Chapter 7

Conclusions

In concluding the study, a comprehensive exploration was undertaken to optimize EDA components for enhanced emotion recognition. The results revealed that phasic EDA signals significantly influenced the classification of emotional states when employing SVM, RF, and XGB classifiers. Leveraging phasic EDA signals with XGB, obtained through the cvxEDA decomposition method, yielded an impressive accuracy rate of 86.87%. This highlights the efficacy of the cvxEDA method in capturing relevant signals for emotion detection. Moreover, a significant stride was made in optimizing segments within the phasic EDA signals. Notably, focusing on the Second half of phasic signals and employing STFT spectrograms for phasic EDA signals and texture features such as GLCM and GLRLM led to a remarkable classification accuracy of 97.08% with the SVM classifier. This underscores the importance of segment optimization in refining emotion recognition systems. Furthermore, the study advanced one step by optimizing the windowing approach on the Second half of phasic signals. By implementing five and nine windows and leveraging image-based features extracted from MTF, including GLCM, GLRLM, FDTA, FOS, HM and ZM features, an accuracy of 88.24% was achieved with the nine-window approach. This highlights the significance of refining windowing strategies to enhance emotion classification accuracy. In summary, the findings underscore the significance of methodological choices in refining emotion recognition systems. By optimizing the Second half of phasic signals alongside STFT spectrograms and texture features like GLCM and GLRLM, a robust approach for effective emotion recognition has been identified. This study holds promise for various applications across various industries, offering the potential to enhance user experiences, improve well-being, and drive innovation.