SPEECH PERCEPTION AND SOCIAL MEDIA DATA MINING: NEURAL NETWORK AND GENERATIVE APPROACH

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The speech perception in its multilevel processing system has a rich tradition of research, meanwhile, lately the problems of transformation of perception in a virtual environment came to the fore (Essam & Abdo, 2020). The analysis of perception in a multimodal virtual environment involves the study of the integrated result of the dissemination of information using various modes. When analyzing the specifics of speech perception in this study, preference is given to the neural network and generative approach. In linguistic research, the potential of artificial neural networks is already being used quite actively: neural and statistical approaches in linguistics (Pater, 2019); learning reduplication using a variable-free neural network (Brandon, Traylor, & Pater, 2019) cross-linguistic evaluation of the syntax of neural models (Aaron et al. 2020); linguistic inductive biases via meta-learning (McCoy et al. 2020). New generative tools allow us to take research to a fundamentally new level. Specifically, a non-invasive decoder was presented that reconstructs continuous natural language from cortical representations of semantic meaning recorded using functional magnetic resonance imaging (fMRI) (Tang et al. 2022).

The empirical material for the analysis was the content dedicated to the construction of the Troitskaya metro line (TLM) in Moscow. Data collection was carried out 10/01/2022 - 03/31/2023 in social media Vkontakte, Telegram, YouTube, Dzen. The dataset contains 22,199,085 tokens.

Using a model based on the neural network paradigm of using neural-like elements with temporal summation of signals (the so-called corticomorphic associative memory), was analysis the topic structure of the database and the results of summarization. Such a network representation of the data made it possible to isolate and interpret the semantic network in the form of a set of interrelated concepts. With the help of the semantic network semantic accents that are most important for actors were analyzed and rated. The analysis of word associations, carried out according to the results of associative search and the construction of an associative network, made it possible to identify implicit information characterizing the attitude of actors to certain concepts and processes. Speech data analysis was also carried out using ChatGPT Plus. Sentiment analysis was performed using the Eureka Engine sentiment determination module. The technique is based on a statistical algorithm for conditional random CRF fields using sentiment dictionaries. Sequences of lexems are used as input data, after which the algorithm calculates the probabilities of possible sequences of tags and chooses the maximum probable one. Linguistic content analysis was performed using the AutoMap text mining tool. For visual analytics, the Tableau platform was used.

Analysis of the speech perception by social media users in response to the TLM construction showed that the growth of negative perception (negative sentiment, aggression) is more actively formed and disseminated through personal accounts, thus enabling involvement of a large audience and achieving a higher degree of involvement. Meanwhile, there is a more effective spread of a certain type of perception in communities. Optimization of the speech influence and perception by users is determined by a number of reasons: the accuracy of determining the specifics of the communicative situation, identifying relevant topics, generating messages on relevant topics using an imperative strategy that includes negative sentiment and aggression. An important role is played by the symbolic capital of the source of information dissemination for certain types of actors. One should also take into account the dynamism of communication processes taking place in the network environment and a sharp change in the situation in short time periods. The choice of adequate communication means and successful solution of urgent communication tasks ensures active influence on the perception of network actors and translation of virtual intentions into real actions.