dialogue systems

universität ulm

Bachelor Thesis

Faculty of Engineering,
Computer Science and Psychology –
Dialogue Systems

dialogue-systems.org

20.06.2023

Investigating the Impact of Fusion Methods on Emotion Recognition Performance

DESCRIPTION:

Emotions play a crucial role in human communication and interaction, and accurately recognizing and understanding these emotions has great importance. In recent decades, there has been growing interest in automated emotion recognition systems, which find applications in various domains such as virtual assistants, affective computing, and human-computer interaction. Traditional approaches to emotion recognition often relied on analyzing individual modalities, such as speech or facial expressions. However, these approaches may not capture the complete emotional context, as emotions are often conveyed through multiple modalities simultaneously.

This bachelor thesis aims to investigate the impact of fusion methods on emotion recognition performance. Fusion methods involve combining information from multiple modalities such as gestures, facial expressions, and speech, to improve the accuracy and robustness of emotion recognition systems. By exploring different fusion techniques, including early, late, and hybrid fusion, the thesis seeks to analyze their effectiveness in capturing the underlying emotional states.

The task of this thesis is to implement and experiment with various fusion approaches, utilizing state-of-the-art deep learning architectures. After development, the performance evaluation of these fusion methods will be done by comparing them to individual modality-based approaches and assessing their ability to enhance emotion recognition accuracy and generalization.

The thesis comprises the following items:

1. Exploration of existing fusion methods in the context of emotion recognition.
2. Development and implementation of fusion techniques specifically designed for emotion recognition.
3. Comparative analysis of the proposed fusion methods against baseline models based on individual modalities.
4. Evaluation of the fusion methods using publicly available emotion recognition datasets, assessing their performance in terms of accuracy, robustness, and generalization.

PREREQUISITES:

- Knowledge in Python
- Profound interest in deep learning and signal processing
- Basic knowledge in machine and deep learning desirable but not mandatory

CONTACT:

M. Sc. Denis Dresvyanskiy
Institute of Communications Engineering – Dialogue Systems
Room: 43.2.231 (Uni West)
Tel: 0731/50-31501
E-Mail: denis.dresvyanskiy@uni-ulm.de