerous documents like websites, e-mail messages, and alternative electronic documents. The method of distinguishing and extracting valuable data from such information repositories is thought as text data processing. Tools to try to to the work should transcend easy keyword categorization and looking. they have to verify, at some level, what a document is regarding. Report could be a key data processing construct that involves techniques for locating a compact description of a dataset. Easy report strategies like tabulating the mean and

automatic report generation

II. DATA MINING

Data mining is a knowledge base subfield of computing. It's the process method of discovering patterns in giant knowledge sets ("big data") involving strategies at the intersection of computer science, machine learning, statistics, and information systems. The goal of the {information} mining method is to extract information from a knowledge set and rework it into a lucid structure for additional use. Apart from the raw analysis step, it involves information and knowledge management aspects, knowledge pre-processing, model and illation considerations-interestingness-metrics, complexness concerns, post-processing of discovered structures, visualisation, and on-line change. {data mining|data methoding} is that the analysis step of the "knowledge discovery in databases" process, or KDD. the particular data processing task is that the automatic or semi-automatic analysis of huge quantities of information to extract antecedently unknown, attention-grabbing patterns like teams of information records (cluster analysis), uncommon records (anomaly detection), and dependencies (association rule mining). This sometimes involves victimisation information techniques like spacial indices. These patterns will then be seen as a form of outline of the computer file, and will be employed in additional analysis or, for instance, in machine learning and prognostic analytics. for instance, {the knowledge|the info|the information} mining step may determine multiple teams within the data, which might then be accustomed get a lot of correct prediction results by a choice web. Neither the information assortment, knowledge preparation, nor result interpretation and coverage is a component of the information mining step, however do belong to the KDD method as further steps. The connected terms knowledge dredging, knowledge fishing, and knowledge snooping see the utilization {of knowledge|of knowledge|of information} mining strategies to sample components of a bigger population data set that ar (or could be) too tiny for reliable applied mathematics inferences to be created concerning the validity of any patterns discovered. These strategies will, however, be employed in making new hypotheses to check against the larger knowledge populations.

Big knowledge concern large-volume, complex, growing knowledge sets with multiple, autonomous sources. With the quick development of networking, knowledge storage, and therefore the knowledge assortment capability, huge knowledge ar currently quickly increasing all told science and engineering domains, together with physical, biological and medical specialty sciences. This paper presents a HACE theorem that characterizes the options of the large knowledge revolution, and proposes an enormous processing model, from the information mining perspective. This data-driven model involves demand-driven aggregation of knowledge sources, mining and analysis, user interest modeling, and security and privacy concerns. we have a tendency to analyze the difficult problems within the data-driven model and conjointly within the huge knowledge revolution.

2.1 data mining in the filed of summarization

Summarization has been and continues to be a hot analysis topic within the knowledge science arena. whereas text account algorithms have existed for a moment, major advances in linguistic communication process and deep learning are created in recent years. several web firms ar actively business enterprise analysis papers on the topic. Salesforce has printed numerous groundbreaking papers presenting progressive theoretic account. In could 2018, the most important account dataset as unconcealed during a projected supported by a Google analysis award. While there's intense activity within the analysis field, there's less literature on the market concerning universe applications of AI-driven account. one among the challenges with account is that it's onerous to generalize. for instance, summarizing a article is extremely totally different to summarizing a money statement. Bound text options like document length or genre (tech, sports, finance, travel, etc.) build the task of account a heavy knowledge science drawback to unravel.

There are 2 main approaches to summarization:

Extractive summarization: it works by choosing the foremost meaningful sentences in a writing and transcription them during a comprehensive manner. This implies the outline sentences ar extracted from the article with none modifications.
Abstractive summarization: it works by paraphrasing its own version of the foremost vital sentence within the article.

There also are 2 scales of document summarization:

Single-document summarization: the task of summarizing a standalone document. Note that a "document" may sit down with various things looking on the utilization case (URL, internal PDF file, legal contract, money report, email, etc.).

Multi-document summarization: the task of collection a set of documents (usually through a question against a info or search engine) and generating a outline that comes with views from across documents.

applications of summarization:

media observance, newsletters, money analysis, social media selling, medical cases, books and lietrature, automatic content creation ,programming languages.

III.SURVEY OF LITERATURE

Luca Calgriero introduced Associate in Nursing item set-based technique[1] for summarizing a document supported news articles. we have a tendency to projected Feedback news driven summarizer for higher performance of summarisation vital feedback given on sentences is employed to supply new, necessary outline. Word mixtures elect in sentences with high score of feedback denotes ideas as relevant. It improves the standard of created outline compared to its original version Dr.Chintan shah[2] bestowed methodology|a way|a technique} on extractive single document text summarisation mistreatment Deep Learning technique - SelfOrganizing Maps (SOM) that could be an unattended technique and Artificial Neural Networks (ANN) that is a supervised method. The work involves investigation the impact of adding mapped sentences from Kyrgyzstani monetary unit image, and re-training the inputs on ANN for ranking the sentences. In individual experiment of the hybrid model, a special mapping of Kyrgyzstani monetary unit is extra to the ANN network as input vector. Hybrid model uses random Gradient Descent update set of parameters in Associate in Nursing reiterative manner to reduce the price operate. additionally, mistreatment back-propagation weight is being adjusted for the input vector. The empirical results show that the hybrid model mistreatment mapping clearly provides a comprehensive result and improves the F-score on the average five-hitter on ROUGE-1, ROUGE-2, ROUGE-L and ROUGE-SU4. This novel technique has been enforced on totally different documents, that ar publically offered on Opinosis Dataset

Kaiz Merchant[3] projected an automatic text summarisation system that generates short and helpful summaries from prolonged judgements. He makes use of a language process technique known as latent linguistics analysis (LSA) to capture ideas inside one document. He used 2 approaches- one document primitive approach and a multi-document trained approach reckoning on the kind of input case (criminal or civil). Our information was collected from official government sites that enclosed Supreme Court, tribunal and district charge and our model achieved a median ROGUE-1 score of zero.58. Finally, our system was approved by skilled lawyers. within the future we have a tendency to aim to supply higher continuity inside our generated summaries and judge our system a lot of accurately.

Atif khan[4] introduced a genetic linguistics graph based mostly approach for multi-document theoretic summarisation. linguistics graph from the document set is made in such the simplest way that the graph nodes represent the predicate argument structures (PASs), extracted mechanically by using grammatical category labeling (SRL); and therefore the edges of graph correspond to linguistics similarity weight determined from PAS-to-PAS linguistics similarity, and PAS- to-document set relationship. The PAS-to-document set relationship is painted by totally different options, weighted and optimized bygenetic formula. The salient graph nodes (PASs) ar hierarchal supported changed graph based mostlyranking formula. so as to cut back redundancy, we have a tendency to utilize maximal marginal connexion (MMR) to re-ranks the PASs and use language generation to get outline sentences from the highest hierarchal PASs. Experiment of this study is disbursed mistreatment DUC-2002, a regular corpus for text summarisation

Munesh Chandra and vikrant gupta's analysis focuses on developing a applied mathematics automatic text summarisation approach[5], Kmixture probabilistic model, to enhancing the standard of summaries. KSRS employs the K-mixture probabilistic model to determine term weights during a applied mathematics sense, and more identifies the term relationships to derive the linguistics relationship significance (SRS) of nouns. Sentences ar hierarchal and extracted supported their linguistics relationship significance values. the target of this analysis is so to propose a applied mathematics approach to text summarisation. Author proposes a K-mixture linguistics relationship significance (KSRS) approach to enhancing the standard of document outline results. The K-mixture probabilistic model is employed to see the term weights. Term relationships ar then investigated to develop the linguistics relationship of nouns that manifests sentence linguistics. Sentences with vital linguistics relationship, nouns are extracted to create the outlineconsequently.

One of the most issues in analysis on automatic summarisation is that the inaccurate linguistics interpretation of the supply. mistreatment specific domain information will significantly alleviate the matter. Laura Plaza Morales Alberto D'iaz Esteban[6] introduced Associate in Nursing ontology-based extractive technique for summarisation. it's supported mapping the text to ideas and representing the document and its sentences as graphs. Author has applied approach to summarize medical specialty literature, taking benefits of free resources as UMLS. Preliminary empirical results are bestowed and unfinished issues are known.

Nitin Madnani[7] performed multi-document summarisation by generating compressed versions of supply sentences as outline candidates and mistreatment weighted options of those candidates to construct summaries. It combines a parse-and-trim approach with a unique technique for manufacturing multiple different compressions for supply sentences. additionally, we have a tendency to use a unique technique for standardization the feature weights that maximizes the amendment within the ROUGE-2 score (Δ ROUGE) between the already existing outline state and therefore the new state that results from the addition of the candidate into consideration. Author conjointly describes experiments employing a new paraphrase-based feature for redundancy checking. Finally, we have a tendency to gift the results of our DUC2007 submissions and a few concepts for future work.

In this paper, Ayman El-Kilany Associate in Nursinging Iman Saleh[9] investigated the matter of extractive single document summarisation and projected an unattended summarisation technique that's supported extracting and grading keywords during a document and mistreatment them to seek out the sentences that best represent its content. Keywords ar extracted and scored mistreatment bunch and dependency graphs of sentences. They tested their projected technique mistreatment totally different corpora together with news, events and email corpora and evaluated technique within the context of reports

Ani Nenkova Associate in Nursingd Rebekah Passonneau[10] gift an by trial and error grounded technique for evaluating content choice in summarisation. It incorporates the concept that no single best model outline for a set of documents exists. Their technique quantifies the relative importance of facts to be sent. They argue that it's reliable, prognostic and diagnostic, so improves significantly over the shortcomings of the human analysis technique presently utilized in the Document Understanding Conference

In the age of massive information, automatic ways for making summaries of documents become more and more necessary. during this paper Oskar Gross, Antoine Doucet[11] planned a completely unique, unsupervised technique for (multi-)document summarisation. In associate unsupervised and language-independent fashion, this approach depends on the strength of word associations within the set of documents to be summarized. The summaries ar generated by choosing sentences that cowl the foremost specific word associations of the document(s). They live the performance on the DUC 2007 dataset. Our experiments indicate that the planned technique is that the best-performing unsupervised summarisation technique within the progressive that creates no use of human-curated information bases.

Ms.Pallavi D.Patil* academician.N.J.Kulkarni aforesaid [12] during this new generation, wherever the tremendous data is obtainable on the web, it's tough to extract the knowledge quickly and most with efficiency. There ar such a big amount of text materials out there on the web, so as to extract the foremost relevant data from it, we'd like an honest mechanism .This downside is resolved by the automated Text summarisation mechanism. "Text Summarization" could be a method of making a shorter version of original text that contains the necessary data. Text summarisation is broadly speaking classified into 2 types: Extraction and Abstraction. This paper focuses on the symbolic logic Extraction approach for text summarisation.

Dan Gillick, Benoit Favre, Dilek Hakkani-Tur[13] mentioned concerning ICSI multi-document summarisation system depends on a general framework that casts summarisation as a worldwide improvement downside with associate whole number applied math resolution. Our primary submission, a straightforward sentence extractor with associate n-gram frequency heuristic, offers results a minimum of pretty much as good as any reportable on the non-update a part of the most task. Our secondary submission adds compressed sentence alternatives, achieving high ROUGE scores however lower manual scores. They additionally observe that associate oracle version of our sentence extractor is almost an immediate improvement of ROUGE. They show oracle results for the TAC information set and discuss their significance. Finally, they supply a close analysis of the linguistic quality of our 2 systems, suggesting specifically wherever enhancements can be most helpful

Dimple, Dr. Kawaljeet Singh, Dr. Neeraj Sharma[14] mentioned concerning chat summarisation technique, that provides the summarisation of the input chat. The chat summarisation defines the words, that ar used oftentimes within the chat. during this work, the chat summarisation is generated on the premise of metaphysics technique. The metaphysics is that the technique of lexical analysis within which the complete chat gets processed. within the technique of metaphysics words ar known from the chat. The frequency of the words is calculated on the premise of their incidence. The frequency defines the importance of every word within the chat. The module of chat summarisation is applied in python which can calculate incidence of every word. The chat summarisation module can choose the foremost frequent words and show it because the summarized chat. The planned algorithmic rule has been enforced in python and results ar analyzed in terms of accuracy and execution time.

Summarizing documents line the wants of associate user is hard and difficult. although there ar sorts of approaches, graphical ways are quite popularly investigated for summarizing document contents. This paper focus its attention on 2 graphical ways namely-LexRank (threshold) and LexRank (Continuous) planned by Erkan and Radev[15]. This paper proposes 2 enhancements to the on top of work investigated earlier by adding 2 additional options to the prevailing one. Firstly, discounting approach was introduced to make a outline that ensures less redundancy among sentences. Secondly, position weight mechanism has been adopted to preserve importance supported the position they occupy. Intrinsic analysis has been through with 2 information sets. information set one has been created manually from the news paper documents collected by U.S. for experiments. information set a pair of is from DUC 2002 information that is commercially out there and distributed or accessed through National Institute of Standards Technology (NIST). we've got shown that the primarily based upon exactitude and recall parameters were comprehensively higher as compared to the sooner algorithms.

The planned applied mathematics feature primarily based model utilizes the fuzzy model to upset the inaccurate and uncertainty of feature weight[16]. Redundancy removal mistreatment trigonometric function similarity is bestowed as enrichment to planned work. The planned approach is compared with DUC (Document Understanding Conference) participant systems and different summarisation systems like TexLexAn, ItemSum, Yago Summarizer, MSSF and PatSum mistreatment ROUGE live on dataset DUC 2004. The experimental results show that our planned work achieves a big performance improvement over the opposite summarizers

This paper presents associate innovative unsupervised technique for automatic sentence extraction mistreatment graph primarily based ranking algorithms planned by Rada Mihalcea[17]. They valuate the tactic within the context of a text summarisation task, and show that the results obtained compare favorably with antecedentlyrevealed results on established benchmarks.

Dan Cao, Liutong Xu reviews all the options that use metrics and idea of complicated network for evaluation sentences[18]. The experiment results on single feature and combos of varied options they planned ar mentioned. Quantitative and qualitative aspects were thought of in our assessment acting on the DUC 2002 information sets.

Prof.N.J Kulkarni[19] . “Text Summarization” could be a method of making a shorter version of original text that contains the necessary data. Text summarisation is broadly speaking classified into 2 types: Extraction and Abstraction. This paper focuses on the symbolic logic Extraction approach for text summarisation and used options like thematic words,term weight and Similarity of sentences

TEXT SUMMARIZATION APPROACHES

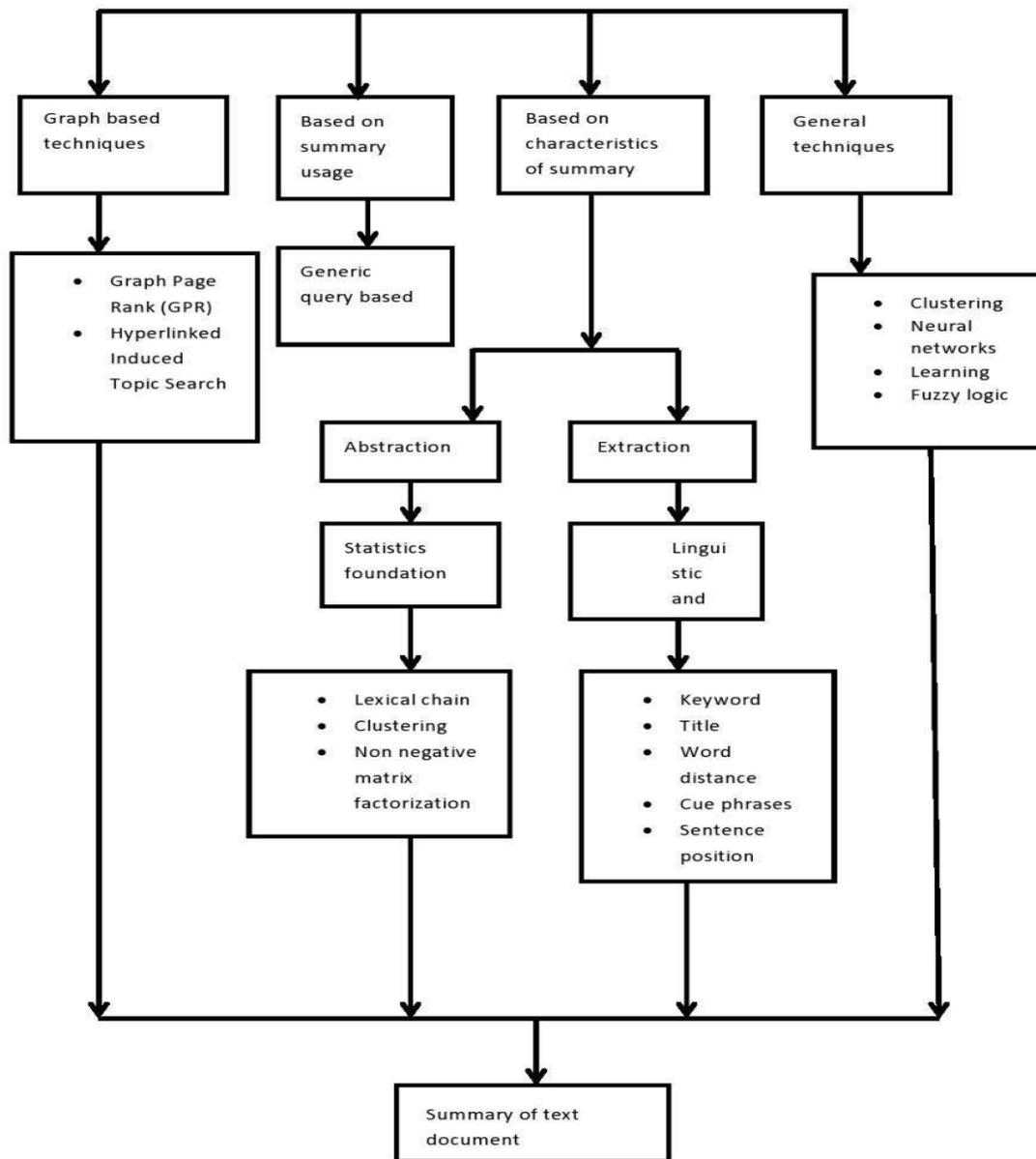


Table -1 Literature Survey Analysis

TITLE	AUTHOR	TECHNIQUE	DATASET	TOOL	PARAMETER	PERFORMANCE (INCREASED BY)
1. Summarization of emergency news articles driven by relevance	Luca Calgriero	Itemset based technique	Frequent Itemset mining	ROUGE-2	FeedNews Summarizer	10 %
2. A Hybrid approach of text summarization using latent semantic analysis and deep learning	Dr.Chintan Shah, Anjali jivani	Latent Semantic Analysis	Opinosis dataset	ROUGE-2.0	ROUGE Evaluation parameter	5%
3. NLP based LSA for legal document summarization	Kaiz merchant, Yash pande	Latent Semantic Analysis	Official government sites	ROUGE-1	Legal Text Summarizer	0.58%
4. Genetic Semantic Graph approach for multi document Summarization	Atif Khan, Naomie Salim	Semantic graph approach	DUC 2002	ROUGE-1	Similarity of sentence, word weight	0.05%
5. A statistical approach for Automatic text summarization by extraction	Munesh Chandra, Vikrant Gupta	K-Mixture semantic relationship significance	Text mining	ROUGE-L	K-Mixture Probabilistic parameter	0.8%
6. Concept graph based biomedical Automatic Summarization using ontologies	Laura Plaza, Pabla Garvos	Graph based approach	Biomedical ontologies UMLS	NLTK	-	2%
7. Multiple Alternative Sentence compressions for Automated Text Summarization	Nitin Madnani, David Zajic, Bonnie Dorr	Novel technique- Parse and trim approach	DUC 2007	ROUGE-7	Weight Optimization	3.089%

8. Summarization of news articles driven by relevance feedback	Luca cagliero	Feedback driven news summarizer	DUC	ROUGE-2, ROUGE-4	Threshold	10%
9. Unsupervised Document Summarization	Ayman El-kilany, Iman Saleh.	Unsupervised method	DUC 2002	ROUGE-1, ROUGE-L	Text Rank	4%
10. Evaluating Content Selection in Summarization	Ani Nenkova, Rebecca Passonneau	Pyramid Approach	DUC 2003		Weight Optimization	0.48%
11. Document Summarization based on word associations	Oskar Gross, Antoine Doucet	Association mixture text summarization method	DUC-2007	ROUGE-1 F-Measure	-	0.422%
12. Multi Document Text Summarization using Fuzzy logic and association rule mining	Oskar Gross	Apriori algorithm	TAC 2011	ROUGE-N	-	7%

TITLE	AUTHOR	TECHNIQUE	DATASET	TOOL	PARAMETERS	ACCURACY
1. ICSI Summarization System at TAC 2008	Dan Gillick, Benoit Favre	ILP	TAC 2008	ROUGE-1, ROUGE-2, ROUGE-SU4	ICSI	High
2. An adaptive technique for chat summarization	Dr. Neeraj Sharma, Dimple Dr. Kawaljeet Singh	Enhanced pattern based algorithm	IRC Chat	NLTK	Sentence rank	Medium
3. Enhanced Graph based approach for multi document summarization	Shanmugasundaram Hariharan, Thirunavukarasu Ramkumar	NLP	DUC 2002	NLTK	Sentence rank (threshold) Sentence rank (continuous)	High
4. Graph based ranking algorithm for sentence extraction, applied to text summarization	Rada Mihalcea	HITS, Page rank algorithms	DUC 2002	ROUGE	Text rank	High

5. Analysis of complex network methods for extractive automatic text summarization	Dan Cao,Liutong Xu	HITS Algorithm	DUC 2002	ROUGE-N	Text Rank	High
6. Text Summarization using Fuzzy logic	Ms,Pallavi D.Patil, Prof.N.J Kulkarni	Fuzzy logic method	-	-	Thematic words,Term weight,Similarity of sentences	Low
7. Fast and accurate query based multi document summarization	Frank Schilder,Ravikumar Kondadadi	NLP	DUC 2006	ROUGE-2	LARS	High
8. Survey on Abstractive Text Summarization	Nitin Raphael,Hemantha Duawar	-	DUC 2003,DU C 2004	ROUGE-N,ROUGE-L,ROUGE-W	-	Medium

IV. CONCLUSION

Automatic Text report is associate degree previous challenge however this direction diverts towards rising tends in biomedicine, product review, education domains, emails and blogs. this is often because of the very fact that there's info overload in these areas,especially on the globe Wide internet. machine-controlled report is a crucial space in NLP(Natural Language processing)research.it comprises mechanically making a outline of 1 or additional texts.The purpose of extractive document report is to mechanically choose variety of indicative sentence ,passages ,or paragraphs from the initial document.Text report approaches supported neural network, graph speculative, fuzzy and cluster have, to associate degree extend , reach creating an efficient outline of a document. each extractive and theoretical ways are researched. Most report techniques square measure supported extractive methodology. within the existng system because of variations between languages in investment, research, and so the extent of digital resources, the accuracy of Google Translate varies greatly among languages. The planned system to beat the drawbacks of existng system and provides economical report technique to summarize the multi-document and victimisation ranking technique the similarity weight age calculated. The results square measure generated in python within the terms of accuracy and execution time.

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