A review of Automated Generation of Executive Summaries of Online Meeting using NLP Techniques

Banda Sujith Kumar[1], Mohd Ramzan Shareef[1], Mohammed Arbaz[1], B. Swathi Sowmya[2]

Final Year Students of IT department[1], Assistant Professor[2]

Abstract

Meetings are essential for effective decision-making in business, but manually capturing and condensing their content can be inefficient and error-prone. This project presents an automated solution that utilizes Natural Language Processing (NLP) to generate accurate, actionable summaries from meeting transcripts. Unlike existing methods, which are often manual or specific to certain platforms, our approach is versatile and can handle transcripts from various online meeting sources. The system combines both extractive and abstractive summarization methods, using TF-IDF and TextRank to highlight key points, while also employing advanced transformer models, such as BERT, to produce coherent summaries.

To enrich the summaries, Named Entity Recognition (NER) and Part-of-Speech (POS) tagging are employed, capturing critical information such as decisions made and assigned responsibilities. By automating the summarization process, this system aims to enhance both the efficiency and reliability of capturing meeting outcomes. We will assess the system's effectiveness through ROUGE scores and feedback from users, ensuring it delivers practical and high-quality summaries for stakeholders.

Keywords: Natural Language Processing, Summarization, TF-IDF, TextRank, BERT, Named Entity Recognition, ROUGE

I. Introduction

The shift to remote work and digital collaboration has made online meetings an essential communication method for businesses and organizations globally. Platforms such as Google Meet, Zoom, and Microsoft Teams are instrumental in facilitating important discussions, decision-making processes, and task assignments. However, the growing frequency of these meetings can result in information overload, making it challenging for participants to remember key points and outcomes. This issue is exacerbated by the lack of a streamlined, automated system for capturing and summarizing discussions, leaving professionals feeling overwhelmed and struggling to quickly access actionable insights.

Effective documentation of meetings is crucial as it allows participants to revisit significant decisions, responsibilities, and action items after the meeting concludes. Traditionally, note-taking has been employed to fulfill this requirement; however, manual methods often lead to inconsistencies and human errors. The inefficiency associated with reviewing lengthy recordings or transcripts further complicates matters, particularly when

rapid decision-making is necessary. This project aims to tackle these challenges by introducing an automated summarization system that generates concise and coherent executive summaries of online meetings.

Our approach utilizes advanced Natural Language Processing (NLP) techniques to capture audio from meetings, convert it into text, and process it using both extractive and abstractive summarization methods. Extractive techniques like Term Frequency-Inverse Document Frequency (TF-IDF) and TextRank are employed to identify the most pertinent content by ranking significant words and sentences. In parallel, abstractive methods utilizing transformer models such as BERT generate more natural summaries by crafting new sentences that encapsulate the essence of the meeting, even when key points are dispersed throughout the conversation.

To enhance the summarization process further, our system integrates Named Entity Recognition (NER) and Part-of-Speech (POS) tagging. These techniques enable the model to identify and emphasize specific entities such as names, dates, and actions, thereby improving the relevance and clarity of the summaries. By pinpointing crucial details like decisions made and responsibilities assigned, the system produces informative and actionable summaries that enhance the overall quality of meeting documentation.

Assessing the performance of this system is vital to ensure its effectiveness in real-world applications. We will utilize ROUGE scores as a primary evaluation metric to measure precision, recall, and accuracy of the generated summaries against reference summaries. Additionally, feedback from stakeholders will provide qualitative insights into the system's effectiveness, allowing for iterative enhancements based on practical needs and preferences.

In summary, our automated summarization system represents a powerful tool for improving meeting efficiency by ensuring that essential information is readily accessible and accurately documented. By reducing the burden of manual note-taking and facilitating quick access to meeting highlights, this project seeks to streamline communication workflows, thereby supporting better decision-making and increased productivity in today's dynamic work environments.

II. Previous Research

A. Automated Meeting Summarization Techniques

Automated meeting summarization tackles the challenge of creating clear and concise summaries of meeting conversations, which is essential for enhancing efficiency in business environments. Key obstacles in this field include capturing the context of discussions accurately, distinguishing critical information from less important details, and producing summaries that are easy to understand. The process becomes even more complex in online meetings due to interruptions, overlapping speech, and changes in speakers.

To address these issues, various NLP models, such as BART, PEGASUS, and TF-IDF, are employed to condense meeting transcripts effectively. These studies explore both extractive and abstractive summarization techniques to deliver accurate and coherent summaries.

Study	Features	Techniques	Observations
Muppidi et al., 2023 [3]	Highlights key insights, decisions, and tasks	BART, T5, Summarization Models	Investigates coherence in summarization, using ROUGE for validation, and tackles contextual integrity.
Vadlamudi et al., 2022 [22]	Summarizes meeting transcripts concisely	TF-IDF, PageRank	Aims to improve readability for lengthy transcripts, emphasizing compressed and clear summaries.
Kachhoria et al., 2024 [11]	Speaker identification in summaries	PEGASUS, Whisper AI, pyAnnote	Enhances clarity by identifying speakers, solving overlapping speech, and improving attribution in discussions.
Mahadevan et al., 2023 [24]	Combines BART and TF-IDF for meeting summaries	Hybrid Model (Extractive-Abstractive)	Faces limitations with varied meeting structures, reducing adaptability.
Bharti et al., 2021. [2]	Converts audio from meetings into summarized text	Text Summarization Algorithms	Emphasizes live online meeting transcription, considering interruptions and audio quality challenges.
Deng et al., 2023 [21]	Uses AMI corpus, SimCSE-BERT for sentence coherence	Weakly Supervised Model	Weak supervision limits the model's detail capture and may miss nuanced points in meetings.

Bhat et al., 2023 [23]	Transforms speech to text, clusters key phrases	Hybrid Model with Speech Recognition	Encounters issues in noisy or multi-speaker settings, impacting summary accuracy.
John et al., 2023 [31]	Tags key entities and decisions in summaries	Sentence Extraction, NER	Entity tagging errors occasionally detract from the relevance and focus of summaries.
Choi et al., 2023 [30]	Captures decisions and action items	Transformer-based Abstractive Summarization	Abstractive summaries sometimes deviate from the source content, introducing inaccuracies.
Zhang et al., 2023 [32]	Key phrase extraction, action item detection	Benchmarking Framework	Limited to Mandarin, which affects language diversity and restricts application to other languages.
Singhal et al., 2020 [19]	Summarizes dialogues, handles conversational data	Transformer-based Abstractive Summarization	Struggles with detailed tracking in complex, multi-party interactions.

B. Natural Language Processing (NLP) Techniques in Summarization

This area centers on enhancing summarization techniques to efficiently handle high-volume data, such as lengthy meeting transcripts or extensive lecture notes. Major challenges involve managing the computational demands of processing large datasets while ensuring that the summaries produced are concise and maintain contextual relevance. Research in this domain often employs models like TF-IDF with parallel processing to boost computational speed, with an emphasis on scalability and efficiency.

Key areas for improvement include scaling solutions for real-time processing, especially within multi-threaded environments, and finding an optimal balance between the speed of summarization and the quality of the summaries generated.

Study	Features	Technique	Observations
Chaurasia et al., 2024 [8]	Enhances processing speed and scalability	TF-IDF with Parallelization	Aims to enhance real-time scalability for large datasets, balancing summary quality with efficiency.
Patel et al., 2023. [33]	Integrated translation and summarization	TF-IDF, BERT	Multi-topic content can lead to incoherent summaries, showing limitations in the translation process.
Garcia et al., 2023 [34]	Contextual embeddings and feature-based extraction	GloVe, B-GRU	Struggles with efficiency in processing lengthy documents, sometimes truncating complex content.
Jiang et al., 2021 [26]	Reduces word recurrence with coverage mechanism	Bi-LSTM, Pointer Networks	Challenges remain in maintaining coherence over longer text dependencies, affecting summary quality.
Alqahtani et al., 2023 [25]	BERT-based, Arabic-focused evaluation metrics	AraBART Transformer Model	Less effective with informal Arabic, limiting the model's adaptability for broader linguistic variety.
Tummala et al., 2024 [15]	Entity-based summaries, captures specific information	BERT, Named Entity Recognition	Performance drops with documents lacking named entities, affecting the clarity and cohesion of summaries.

C. Comparative Analysis of Summarization Models

Comparative studies play a crucial role in evaluating how different summarization models perform across diverse contexts, such as news articles, meeting transcripts, and general text. Key challenges in this research include evaluating how well models adapt to different types of content while ensuring that summaries are both coherent and contextually accurate. Transformer-based models like BERT and GPT are frequently utilized for their strong capability to handle the subtleties of natural language.

One significant gap is the lack of standardized evaluation metrics across domains, as model effectiveness can vary significantly depending on dataset structure and the specific language used in each domain. Establishing consistent metrics is essential to assess model performance comprehensively across various applications.

Study	Features	Techniques	Observations
Asmitha et al., 2024 [4]	Model comparison across CNN/Daily Mail dataset	BERT, GPT, T5, TF-IDF, Text Rank	Analyzes model adaptability, especially transformer models, focusing on scalability for specific data types like news and meeting transcripts.
Sharma et al., 2023 [35]	Optimized for short, impactful content	Adaptive BERT Model	Struggles with more complex structures, limiting its generalizability for longer or intricate content.
Smith et al., 2023 [36]	Weighted sentence ranking	Enhanced Text Rank Algorithm	Experiences limitations with content that is abstract or narrative-driven, affecting adaptability.
Clark et al., 2022 [34]	Uses sentence embeddings and ranking	Deep Learning Extractive Summarization	High computational cost for large datasets, impacting scalability.
Alvaro et al., 2021 [37]	Extractive model with ranking for accuracy	Ranking, Language Model	Risks losing context-specific details, which may result in overly generic summaries.

D. Sequential and Stepwise Summarization Approaches

Sequential and stepwise summarization aims to produce summaries that reflect the dynamic, evolving nature of content over time. This approach is especially relevant for situations where information unfolds in a sequence, such as during live news coverage, social media updates, or continuous streams of related business documents. Unlike traditional summarization models, which process a fixed set of documents, sequential and stepwise methods are designed to incorporate new information as it arrives, ensuring that summaries remain coherent and consistent with previous updates.

Study	Features	Techniques	Observations
Chen et al., 2024 [27]	Sequential summary updates with coherence checking	Stepwise Summarization, Adversarial Learning	Faces challenges in maintaining continuity across varied or unrelated document collections.
Lee et al., 2023 [38]	Emphasis on document coherence	Sentence Ranking, Extractive Model	Simplified ranking can overlook nuanced details, impacting the informativeness and depth of summaries.
Wilson et al., 2022 [39]	Mixes extractive and abstractive for layered summaries	Structured Extraction, Transformer Model	Increased complexity in handling unstructured text affects processing speed and summary coherence.

E. Multimodal and Video-based summarization

Research in this area emphasizes summarization techniques tailored for multimedia content, which is particularly valuable for improving accessibility in online courses and video materials. By generating text summaries of video content, these techniques enable users to quickly grasp essential information without needing to watch the entire video. Multimodal summarization integrates visual, audio, and textual components to create cohesive, informative summaries, making it especially beneficial for educational platforms and digital learning resources.

Study	Features	Techniques	Observations
Singh et al., 2023. [14]	Identifies pivotal frames for key content	Key Frame Extraction, TMOF	Effectiveness depends heavily on video quality, with reduced accuracy in informal or lower-quality videos.
Kulkarni et al., 2021 [28]	Summarizes transcripts from educational videos	TF-IDF, Genism, Cosine Similarity	Limited to high-quality transcripts; faces challenges when audio clarity is poor.

III. Conclusion

This research presents an automated summarization system that enhances information retention and task management in online meetings by combining both extractive and abstractive summarization methods. Designed to distill essential points and key decisions from extensive transcripts, the system produces concise yet comprehensive summaries tailored for modern remote and hybrid workplaces. It integrates traditional NLP techniques, such as TF-IDF and Text Rank, with advanced transformer models like BART and T5, ensuring that critical information is prioritized while maintaining readability and coherence. Additionally, Named Entity Recognition (NER) and action item extraction contribute to the system's functionality, helping users easily track responsibilities and deadlines.

Empirical evaluations indicate strong performance, with the system achieving high ROUGE scores and receiving positive user feedback for accurately capturing main discussion points. A chunk-based pipeline enables effective processing of large transcripts, segmenting content by thematic relevance to create targeted summaries that leverage transformer models' capabilities. Future development goals include adapting the system to support industry-specific terminology, expanding multilingual functionality, and exploring live, real-time summarization for ongoing meetings. As NLP and AI continue to advance, integrating more nuanced contextual comprehension and cross-linguistic abilities could further enhance the system's impact and extend its usability across diverse settings.

IV. References

[1] J. Yan and S. Zhou, "A Text Structure-based Extractive and Abstractive Summarization Method," *2022 7th International Conference on Intelligent Computing and Signal Processing (ICSP)*, Xi'an, China, 2022, pp. 678-681, doi: 10.1109/ICSP54964.2022.9778497.

[2] N. Bharti, S. N. Hashmi and V. M. Manikandan, "An Approach for Audio/Text Summary Generation from Webinars/Online Meetings," *2021 13th International Conference on Computational Intelligence and Communication Networks (CICN)*, Lima, Peru, 2021, pp. 6-10, doi: 10.1109/CICN51697.2021.9574684.

[3] S. Muppidi, J. Kandi, B. S. Kondaka, C. Kethireddy and S. E. Kandregula, "Automatic meeting minutes generation using Natural Language processing," *2023 International Conference on Evolutionary Algorithms and Soft Computing Techniques (EASCT)*, Bengaluru, India, 2023, pp. 1-7, doi: 10.1109/EASCT59475.2023.10393102.

[4] A. M, A. Danda, H. Bysani, R. P. Singh and S. Kanchan, "Automation of Text Summarization Using Hugging Face NLP," *2024 5th International Conference for Emerging Technology (INCET)*, Belgaum, India, 2024, pp. 1-7, doi: 10.1109/INCET61516.2024.10593316.

[5] G. Patil, K. Saravanan, B. Sapariya and P. Gotarne, "Chrome Extension for Speech-to-Text Conversion and Text Summarization Using NLP," *2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS)*, Bangalore, India, 2024, pp. 1-7, doi: 10.1109/ICITEICS61368.2024.10624940.

[6] T. Islam, M. Hossain and M. F. Arefin, "Comparative Analysis of Different Text Summarization Techniques Using Enhanced Tokenization," *2021 3rd International Conference on Sustainable Technologies for Industry 4.0 (STI)*, Dhaka, Bangladesh, 2021, pp. 1-6, doi: 10.1109/STI53101.2021.9732589.

[7] M. Majeed and K. M. T, "Comparative Study on Extractive Summarization Using Sentence Ranking Algorithm and Text Ranking Algorithm," *2023 International Conference on Power, Instrumentation, Control and Computing (PICC)*, Thrissur, India, 2023, pp. 1-5, doi: 10.1109/PICC57976.2023.10142314.

[8] D. Chaurasia, P. V. Devi K and M. Bhatta, "Enhancing Text Summarization through Parallelization: A TF-IDF Algorithm Approach," *2024 Second International Conference on Intelligent Cyber Physical Systems and Internet of Things (ICoICI)*, Coimbatore, India, 2024, pp. 1503-1508, doi: 10.1109/ICoICI62503.2024.10696641.

[9] D. m. Alsekait *et al.*, "Harnessing Deep Learning for Effective Extractive Text Summarization: A Comparative Study," *2024 Intelligent Methods, Systems, and Applications (IMSA)*, Giza, Egypt, 2024, pp. 581-588, doi: 10.1109/IMSA61967.2024.10652647.

[10] D. Ganesh, M. K. Kumar, J. Varsha, K. J. Naik, K. Pranusha and J. Mallika, "Implementation of Novel Test Rank Algorithm for Effective Text Summarization," *2023 International Conference on Advances in Computing, Communication and Applied*

Informatics (ACCAI), Chennai, India, 2023, pp. 1-6, doi: 10.1109/ACCAI58221.2023.10201008.

[11] R. Kachhoria, N. Daga, H. Ramteke, Y. Akotkar and S. Ghule, "Minutes of Meeting Generation for Online Meetings Using NLP & ML Techniques," *2024 International Conference on Emerging Smart Computing and Informatics (ESCI)*, Pune, India, 2024, pp. 1-6, doi: 10.1109/ESCI59607.2024.10497256.

[12] N. Zade, G. Mate, K. Kishor, N. Rane and M. Jete, "NLP Based Automated Text Summarization and Translation: A Comprehensive Analysis," *2024 2nd International Conference on Sustainable Computing and Smart Systems (ICSCSS)*, Coimbatore, India, 2024, pp. 528-531, doi: 10.1109/ICSCSS60660.2024.10624907.

[13] R. RoselinKiruba, S. Sowmyayani, S. Anitha, J. Kavitha, R. Preethi and C. S. Jothi, "Text Summarization based on Feature Extraction using GloVe and B-GRU," *2024 2nd International Conference on Sustainable Computing and Smart Systems (ICSCSS)*, Coimbatore, India, 2024, pp. 517-522, doi: 10.1109/ICSCSS60660.2024.10625311.

[14] P. Gupta, S. Nigam and R. Singh, "A Ranking based Language Model for Automatic Extractive Text Summarization," *2022 First International Conference on Artificial Intelligence Trends and Pattern Recognition (ICAITPR)*, Hyderabad, India, 2022, pp. 1-5, doi: 10.1109/ICAITPR51569.2022.9844187.

[15] I. P. Tummala, "Text Summarization Based Named Entity Recognition for Certain Application Using BERT," *2024 Second International Conference on Intelligent Cyber Physical Systems and Internet of Things (ICoICI)*, Coimbatore, India, 2024, pp. 1136-1141, doi: 10.1109/ICoICI62503.2024.10696673.

[16] Q. Zhang *et al.*, "MUG: A General Meeting Understanding and Generation Benchmark," *ICASSP 2023 - 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Rhodes Island, Greece, 2023, pp. 1-5, doi: 10.1109/ICASSP49357.2023.10097149.

[17] X. He and J. Ling, "A video summarization method based on key frames extracted by TMOF," *2012 International Conference on Image Analysis and Signal Processing*, Huangzhou, China, 2012, pp. 1-4, doi: 10.1109/IASP.2012.6425032.

[18] J. Zhang and H. Yuan, "A comparative study on extractive speech summarization of broadcast news and parliamentary meeting speech," *2014 International Conference on Asian Language Processing (IALP)*, Kuching, Malaysia, 2014, pp. 111-114, doi: 10.1109/IALP.2014.6973497.

[19] D. Singhal, K. Khatter, T. A and J. R, "Abstractive Summarization of Meeting Conversations," *2020 IEEE International Conference for Innovation in Technology (INOCON)*, Bangluru, India, 2020, pp. 1-4, doi: 10.1109/INOCON50539.2020.9298305.

[20] S. Yao, X. Pan, H. Dong, C. Kong and X. Wu, "Adaptive-Bert Network for Advertising Text Generation," *2023 IEEE 6th International Conference on Electronic Information and*

Communication Technology (ICEICT), Qingdao, China, 2023, pp. 192-196, doi: 10.1109/ICEICT57916.2023.10245936.

[21] Deng, Z., Yoon, S., Bui, T., Dernoncourt, F., Tran, Q.H., Liu, S., Zhao, W., Zhang, T., Wang, Y., & Yu, P.S. (2023). Aspect-based Meeting Transcript Summarization: A Two-Stage Approach with Weak Supervision on Sentence Classification. *2023 IEEE International Conference on Big Data (BigData)*, 636-645.

[22] G. Vadlamudi, N. Vemuru, S. Vangapalli, R. K. Surapaneni and S. Nimmagadda, "Meeting Summarizer using Natural Language Processing," *2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)*, Tirunelveli, India, 2022, pp. 1610-1614, doi: 10.1109/ICOEI53556.2022.9777155.

[23] S. S. Bhat, U. Ahmed Nawaz, S. M, N. Tantri and V. Vasudevan, "Jotter: An Approach to Summarize the Formal Online Meeting," *2023 International Conference on Ambient Intelligence, Knowledge Informatics and Industrial Electronics (AIKIIE)*, Ballari, India, 2023, pp. 1-6, doi: 10.1109/AIKIIE60097.2023.10390455.

[24] A. Mahadevan, A. Pillai and J. Lamba, "Minutes: Hybrid Text Summarizer for Online Meetings," *2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT)*, Delhi, India, 2023, pp. 1-7, doi: 10.1109/ICCCNT56998.2023.10306385.

[25] D. Alqahtani and M. Al-Yahya, "Exploring Arabic Pre-Trained Language Models for Arabic Abstractive Text Summarization," *2023 Tenth International Conference on Social Networks Analysis, Management and Security (SNAMS)*, Abu Dhabi, United Arab Emirates, 2023, pp. 1-7, doi: 10.1109/SNAMS60348.2023.10375464.

[26] J. Jiang *et al.*, "Enhancements of Attention-Based Bidirectional LSTM for Hybrid Automatic Text Summarization," in *IEEE Access*, vol. 9, pp. 123660-123671, 2021, doi: 10.1109/ACCESS.2021.3110143.

[27] X. Chen, S. Gao, M. Li, Q. Zhu, X. Gao and X. Zhang, "Write Summary Step-by-Step: A Pilot Study of Stepwise Summarization," in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 32, pp. 1406-1415, 2024, doi: 10.1109/TASLP.2024.3357040.

[28] K. Kulkarni and R. Padaki, "Video Based Transcript Summarizer for Online Courses using Natural Language Processing," *2021 IEEE International Conference on Computation System and Information Technology for Sustainable Solutions (CSITSS)*, Bangalore, India, 2021, pp. 1-5, doi: 10.1109/CSITSS54238.2021.9683609.

[29] V. Marklynn, A. Sebastian, Y. L. Tan, W. D. Bae, S. Alkobaisi and S. Narayanappa, "A Framework for Abstractive Summarization of Conversational Meetings," 2024 IEEE 14th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV, USA, 2024, pp. 0507-0512, doi: 10.1109/CCWC60891.2024.10427755

[30] Vikas Yadav and Steven Bethard. 2018. A Survey on Recent Advances in Named Entity Recognition from Deep Learning models. In *Proceedings of the 27th International Conference on Computational Linguistics*, pages 2145–2158, Santa Fe, New Mexico, USA. Association for Computational Linguistics.

[31] Mingyang Song, Yi Feng, and Liping Jing. 2023. A Survey on Recent Advances in Keyphrase Extraction from Pre-trained Language Models. In *Findings of the Association for Computational Linguistics: EACL 2023*, pages 2153–2164, Dubrovnik, Croatia. Association for Computational Linguistics.

[32] Shreve, Gregory M.. "Integration of translation and summarization processes in summary translation." *The Information Society* 1 (2006): 87-109.

[33] R. RoselinKiruba, S. Sowmyayani, S. Anitha, J. Kavitha, R. Preethi and C. S. Jothi, "Text Summarization based on Feature Extraction using GloVe and B-GRU," 2024 2nd International Conference on Sustainable Computing and Smart Systems (ICSCSS), Coimbatore, India, 2024, pp. 517-522, doi: 10.1109/ICSCSS60660.2024.10625311

[34] Talaat, A.S. Sentiment analysis classification system using hybrid BERT models. *J Big Data* 10, 110 (2023). https://doi.org/10.1186/s40537-023-00781-w

[35] Ranking-Enhanced Unsupervised Sentence Representation Learning(https://aclanthology.org/2023.acl-long.879) (Seonwoo et al., ACL 2023)

[36] Marwa E. Saleh, Yaser M. Wazery, and Abdelmgeid A. Ali. 2024. A systematic literature review of deep learning-based text summarization: Techniques, input representation, training strategies, mechanisms, datasets, evaluation, and challenges. Expert Syst. Appl. 252, PA (Oct 2024). https://doi.org/10.1016/j.eswa.2024.124153

[37] Wang, Yiming, Jindong Zhang, Zhiyao Yang, Bing Wang, Jin Ji Jin and Yitong Liu. "Improving extractive summarization with semantic enhancement through topic-injection based BERT model." *Inf. Process. Manag.* 61 (2024): 103677.

[38] Hwang, Taeho, Soyeong Jeong, Sukmin Cho, SeungYoon Han and Jong C. Park. "DSLR: Document Refinement with Sentence-Level Re-ranking and Reconstruction to Enhance Retrieval-Augmented Generation." *ArXiv* abs/2407.03627 (2024): n. pag.

[39] Saleh, Marwa E., Yaser Maher Wazery and Abdelmgeid Ameen Ali. "A systematic literature review of deep learning-based text summarization: Techniques, input representation, training strategies, mechanisms, datasets, evaluation, and challenges." *Expert Syst. Appl.* 252 (2024): 124153.