



Maestría en Ingeniería en Sistemas y Cómputo Inteligente

Facial expression recognition system for attitude analysis

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1. Introduction

Currently, it is necessary that computer to recognize a person's facial expressions automatically, without intervention of a human being and in that way to get systems that evaluate the are able to the attitude through by the six expressions Universals of the face.

To develop a system of this type, it is necessary to create and train a model of classification of facial expressions extracting characteristics of a set of training with techniques of deep learning and convolutional neuronal networks of rebates in order to perform recognition of facial expressions and so it can be implemented in an interface.

2. Objectives

2.1. General objective

Develop a system for the attitude analysis.

2.2. Specific objectives

- Train and refine a model based on deep learning to six facial expressions.
- Develop a prototype for the recognition of facial expressions.
- Evaluate the performance of the prototype when an algebra test is being done.

3. Methods

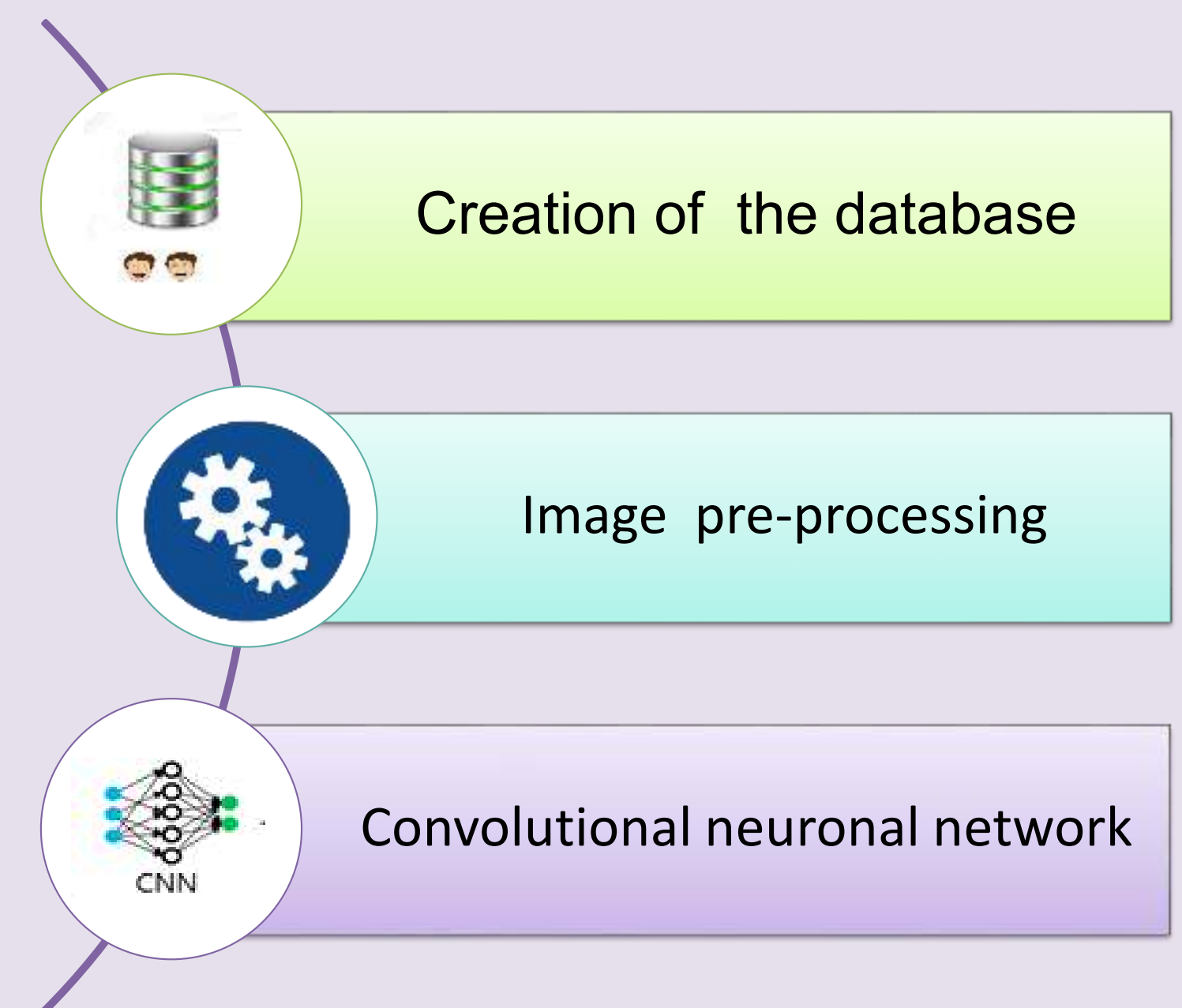


Figure 1. Applied methodology in this investigation.

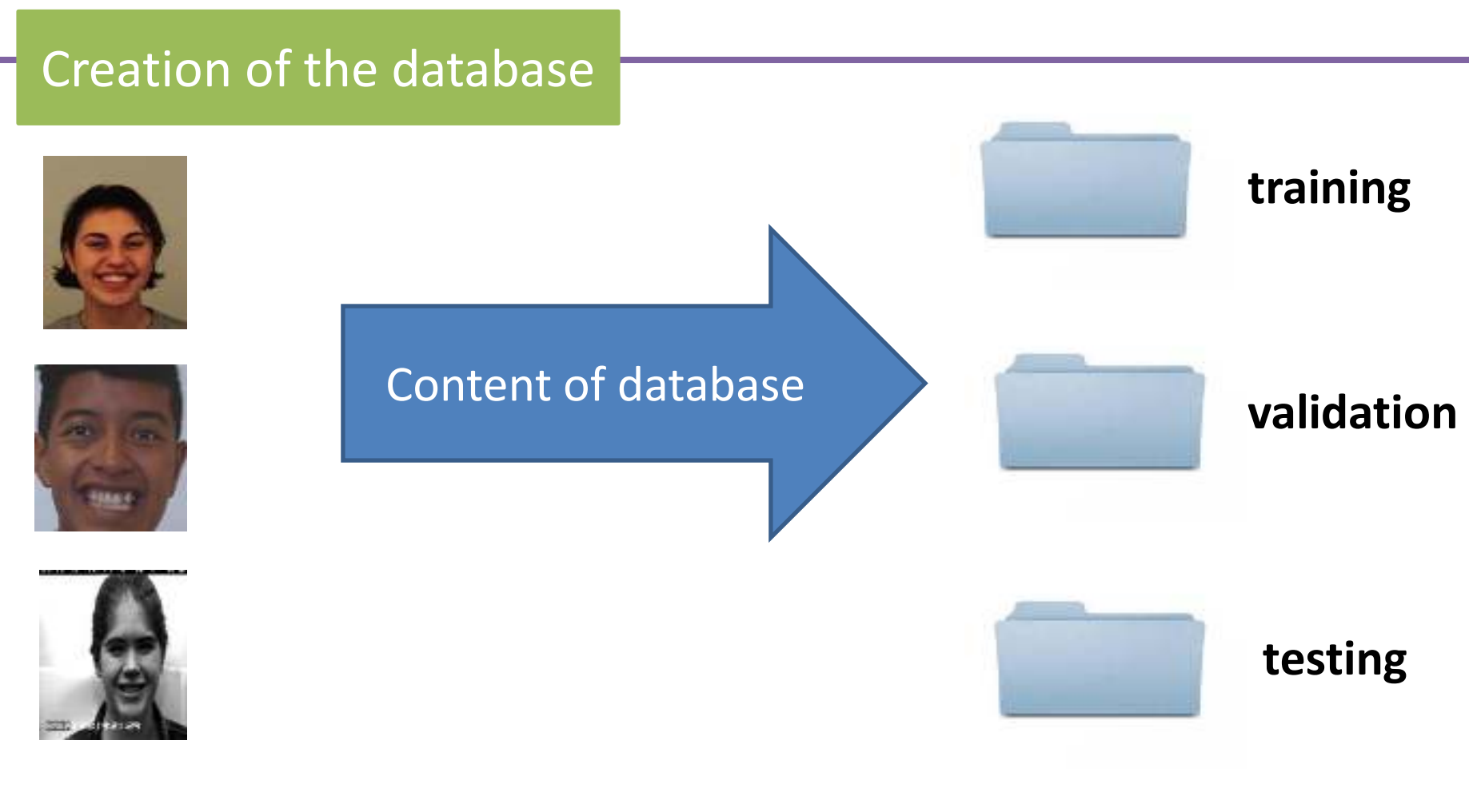


Figure 2. Graphic example of pre-processing images

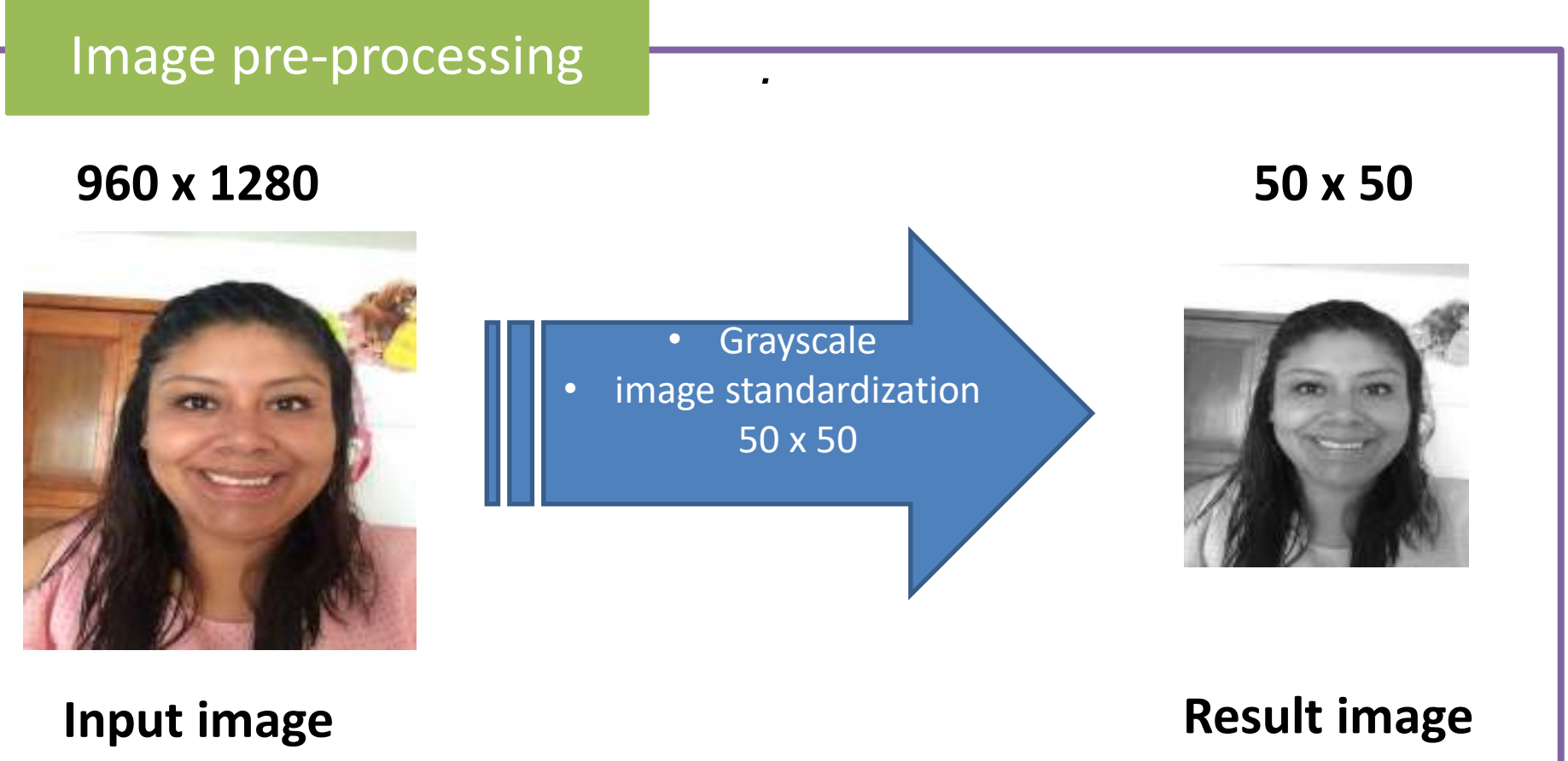


Figure 3. Graphic example of pre-processing images

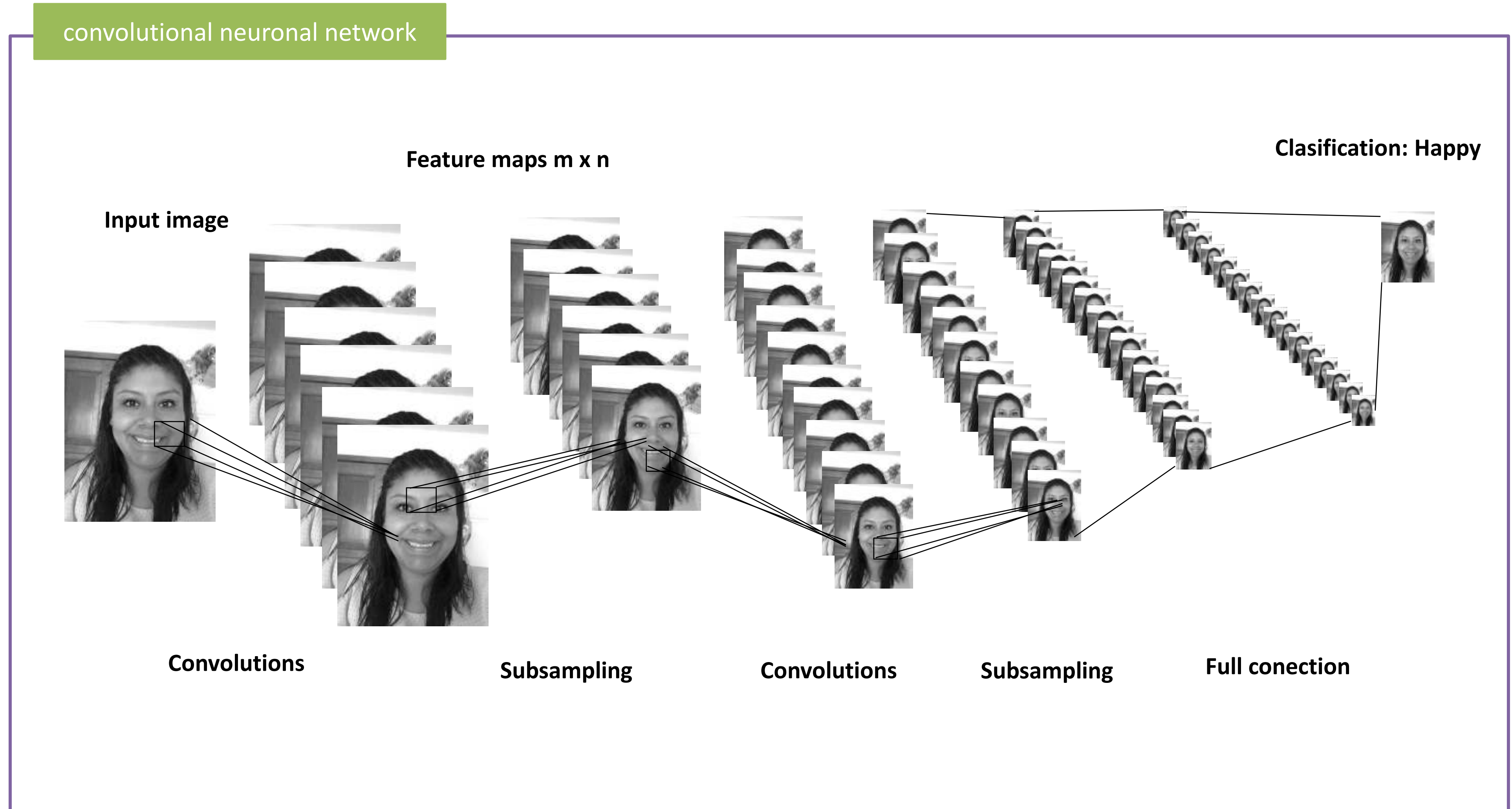


Figure 4. Architecture of the convolutional neuronal network

4. Results



Figure 5. Recognition of facial expression: happy

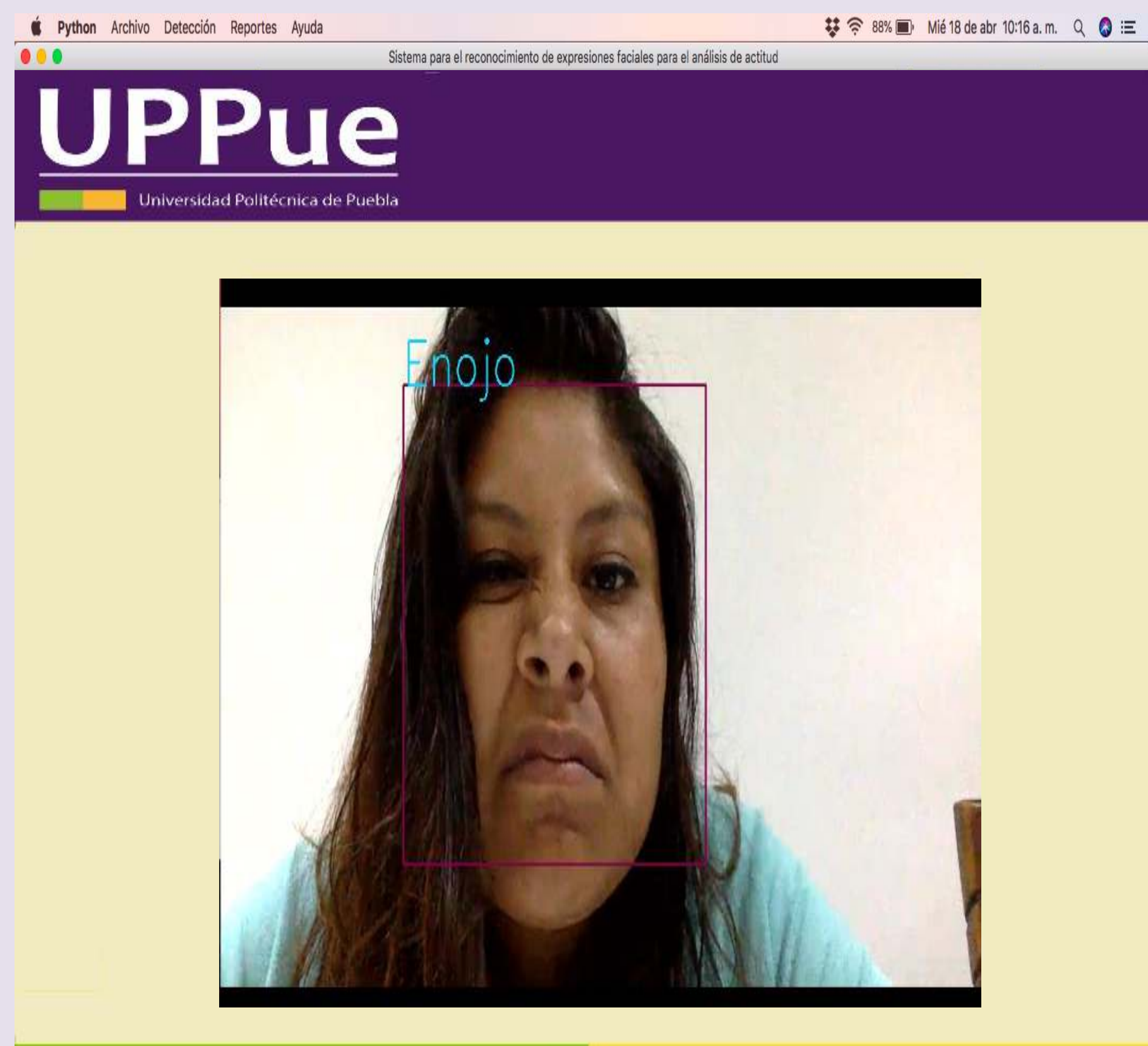


Figure 6. Recognition of facial expression: angry

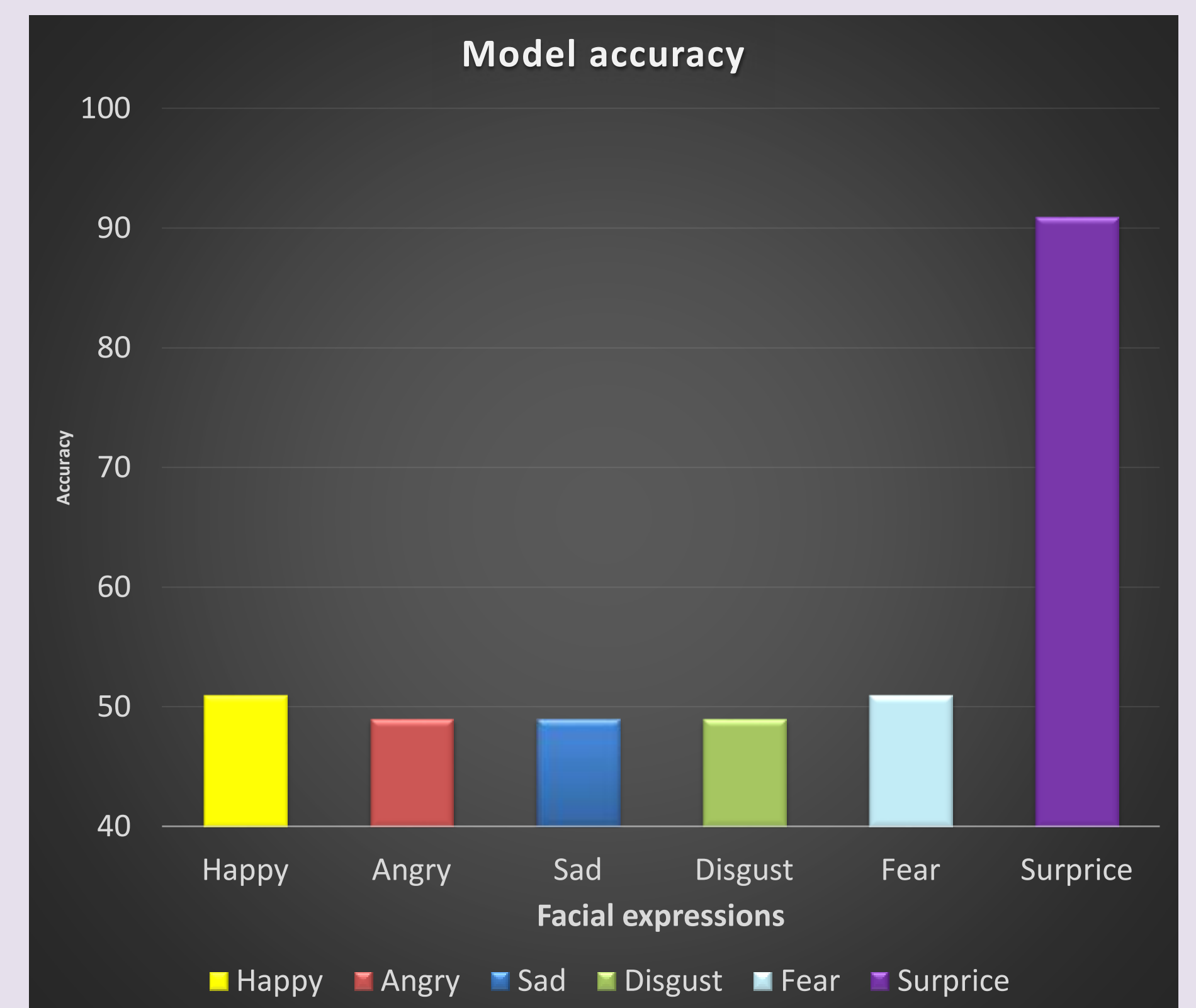


Figure 7. Accuracy of each facial expression of the trained model

5. Conclusion

It has been developed a prototype that allows to recognize the six facial expressions that are: happy, angry, sad, disgust, fear and surprise by creating the classification model that is developed with Python and the TensorFlow library. It is important to mention that with the number of facial expressions that are detected in the video sequence you can identify the attitude of a person when doing a test of algebra.

Acknowledgements

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References

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