Weaknesses of facial emotion recognition systems

Abstract

Emotion detection from faces is one of the machine learning problems needed for human-computer interaction. The variety of methods used is enormous, which motivated an in-depth review of articles and scientific studies. Three of the most interesting and best solutions are selected, followed by the selection of three datasets that stood out for the diversity and number of images in them. The selected neural networks are trained, and then a series of experiments are performed to compare their performance, including testing on different datasets than a model was trained on. This reveales weaknesses in existing solutions, including differences between datasets, unequal levels of difficulty in recognizing certain emotions and the challenges in differentiating between closely related emotions.