Automatic Speech Recognition of Ukrainian Spontaneous Trauma-Related Speech: Accuracy, Linguistic Variability and Evaluation Metrics

Abstract

Speech recognition is part of an intensively growing practice of AI used in psychotherapy and for psychological support to people in traumatic situations of war.

This study evaluates the performance of an automated speech recognition (ASR) system in transcribing spontaneous trauma-related speech in Ukrainian. The research explores the impact of emotional intensity and dialectal variability on ASR accuracy and compares traditional and alternative linguistic metrics including Word Error Rate (WER), Accuracy for Unique Words (AUW), Word-Weighted Accuracy (AWW), and Character-Weighted Accuracy (AWC). Results indicate that dialectal variation significantly affects transcription accuracy, while emotional stimulus intensity does not show statistically significant effects.

Findings suggest that ASR systems may support but cannot completely replace manual transcription for trauma-related linguistic and psychological research.