

EMOTION AI IN EDUCATION: EXPLORING THE RESEARCH POTENTIAL OF MORPHCAST

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doi: 10.18355/PG.2025.14.2.13

Abstract

Nowadays, modern technologies and artificial intelligence play an increasingly important role not only in the educational process but also in academic research. One of the innovative tools in this area is the MorphCast AI-powered software tool, which uses Emotion AI technology – a form of artificial intelligence capable of analyzing and interpreting emotional reactions based on non-verbal expressions, such as facial expressions. The paper aims to present the possibilities of using MorphCast within research projects. It describes the main functions of the software, its advantages in capturing affective reactions, as well as methodological and ethical issues associated with its use. The paper aims to discuss the potential of artificial intelligence-based technologies in developing innovative educational approaches.

Key words

artificial intelligence, affective computing, MorphCast, education

1. Introduction

Understanding the emotional experiences of learners is one of the important predictors of a successful teaching and learning process (Osika et al., 2022). The importance of this statement is confirmed by the fact that emotional experience and the learning process cannot be separated (Borja, 2019).

In recent years, the ability to analyze students' emotional expressions has been significantly enhanced by the implementation of Artificial Intelligence (AI) into the educational space (Salloum et al., 2025). Although many people imagine various areas under the term AI, affective computing (AC), from which education could benefit, is often not included in these ideas (Delovski, 2023).

Rosalind Picard first proposed the notion of affective computing in the mid-1990s, which launched the emergence of a new field within AI specializing in the detection, interpretation, and simulation of human emotions in machines (Picard, 2000). Simply put, pattern recognition that has been customized for emotional data is the foundation of AC technology (Stoner, 2025).

Delovski (2023) reports the use of Emotion AI or AC in several industries, such as marketing, human resources, and education. The educational process can be significantly improved with the help of Emotion AI, which enables the analysis of students' behavioral patterns (Vistorte et al., 2024), the understanding of which is essential for its effectiveness (Osika et al., 2022).

Affective computing also encompasses the Facial Emotion Recognition (FER) method, which is used specifically to analyze emotional expressions through visual inputs like images or videos (European Data Protection Supervisor, 2021). Software tools that use affective computing (AC) and the Facial Emotion Recognition (FER) method include, for example, Brand24, MorphCast, and FaceReader (Lasota, 2024).

This paper builds on the pilot use of MorphCast emotion recognition software in empirical research, without presenting specific research data. The aim is to provide an overview of the possibilities of using MorphCast software in educational research and

to highlight its potential in the area of analyzing students' affective states through emotion recognition technology.

Affective Computing in Education

The study and creation of tools and systems that can identify, decode, process, and mimic human emotions is known as affective computing (Tao et al., 2005). AC can interpret complex human emotional expressions from voice, facial expressions, and other data (Calvo & D'Mello, 2010), by utilizing cross-sectional knowledge from fields like computer and cognitive science (Dilmegani & Arslan, 2025).

Initially, AC has been used in the educational context as a helping tool for pupils with special needs (Delovski, 2023). However, nowadays the focus is on emotions and their importance in the educational process, which is the reason for the really noticeable growth of affective computing as a research topic (Yadegaridehkordi et al., 2019), beyond its initial scope in special education (Delovski, 2023).

Regarding state-of-the-art, a systematic review by Yuvaraj et al. (2025) found that in 65% of the analyzed studies, AC was used solely for the passive assessment of emotional states, rather than for active emotional intervention. However, according to Yadegaridehkordi et al. (2019), it is possible that many developers will now reflect on the increased interest in AC and embed it in existing educational platforms that analyze learners' emotions, helping teachers apply intervention programs.

In an educational environment, AC can help teachers assess learner engagement and provide feedback on comprehension levels (Pei et al., 2024). Stoner (2025) suggests the implementation of AC into teacher dashboards, intelligent tutoring systems (ITS), adaptive educational games, and computer-aided learning for neurodivergent learners.

As for the challenges and limitations of AC in education, privacy concerns and ethical considerations are majorly discussed (Awan, 2023). In connection with that, several authors call for wariness and highlight the importance of existing and possible future regulations (Delovski, 2023; Salloum et al., 2025; Stoner, 2025).

MorphCast Video Analysis Application

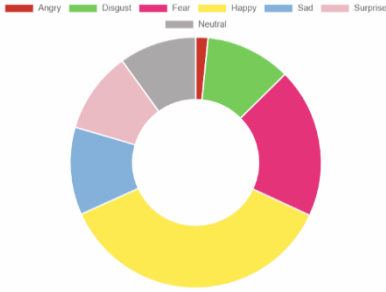
MorphCast Emotion AI is a cutting-edge technology that uses artificial intelligence to identify and analyze facial emotions (Pagani et al., 2023). The application itself processes videos locally on the user's browser, and no data is uploaded to external servers. All the resulting data remain confidential, and, therefore, user privacy is prioritized (MorphCast, 2025).

MorphCast uses a number of emotional metrics, such as valence, arousal, the circumplex model of affect (Russell, 1980), attention, positivity, six emotions according to Ekman's model (Ekman & Friesen, 1971), and even the detection of the number of faces (MorphCast, 2025). In MorphCast's video analysis application, it is possible to export detailed reports in CSV, JSON, or PDF dashboard formats as visible in Figures 1 and 2 (MorphCast, 2025). It also offers a sizeable monthly amount of free usage, making it accessible for teachers and academics (MorphCast, 2025).

Practical Observations and Reflections

Based on preliminary experience with the tool in a pilot study, MorphCast Emotion AI was tested for the purpose of analyzing facial emotions from pre-recorded video monologues. Each video was approximately one minute long and featured a single speaker, captured from the shoulders up, in a naturally lit room with a plain white background.

Emotions Distribution



Quadrant radar

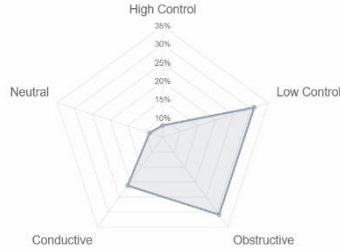


Figure 1: MorphCast Dashboard Report
Source: own application testing, 2025

Engagement Over Time

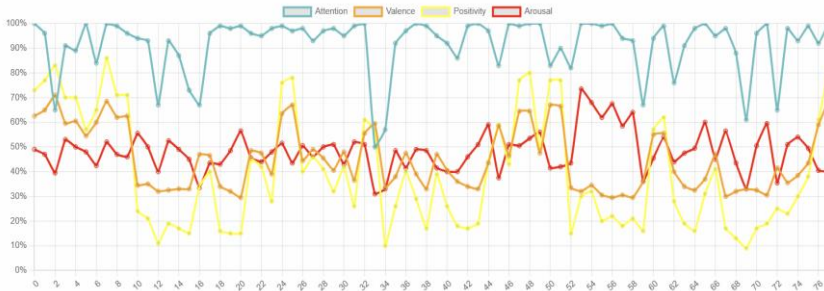


Figure 2: MorphCast Dashboard Report
Source: own application testing, 2025

Strengths

One of the most significant advantages of MorphCast is that it is freely accessible, making it an appealing option for researchers operating under limited budgets. The tool allows users to export visually engaging PDF reports, which can be customized in terms of analysis depth (i.e., adjusting the level of detail presented in the emotional readout). Another major benefit is that data are not stored on any server, which is crucial in human-centered research, where privacy and data security must be prioritized. The ease of access further contributes to its usability in educational research contexts.

Limitations

Despite its strengths, several limitations were encountered during the pilot application. A prominent issue was the tool's difficulty in recognizing facial expressions when the participants were wearing glasses, often leading to incomplete or inaccurate analysis. This problem is partially addressed on the MorphCast website under the section *Transparency on the degree of probability and accuracy*, where it is stated that the lighting conditions as well as the physics of light refraction, may play a crucial role in the data accuracy. In the cases mentioned above, all the respondents were wearing blue light glasses, the reflection of which was visible on the camera and

subsequent analysis was impossible. Such videos had to be discarded from the research.

In addition, the processing time for each video was relatively long, which, together with high energy consumption, poses a challenge for studies involving larger sample sizes. Furthermore, PDF reports cannot be downloaded in bulk, requiring manual download of each file separately, which may also be time-consuming. It is also worth noting that some graphs in the reports lack exact numerical values, which suggests the tool may be designed more with general audiences in mind rather than researchers who require detailed quantitative results.

Considerations for Research Use

While MorphCast offers an innovative and accessible way to integrate emotion AI into research workflows, questions of validity and reliability remain open, as the software has not yet undergone rigorous peer-reviewed evaluation within the broad scientific community. For this reason, its results should be interpreted with caution, especially when used as a primary data source in academic studies.

Conclusions

It is not unexpected to see a rising interest of educational institutions in AI, as research by Gartner (2020) indicated that 24% of businesses have increased their investments in AI since the pandemic of COVID-19 (Delovski, 2023). Educational institutions that are using affective computing are already reporting promising results (Awan, 2023). Delovski (2023) alerts that just like with other advances, those who can adjust more quickly will benefit, while those who cannot will fall behind.

For teachers, the most attractive feature of AC is that it enables the understanding of why students might be feeling the way they are and modifies their teaching methods accordingly (Stoner, 2025). Although there may be advantages to affective computing, there is also the need to think about the morality of ongoing emotional monitoring and figure out how the safety measures (Awan, 2023). Additionally, over-reliance on technologies like affective computing (AC) may lead to emotional detachment from real-world interactions, which is something teachers should be mindful of and try to prevent.

Based on our experience using the MorphCast Emotion AI tool in a classroom-based research setting, we observed that while the technology offers intriguing real-time insights into students' emotional states, the results often require careful interpretation and contextual understanding. For example, inconsistencies in emotional score results were sometimes caused by the technical properties of MorphCast. Since AI is still under development and technology such as this is improved based on constant data input, affective computing should serve as a complementary tool, not a replacement for the teacher's and researcher's intuition and experience.

Acknowledgements

This work was supported by the KEGA Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic under Grant KEGA 001UKF-4/2024.

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