Towards Understanding of User Perceptions for Smart Border Control Technologies using a Fine-Tuned Transformer Approach

Smart Border Control (SBC) technologies became a hot topic in recent years when the European Union (EU) Commission announced the Smart Borders Package to improve the efficiency and security of the border crossing points (BCPs). Although, BCPs technologies have potential benefits in terms of enabling travellers' data processing, they still lead to acceptability and usability challenges when used by travellers. Success of these technologies depends on user acceptance. Sentiment analysis is one of the primary techniques to measure user acceptance. There exists variety of studies in literature where sentiment analysis has been used to understand user acceptance in different domains. To the best of the authors knowledge, there is no study where sentiment analysis has been used for measuring the user acceptance of SBC technologies. Thus, in this study, we propose a fine-tuned transformer model along with an automatic sentiment labels generation technique to perform sentiment analysis as a step towards getting insights into user acceptance of BCPs technologies. The results obtained in this study are promising; given the condition that there is no training data available from BCPs. The proposed approach was validated against IMDB reviews dataset and achieved weighted F1-score of 79% for sentiment analysis task.

Keywords:

Border control technologies, Sentiment analysis, Technology acceptance, User perceptions, Deep learning, Transformer

Biography:

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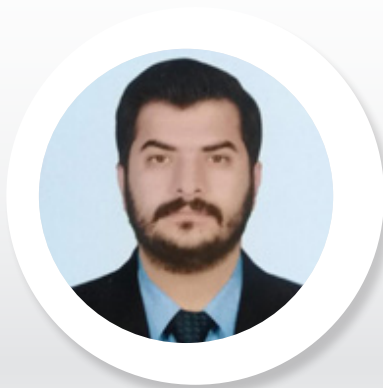
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