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Developing a Mobile Application to Explore the Effect of University Students' Activities on Their Social Dynamics

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Abstract

Understanding the effect of other students' activities and their social dynamics in a university is very important. This knowledge can be used to enhance the student's university performances; academic performances as well as extra-curricular activity participation. When students have a good relationship among themselves, collaboration in those activities and satisfaction they gained is highly increased. Furthermore, it helps to increase the overall university performance. The main objective of this research is to design and develop a mobile application to explore the effect of other students' activities on their social dynamics. To achieve this goal, an android application was developed to track geo-locations of students' to find out the students who frequently meet within the university as well as the outside of the university. Also, it uses the activities which they follow, and the data were updated on the firebase real-time database. The system was used K-means algorithm to identify a group of friends and, the Long Short Term Memory (LSTM) neural network was trained using Keras library to predict the relevant group he/she is going to join, the location and the activity they are going to do in the next time step. Since we have implemented three separate LSTM for activity prediction, location prediction and cluster prediction we used Categorical Cross Entropy to evaluate the performance of the LSTM of both activity and cluster prediction and Mean Squared Error to evaluate the performance of the LSTM of location prediction. Two methods of evaluation were developed for this application; evaluating the accuracy of prediction by the mobile application itself and evaluating the effectiveness of the mobile application using a questionnaire. A total of 150 students have participated in the questionnaire. We achieved 70% accuracy for clustering students relative to a group of friends, the location they gathered and activity they followed. According to the responses 62.8% and 70% of respondents were acknowledged positively for the usefulness and acceptance of the system, respectively.

Keywords: social dynamics, geo locations, Long Short Term Memory (LSTM)[Suggested Citation](#) >[Show Contact Information](#) >

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