**Oleksandr Hladun**
Bachelor student
**Maryna Molchanova**
Teacher of Computer Science Department
**Olha Zalutska**
Teacher of Computer Science Department
*Khmelnytskyi National University, Ukraine*

# METHOD FOR DETERMINING THE PERSON EMOTIONAL STATE IN REAL TIME BY NEURAL NETWORKS TOOLS

**Abstract.** The paper proposes method for determining the person emotional state in real time by means of neural networks, which allows for transformation of input data in the form of trained neural network model of convolutional architecture and video stream into output data that includes information about person's emotional state, presented in the form of emotional tags that correspond to emotions: joy, sadness, anger, disgust, fear, surprise and neutral.

In today's world, where technological progress is unstoppably gaining momentum, understanding and interacting with the emotional sphere of a person become not only important, but also an integral part of everyday life. However, emotional state assessment and recognition remain challenging tasks for researchers and developers. Therefore, the method of determining the emotional state of a person in real time by neural networks tools is proposed, which uses a convolutional neural network and allows detecting 7 basic emotional states of a person (Fig. 1).

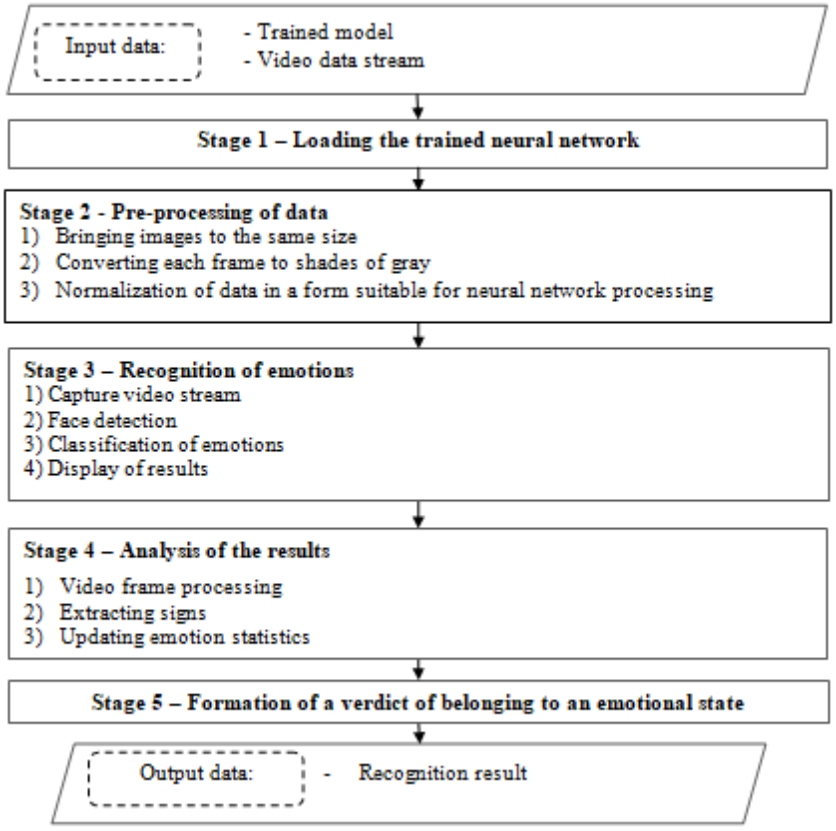


Figure 1 – Stages of the method of determining a person's emotional state in real time

The proposed method allows to achieve an accuracy of more than 80% for each emotion, the chart of metric values for each emotion is shown in Figure 2.

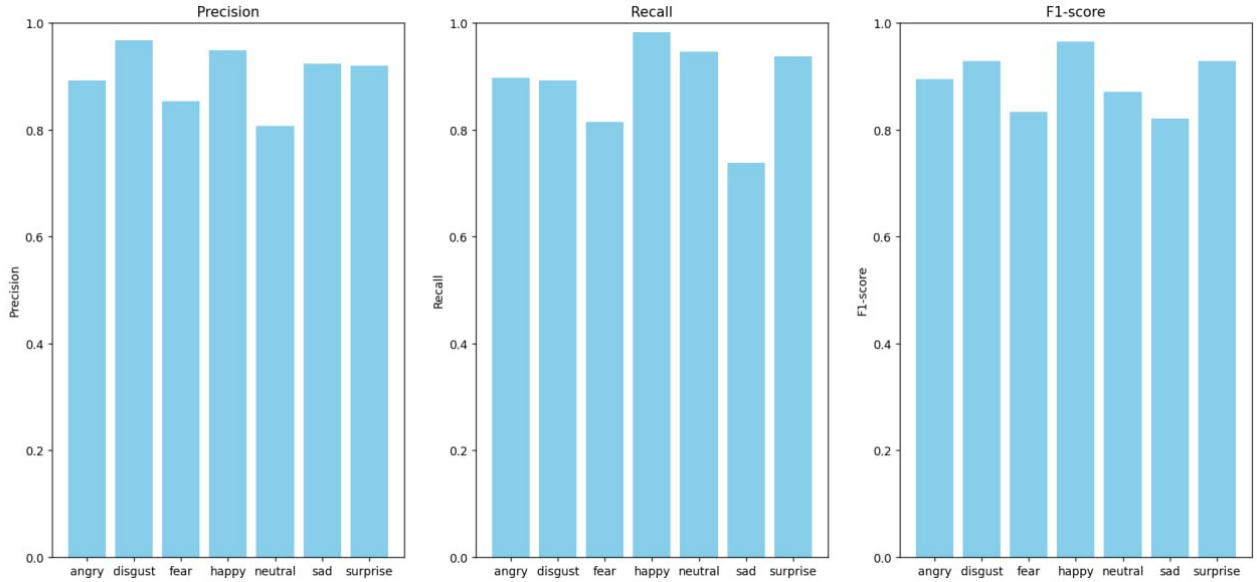


Figure 2 – The value of metrics for emotions

As part of the conducted research, application software was also created, which demonstrates the validity of the developed method (Fig. 3).

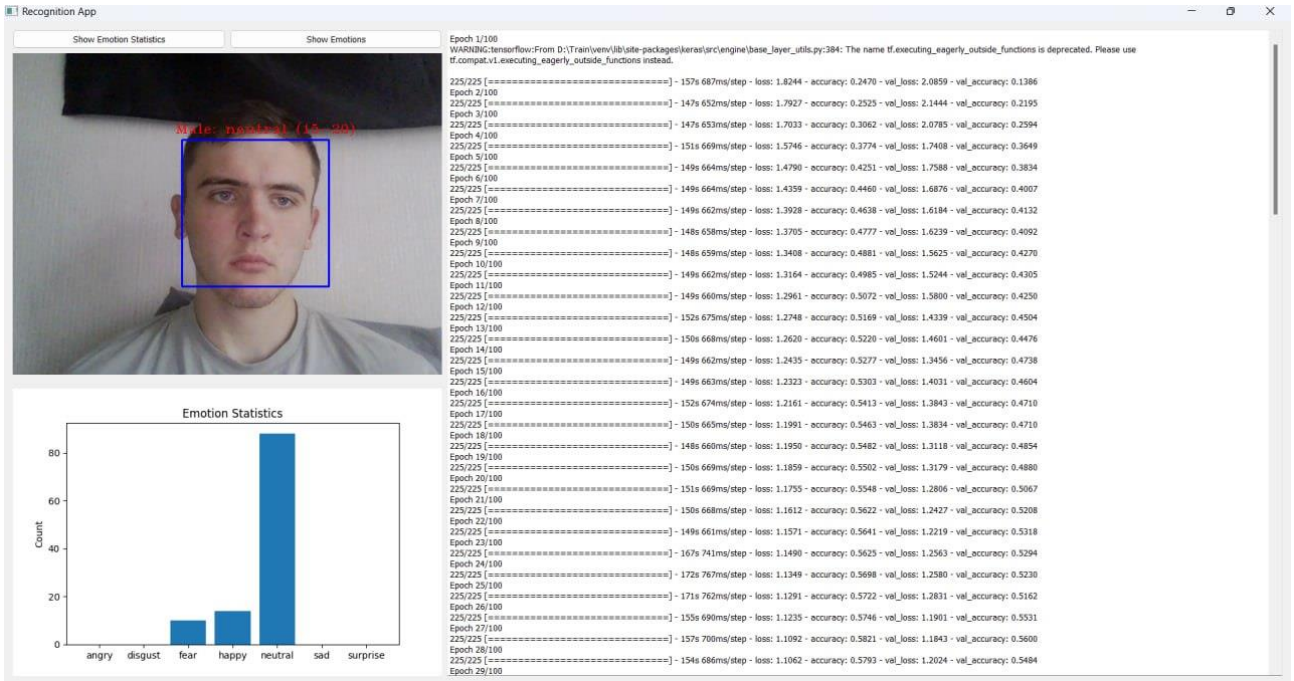


Figure 3 – Developed software product (author Oleksandr Hladun on photo)

Therefore, a method for determining a person's emotional state in real time by means of neural networks was created, which uses the convolutional architecture of a neural network and allows identifying emotional states with an accuracy of more than 80%.