Title: Enhancing online well-being through transformer-based analysis of misinformation and mental health

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Abstract: With the growing digitalization, social media has truly transformed the ways in which people connect, but not without consequences. Alongside enhanced connectivity, these platforms have become fertile ground for the rapid spread of misinformation, with troubling implications for mental health. While much of the existing research has focused on mitigating harmful content, emerging efforts are also recognizing the role of positive discourse, such as hope speech, in promoting digital well-being. This study introduces a hybrid transformer-based model, combining RoBERTa and LSTM architectures, to tackle three pressing challenges: identifying misinformation, gauging its psychological impact, and classifying related mental health disorders, particularly across diverse and low-resource language contexts. The model achieved impressive accuracy rates: 98.4% for misinformation detection, 87.8% for mental health assessment, and 77.3% for disorder classification. A significant link has been shown to substantiate the presence of a statistically significant association between exposure to deceptive information and mental health outcomes using statistical analysis (Pearson's Chi-Squared Test (with a p-value = 0.003871. These findings highlight the urgent need for effective strategies to both curb misinformation and encourage positive emotional engagement online. Future investigations are encouraged to expand this work by incorporating hope speech detection frameworks and addressing broader linguistic, demographic, and cultural perspectives.

Keywords: Mental health, Disorder analysis, Deep learning, Fake news, Social media

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