

EMOTION RECOGNITION USING EEG SIGNALS

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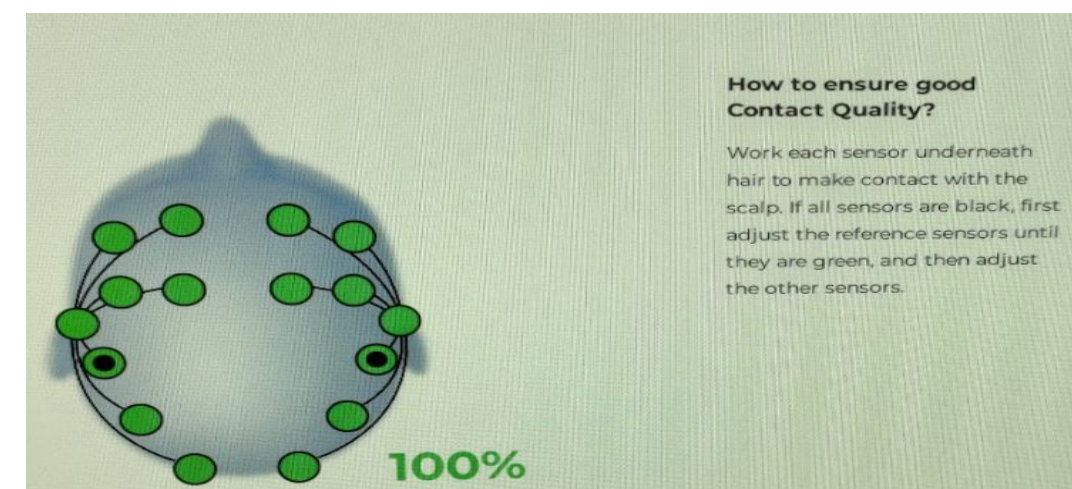


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Abstract

For decades, BCI research has become one of the most exciting biomedical engineering research areas, and it has gotten much recognition in recent years.

We propose a new interpretable emotion detection technique to abstract features from EEG signals for the classification of moods and to design an IoT system for light based on perceived emotions.



Proposed Methods

- FIR and FFT filtering used for pre-processing.
- Fully Connected layers used with PreLU activation function.
- The emotion is predicted by calculating the minimum distance of the predicted values to actual average values of the 4 categories for different emotions.
- Fastest and most accurate method in the state of the art.



Conclusion

Non-invasive brain signal processing are popular and used in real-world scenarios. Brainwave emotion analysis shows that the authenticity and credibility of brain waves are high. Automatic emotion recognition algorithms can close the human-machine interface gap.

Further improvements in the computing power and datasets will make this even more reliable and more emotions can be added.

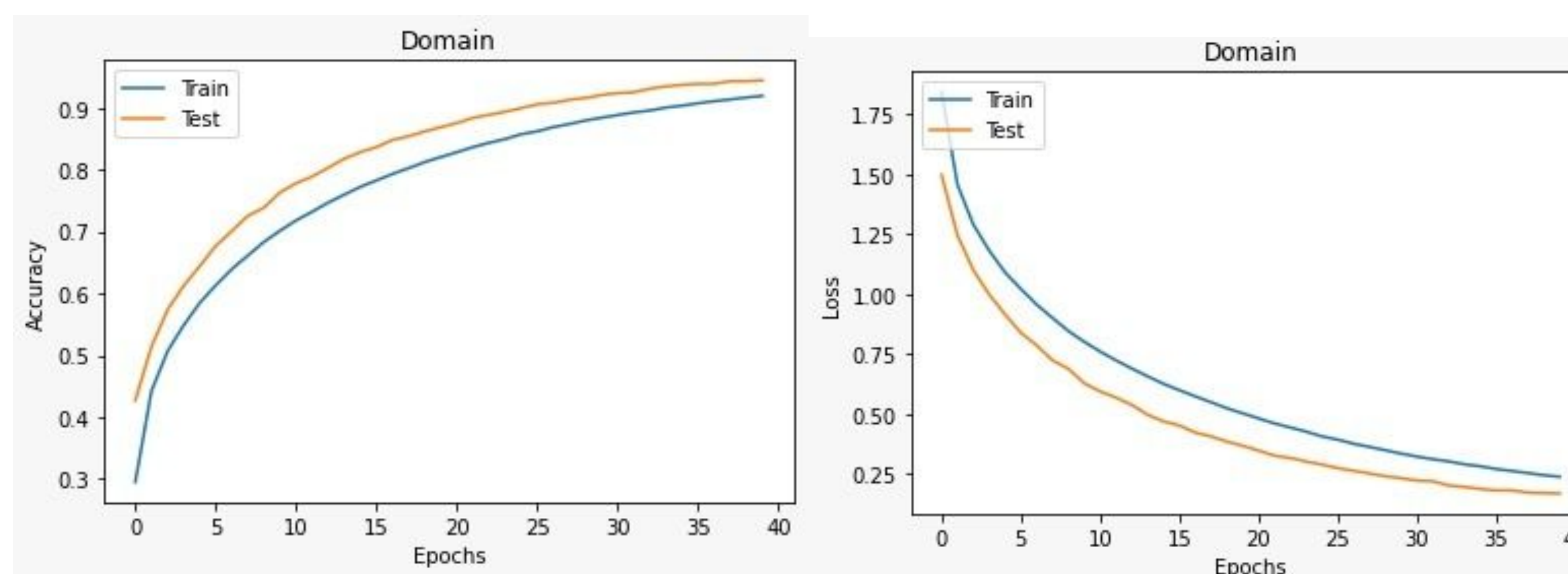
Introduction

The aim is to capture the emotion expressed by a person through EEG data that is generated and produce the lighting effects based on it.

We have used the DEAP dataset, having 14 channels of EEG data, for the training of the model containing EEG recordings over four emotions which were recorded using 40 videos, and the bottleneck in terms of time very recent methods that solves emotion recognition in real time.

Results

- We were able to achieve about **94% accuracy** for the emotion category **Liking** and also around **96% accuracy** for the **Arousal** category.
- The project is able to determine the value of valence, domain, arousal and liking for the given signals.



References

