Review of: "EEG-based Emotion Classification using Deep Learning: Approaches, Trends and Bibliometrics"

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Potential competing interests: No potential competing interests to declare.

- ***Paper strengthness***

The paper "EEG-based Emotion Classification using Deep Learning: Approaches, Trends, and Bibliometrics" demonstrates several strengths:

Comprehensive literature review: The paper provides a thorough review of recent advancements in EEG-based emotion classification using deep learning techniques. It covers a wide range of methodologies, including convolutional neural networks, recurrent neural networks, attention mechanisms, and spiking neural networks. This comprehensive overview allows readers to gain insights into the state-of-the-art techniques and their applications in emotion classification.

Bibliometric analysis: The inclusion of a bibliometric analysis adds a unique dimension to the paper, providing valuable insights into the evolution of research trends, influential authors, prolific sources, and key research themes in the field of emotion classification. This quantitative analysis enhances the paper's credibility and contributes to a deeper understanding of the research landscape.

Data-driven approach: By leveraging the Scopus database and employing advanced analytical tools, the paper adopts a data-driven approach to analyze a substantial corpus of research literature. This methodology enhances the robustness of the findings and enables the identification of significant patterns and trends in EEG-based emotion classification research.

Clear objectives and research questions: The paper clearly outlines its objectives and research questions, which focus on understanding the trends, contributors, and methodologies in EEG-based emotion classification. This clarity of purpose helps guide the analysis and ensures that the paper stays focused on its intended goals.

Insights for future research: The paper concludes with a discussion of future research directions and practical implications, such as real-time emotion classification and multimodal approaches. By highlighting areas for further exploration and application, the paper stimulates discourse and innovation in the field, paving the way for future advancements.

- ***Paper Weakness***

However, like any scholarly work, it may have certain weaknesses or areas where improvements could be made:

Limited discussion of methodological limitations: While the paper acknowledges the limitations of its bibliometric analysis, such as the focus on the Scopus database and exclusion of non-English papers, it could provide a more detailed discussion of potential biases or gaps introduced by these limitations. Additionally, addressing the potential limitations of the deep learning techniques used in emotion classification, such as data scarcity or interpretability issues, would enhance the paper's rigor.

Lack of critical evaluation of reviewed studies: The paper provides a comprehensive list of recent deep learning techniques and their performance in EEG-based emotion classification. However, it lacks critical evaluation or comparison of these techniques in terms of their strengths, weaknesses, and suitability for different applications or datasets. Adding such analysis would provide readers with valuable insights for selecting appropriate methods for their research.

Limited discussion on reproducibility and generalizability: The paper highlights the accuracy achieved by various deep learning models in emotion classification tasks but does not delve deeply into the reproducibility of these results or their generalizability to real-world scenarios. Including discussions on model generalization, transferability to diverse populations, and reproducibility of findings would strengthen the paper's implications for practical applications.

Insufficient consideration of ethical implications: Deep learning-based emotion classification, particularly when applied in domains like healthcare or human-computer interaction, raises ethical concerns regarding privacy, consent, and potential biases in algorithmic decision-making. Addressing these ethical considerations and discussing strategies for mitigating biases and ensuring fairness would enrich the paper's discussion and broaden its impact.

Clarity in writing and organization: While the paper contains a wealth of information, some sections could benefit from improved clarity and organization. Ensuring that key points are effectively communicated and that the flow of the paper is logical and easy to follow would enhance readability and comprehension for readers.

Addressing these weaknesses would strengthen the overall quality and impact of the paper, making it more informative and valuable to researchers and practitioners in the field of EEG-based emotion classification.