



OPEN ACCESS

EDITED AND REVIEWED BY
Florin Dolcos,
University of Illinois at Urbana-Champaign,
United States

*CORRESPONDENCE
Tindara Capri
✉ t.capri@unilink.it

RECEIVED 31 May 2024
ACCEPTED 12 June 2024
PUBLISHED 25 June 2024

CITATION
Capri T, Cicceri G, Distefano S and
Tartarisco G (2024) Editorial: Computer vision
and human behaviour to recognize emotions.
Front. Psychol. 15:1441678.
doi: 10.3389/fpsyg.2024.1441678

COPYRIGHT
© 2024 Capri, Cicceri, Distefano and
Tartarisco. This is an open-access article
distributed under the terms of the [Creative
Commons Attribution License \(CC BY\)](#). The
use, distribution or reproduction in other
forums is permitted, provided the original
author(s) and the copyright owner(s) are
credited and that the original publication in
this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted
which does not comply with these terms.

Editorial: Computer vision and human behaviour to recognize emotions

Tindara Capri^{1*}, Giovanni Cicceri², Salvatore Distefano³ and Gennaro Tartarisco⁴

¹Department of Life and Health Sciences and Health Professions, Link Campus University, Rome, Italy, ²Department of Biomedicine, Neuroscience and Advanced Diagnostics (BiND), University of Palermo, Palermo, Italy, ³MIFT Department, University of Messina, Messina, Italy, ⁴Institute for Biomedical Research and Innovation (IRIB), National Research Council (CNR), Messina, Italy

KEYWORDS

artificial intelligence, machine learning, computer vision, human behavior, emotion mining, general psychology

Editorial on the Research Topic

Computer vision and human behaviour to recognize emotions

Computer vision is the interdisciplinary scientific field that deals with how computers can gain high-level understanding from digital images or videos. From the perspective of engineering, it seeks to automate tasks that the human visual system can perform. Additionally, integrating insights from general psychology and computer vision can enhance our understanding of human behavior and the mental processes underlying emotions and future actions (Wiley and Lucas, 2018; Patel and Patel, 2020). The present Research Topic aimed to discover and argue computer vision solutions suitable for recognizing and managing emotions, considering the latest research contributions in the multidisciplinary field of engineering, neuroscience and behavioral psychology applied to the field of computer vision.

A study, included in this Research Topic, carried out a cross-racial validation of two common facial emotion recognition systems, respectively FaceReader and DeepFace (Li et al.). FaceReader was a user-friendly and versatile software for examining face images or videos. This system employs deep-learning models to detect faces and classify facial expressions. DeepFace was a Python package that implements face recognition and facial attribute analysis, such as: age, gender, emotion, and race. It used different models based on convolutional neural networks. To compare and validate these two systems, the authors used two Western and two Eastern face datasets and calculated the accuracy for each system on face images from the same emotion category of each dataset. With reference to the Western dataset both systems obtained a high accuracy, whereas for the Eastern dataset accuracy was poor.

A second study of Kim et al. also investigated emotion recognition comparing human behavior and machine analysis in three featural parameters, such as prototypicality, ambiguity, and complexity. The authors carried out two studies in which facial expression videos and related images depicting the peak of the target and non-target emotion were presented to both human observers and the machine classifier. Results were interesting because it was found that recognition performance by the machine was better to humans for both target and non-target images.

Another study of Zhang et al. investigated facial emotion recognition in virtual reality environments, using a novel system with MobileNet V2. This system was a lightweight convolutional neural network appropriate for running on virtual reality headsets. Obtained results were controversial because the model better recognized some emotions like “Neutral,” “Happiness,” “Sadness,” and “Surprise,” but the model confused “Anger” and “Fear” emotions with “neutral” ones.

In the last study included in this Research Topic, the authors carried out a quasi-experimental study aimed to identify children’s accuracy in recognizing basic and neutral facial emotions in two conditions (Mastorogianni et al.). A condition was no-masks on the face and another condition was faces partially covered by various types of masks. Results showed that children accurately recognized emotions even when face was covered by mask.

The present Research Topic shows that the intersection of computer vision and human behavior opens promising possibilities for emotion recognition, with applications that can profoundly impact various fields. As the technology advances, addressing the challenges and ethical issues will be paramount to ensure that emotion recognition systems are reliable, unbiased, and respectful of individual privacy. With responsible development and deployment, computer vision could revolutionize our understanding and interaction with human emotions, leading to more empathetic and responsive systems.

Author contributions

TC: Writing – original draft, Writing – review & editing. GC: Writing – original draft, Writing – review & editing. SD: Writing –

original draft, Writing – review & editing. GT: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

We thank authors of the articles published in this Research Topic for their significant contributions and the referees for their meticulous review. We also thank the editorial board of Frontier in Psychology Section Emotion Science, especially Naomi Kilpatrick, for their support.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher’s note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

Patel, R., and Patel, S. (2020). A comprehensive study of applying convolutional neural network for computer vision. *Int. J. Adv. Sci. Res.* 6, 2161–2174.

Wiley, V., and Lucas, T. (2018). Computer vision and image processing: a paper review. *Int. J. Artif. Intell. Res.* 2, 29–36. doi: 10.29099/ijair.v2i1.42