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SPEECH COMPRESSION IN MEDIA DISCOURSE: A MULTIFACETED ANALYSIS

Annotation. *This article explores the phenomenon of speech compression in media discourse, examining its various linguistic, cognitive, and communicative aspects. The study highlights the role of compression techniques in enhancing information density, improving audience engagement, and adapting content for different media formats. The analysis considers syntactic, lexical, and phonetic strategies employed in speech compression, as well as their implications for meaning transmission and perception. Additionally, the article discusses the impact of digital media and evolving communication practices on the increasing prevalence of compressed speech in news, social media, and audiovisual content.*

Key words: *speech compression, Media discourse, Information density, Linguistic economy, Cognitive processing, Digital communication, News media, Phonetic reduction, Syntactic compression, Audience engagement.*

MEDIA NUTQIDA NUTQNI SIQISH: KO'P QIRRALI TAHLIL

Annotatsiya. *Ushbu maqola ommaviy axborot vositalarida nutqni siqish fenomenini o'rganadi, uning turli lingvistik, kognitiv va kommunikativ jihatlarini o'rganadi. Tadqiqot axborot zichligini oshirish, auditoriyani jalb qilishni yaxshilash va kontentni turli media formatlari uchun moslashtirishda siqish texnikasining rolini ta'kidlaydi. Tahlil nutqni siqishda qo'llaniladigan sintaktik, leksik va fonetik strategiyalarni, shuningdek ularning ma'noni uzatish va idrok etishga ta'sirini ko'rib chiqadi. Bundan tashqari, maqolada raqamli media va rivojlanayotgan aloqa amaliyotlarining yangiliklar, ijtimoiy media va audiovizual kontentda siqilgan nutqning ko'payishiga ta'siri muhokama qilinadi.*

Kalit so'zlar: *nutqni siqish, Media nutqi, Axborot zichligi, Lingvistik iqtisod, Kognitiv ishlov berish, Raqamli aloqa, Yangilik mediasi, Fonetik reduksiya, Sintaktik siqish, Auditoriyani jalb qilish.*

КОМПРЕССИЯ РЕЧИ В МЕДИАДИСКУРСЕ: МНОГОГРАННЫЙ АНАЛИЗ

Аннотация. *В этой статье рассматривается явление компрессии речи в медиадискурсе, изучаются его различные лингвистические, когнитивные и коммуникативные аспекты. В исследовании подчеркивается роль методов компрессии в повышении плотности информации, улучшении вовлеченности аудитории и адаптации контента для различных медиаформатов. Анализ рассматривает синтаксические, лексические и фонетические стратегии, используемые при компрессии речи, а также их влияние на передачу и восприятие смысла. Кроме того, в статье обсуждается влияние цифровых медиа и развивающихся практик коммуникации на растущую распространенность сжатой речи в новостях, социальных сетях и аудиовизуальном контенте.*

Ключевые слова: *компрессия речи, медиадискурс, плотность информации, лингвистическая экономика, когнитивная обработка, цифровая коммуникация, новостные медиа, фонетическая редукция, синтаксическая компрессия, вовлечение аудитории*

Introduction. The evolution of media has profoundly impacted how we communicate, leading to a concurrent evolution in speech compression techniques. This analysis explores the intersection of speech compression and media discourse, examining its technical advancements, impact on communication styles, and implications for various media platforms. We will delve into the different

approaches to speech compression, their strengths and weaknesses, and how these technologies shape modern discourse. The analysis will draw heavily on existing research across diverse fields, including communication studies, signal processing, and linguistics.

Technical Advancements in Speech Compression. Speech compression is a crucial technology underlying various communication systems, including digital cellular communications, VoIP, voicemail, and voice response systems [1]. The field has witnessed significant advancements, evolving from early linear prediction models [1] to more sophisticated techniques. These advancements have been driven by the need to reduce storage requirements and bandwidth consumption while maintaining acceptable speech quality.

One notable approach involves the use of discrete wavelet transforms (DWT) [2]. Studies have explored the performance of different DWT families, such as Daubechies, Coiflets, Symlets, Battle, and Beylkin-Vaidyanathan, for speech compression [2]. These methods aim to efficiently represent speech signals by decomposing them into different frequency bands, allowing for selective compression based on perceptual importance. The effectiveness of these methods is often evaluated using metrics like Mean Opinion Score (MOS) and Perceptual Evaluation of Speech Quality (PESQ) [2], which assess the perceived quality of compressed speech.

Other research explores alternative transforms like the discrete Krawtchouk-Tchebichef transform (DKTT) [3], offering potentially improved compression and enhancement capabilities compared to standard transforms. The DKTT combines Krawtchouk and Tchebichef polynomials, providing a new tool for signal processing [3]. Furthermore, advancements in compressed sensing [2], [4] offer novel signal compression techniques that allow for compression during the sensing process itself, reducing storage requirements compared to conventional Shannon-Nyquist sampling [2].

The field also grapples with challenges in computational efficiency, especially for higher polynomial orders in transforms like Tchebichef polynomials [5]. New algorithms are continually being developed to address these computational issues and improve the speed and accuracy of speech compression [5]. The pursuit of improved efficiency is particularly crucial for real-time applications, where low latency is essential.

Beyond traditional methods, cognitive speech coding offers a paradigm shift [6]. This approach incorporates insights from cognitive studies of speech perception to improve compression paradigms that have remained largely unchanged for decades [6]. By focusing on auditory and cortical processing mechanisms, cognitive speech coding aims to produce more perceptually efficient representations of speech [6]. This approach represents a significant departure from purely signal-processing based methods.

The integration of steganography into low-bit rate speech codecs is another area of active research [7]. This technique involves embedding hidden information within compressed speech signals, offering potential applications in secure communications [7]. The challenge lies in achieving high-quality embedding without compromising speech quality or making the hidden information detectable through steganalysis [7].

Furthermore, research into quantum rate-distortion coding explores the potential of quantum mechanics for data compression [8]. This approach aims to compress only "relevant" information based on correlations between the compressed variable and a variable of interest [8]. This method presents both conceptual and mathematical challenges, particularly concerning the differences in mathematical formalism between classical and quantum probability [8].

Impact of Speech Compression on Media Discourse. The widespread adoption of speech compression technologies has significantly impacted media discourse in several ways. The compression of speech for transmission over various media, such as the internet, mobile phones, and satellite broadcasting [9], inevitably influences the characteristics of communication. The reduction in bandwidth and storage requirements enabled by these technologies has facilitated the proliferation of voice-based communication across different platforms. This has led to increased accessibility and participation in online discussions and collaborative activities.

However, speech compression can also introduce artifacts and distortions that may affect the intelligibility and perceived quality of speech [2], [10]. This is particularly relevant in scenarios where

speech is already degraded by background noise or other adverse listening conditions [11]. In such cases, the combined effect of noise and compression can lead to a significant reduction in speech intelligibility, potentially hindering effective communication. The impact of compression on speech intelligibility is further complicated by factors such as the type of compression algorithm used and the characteristics of the speech signal itself [10].

Studies on the effects of nonlinear frequency compression (NLFC) in hearing aids provide insights into the potential impact of compression on speech perception in individuals with hearing loss [12]. While NLFC aims to improve access to speech by widening the input bandwidth, research has not consistently demonstrated improvements in speech and language skills compared to conventional amplification [12]. This highlights the complexity of assessing the impact of compression on communication, especially considering individual differences in hearing abilities and communication styles.

The compression of speech for transmission also affects the temporal dynamics of communication. Studies using time-resolved fMRI have shown that the brain's response to time-compressed speech varies across cortical areas [13]. While sensory areas show a linear relationship between stimulus duration and activation, higher-level processing areas exhibit a time-invariant response followed by a sudden collapse at faster presentation rates [13]. This suggests that higher-level processing stages operate at a fixed internal speed, imposing a bottleneck on sentence comprehension [13]. This bottleneck can lead to reduced comprehension when the rate of incoming information exceeds the brain's processing capacity. This has implications for the design of real-time communication systems, particularly in situations where rapid information exchange is crucial.

Furthermore, the compression of speech can impact the quality of experience (QoE) for users [14]. Factors such as bit rate, codec type, and network conditions can all contribute to variations in perceived speech quality [14]. The assessment and monitoring of VoIP quality are critical for ensuring a positive user experience [14]. This involves considering not only the technical aspects of speech compression but also the subjective perceptions of users.

The use of speech compression in various media has also influenced communication styles. The prevalence of short messages and rapid exchanges in online communication [15] reflects, in part, the technical limitations and affordances of the underlying communication technologies. The compression of speech into concise messages can lead to a more fragmented and less nuanced form of communication, potentially impacting the overall effectiveness of information exchange. The use of visual information and multimodal content in electronic media [15] may also be influenced by the limitations of speech transmission, leading to a shift toward communication styles that rely more heavily on visual cues.

Speech Compression and Security Concerns. The use of speech compression in communication systems also raises security concerns. Speaker recognition systems (SRSs), which rely on the analysis of speech signals, have been shown to be vulnerable to adversarial attacks [16]. These attacks involve modifying speech signals in subtle ways to deceive SRSs, raising significant security concerns [16]. Research is ongoing to develop robust defenses against such attacks, including transformation-based and training-based methods [16]. The impact of different speech compression techniques on the effectiveness of these defenses is also an area of active investigation [16]. Different compression methods may exhibit varying degrees of susceptibility to adversarial attacks, highlighting the need for careful consideration of security implications when choosing speech compression techniques.

Scrambling-based speech encryption via compressed sensing offers a potential solution to enhance the security of speech communications [4]. This approach leverages the advantages of compressed sensing to address the limitations of conventional speech scramblers, such as heavy communication overhead, signal feature underexploitation, and low attack resistance [4]. This approach aims to achieve both high security and desirable channel usage with notable resistance to hostile attacks [4].

Future Directions. Future research in speech compression will likely focus on several key areas. The development of more efficient and perceptually transparent compression algorithms will remain a priority, particularly for real-time applications. Further exploration of cognitive speech coding and

its integration with machine learning techniques holds significant potential for improving compression efficiency and quality. The development of robust defenses against adversarial attacks on speech recognition systems is also crucial for ensuring the security of voice-based communication. The integration of speech compression with other signal processing techniques, such as noise reduction and enhancement, offers opportunities for improving the overall quality of communication in noisy environments. Finally, a deeper understanding of the cognitive and perceptual effects of speech compression will be essential for developing technologies that optimize both technical performance and user experience.

Conclusion. Speech compression is an integral part of modern media discourse, facilitating efficient communication across various platforms. However, it also presents challenges related to speech quality, intelligibility, and security. Ongoing research in this field focuses on developing more efficient and robust compression techniques, while also considering the cognitive and perceptual impacts of compression on communication. A comprehensive understanding of these technical, cognitive, and security aspects is crucial for designing future communication systems that optimize both efficiency and user experience. The interplay between technological advancements and the evolving nature of media discourse will continue to shape the future of speech compression research.

Used literature.

1. Abdulhussain, Sadiq H., Ramli, Abd Rahman, Al-Haddad, S. A. R., Mahmmod, Basheera M., and Jassim, Wissam A.. 2016. "On Computational Aspects of Tchebichef Polynomials for Higher Polynomial Order". Institute of Electrical and Electronics Engineers. https://doi.org/10.1109/access.2017.2669218

2. Azamatjon, A. ., & Rasulov , Z. I. . (2023). The Stydying of the Notion of Language Economy in Linguistics . Miasto Przyszłości, 32, 161–164. Retrieved from http://miasto-przyszlosci.com.pl/index.php/mp/article/view/1120

3. Bentler, R., Walker, E., McCreery, R., Arenas, Richard M., and Roush, P.. 2014. "Nonlinear Frequency Compression in Hearing Aids: Impact on Speech and Language Development". Ear and Hearing. https://doi.org/10.1097/AUD.0000000000000030

4. Cerak, Milo, Asaei, Afsaneh, and Hyafil, Alexandre. 2018. "Cognitive Speech Coding: Examining the Impact of Cognitive Speech Processing on Speech Compression". Institute of Electrical and Electronics Engineers. https://doi.org/10.1109/msp.2017.2761895

5. Chen, Guangke, Zhao, Zhe, Song, Fu, Chen, Sen, Fan, Lingling, Wang, Feng, and Wang, Jiashui. 2022. "Towards Understanding and Mitigating Audio Adversarial Examples for Speaker Recognition". IEEE Computer Society. https://doi.org/10.1109/tdsc.2022.3220673

6. Gibson, Jerry D.. 2016. "Speech Compression". Multidisciplinary Digital Publishing Institute. https://doi.org/10.3390/info7020032

7. Gor, Kira. 2014. "Raspberry, not a car: context predictability and a phonological advantage in early and late learners processing of speech in noise". Frontiers Media. https://doi.org/10.3389/fpsyg.2014.01449

8. Huang, Yongfeng, Liu, Chenghao, Tang, Shanyu, and Bai, Sen. 2012. "Steganography Integration Into a Low-Bit Rate Speech Codec". Institute of Electrical and Electronics Engineers. https://doi.org/10.1109/tifs.2012.2218599

9. I., Karasik Vladimir and G., Slyshkin Gennady. 2021. "Modern discourse developmental trends". None. https://doi.org/10.29025/2079-6021-2021-1-14-31

10. Ikromovich, A. I. (2025). Utilizing Aphorisms in Uzbek and English to Express Linguistic Images of The World. International Journal of Language Learning and Applied Linguistics, 4(1), 79–83. https://doi.org/10.51699/ijllal.v4i1.354

11. Keane, John. 2013. "Democracy and Media Decadence". None. https://doi.org/10.1017/cbo9781107300767

12. Li, Zeng, Zhang, Xiongwei, Chen, Liang, Fan, Zhangjun, and Wang, Yonggang. 2012. "Scrambling-based speech encryption via compressed sensing". Springer Science+Business Media. https://doi.org/10.1186/1687-6180-2012-257

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