INTRODUCTION

Language is fundamental to human communication and self-expression, and this principle extends to how machines interact with humans and each other. Natural Language Processing is a vital branch of artificial intelligence that empowers computers to understand, interpret, and generate human languages. By facilitating more natural and intuitive interactions, NLP bridges the gap between human communication and machine comprehension.At its core, NLP breaks down language into manageable units known as tokens, which can be words, phrases, or punctuation marks. By analyzing the relationships among these tokens, NLP systems can extract meaning and context from text or speech. This process encompasses a range of sophisticated techniques and applications that enhance our ability to communicate with machines. Natural Language Processing provides key capabilities such as content categorization, topic discovery, and contextual extraction, helping organize and analyze text data. It also enables sentiment analysis for understanding emotional tone, supports voice interfaces through text-to-speech and speech-to-text, and offers tools like document summarization and machine translation to improve information access and global communication.

The evolution of NLP has led to the development of various language models, such as N-grams, Recurrent Neural Networks, and more advanced models. While N-grams provide a foundational approach to language prediction through statistical methods, RNNs enhance this capability by considering the sequential nature of language. In this exploration, we will delve into the intricacies of these models, examining how they function and their impact on the field of Natural Language Processing. By understanding these mechanisms, we gain insight into how machines increasingly become adept at understanding and engaging with human language, ultimately transforming our interactions with technology.

The presented manual “GENERATIVE AI” for studying the discipline “Intellectual analysis of text and text tone” for students of the second (master's) level of higher education in the specialty F3 “Computer Science” (122 “Computer Science”).