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Activity Recommendation for Mental Stress (ARMS)

A Dissertion by

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ABSTRACT

This research paper presents an activity recommendation system for mental stress using machine learning techniques. Mental stress is a significant public health concern that can lead to various mental and physical health problems. To alleviate mental stress, regular physical activity is recommended. However, people often struggle to find suitable activities that can help them manage their stress levels.

To solve this problem, an activity recommendation system is proposed that uses machine learning models to predict users stress and provide personalized recommendations. Two machine learning models were used in the research: Naive Bayes Multinomial for activity prediction and content-based filtering using cosine similarity for recommendation. The Naive Bayes Multinomial model was used to predict the probability of the user's stress. The content-based filtering model used Tfidf vectorized cosine similarity to recommend activities that can help manage mental stress levels.

The proposed system was evaluated, and the results showed that the system can effectively predict users' stress and provide relevant recommendations for managing mental stress. The system's performance was evaluated using various metrics such as precision, recall, and F1-score, and the results showed that the prediction system outperformed the baseline models. The recommendation was evaluated using the MAP for predictions as the output of the recommendation system is a range and it depends on different features.

Overall, the proposed activity recommendation system for mental stress has the potential to improve users' mental well-being by providing personalized and relevant activity recommendations. The system can be used by mental health professionals to prescribe suitable activities to their patients or by individuals who want to manage their stress levels. The research demonstrates the effectiveness of machine learning techniques in developing personalized activity recommendation systems for mental health.

Keywords: Recommendation Systems, Prediction System, Machine Learning, Mental Stress, Naïve Bayes Multinomial, Cosine-Similarity