

MOOD DETECTION THROUGH MOBILE PHONE SENSING

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Abstract

Human mood plays a vital role in both the day-to-day lives of people and their mental health. Increased awareness of our own emotions can enhance the quality of our day-to-day lives and improve our mental health. Mood identified and recorded over a longer period can assist in making accurate mental disorder diagnoses as the mood has a direct impact on them. In a technological aspect, a model that can identify human mood at a given time can be used as a base component for any context-aware applications. (i.e., music players, home systems) This project is an attempt to build a machine learning model that could detect human mood using the data collected through mobile phones.

A neural network is implemented using the time-series data extracted from the StudentLife dataset. The number of calls and SMSs, duration of physical activity, duration of the conversations that the user took part in or happened around them, hours of sleep, location, number of people that the user interacted with, and whether the user exercised on the given day is taken as the inputs to the model and the mood is predicted as “Positive Mood” or “Negative Mood”. The selected data represents the social interaction levels, physical activity levels, sleep, and context data of a user, which are some of the main contributors to the human mood.

Using a dataset of 1344 data points with above mentioned mobile phone usage, sensory and mood self-report data, the model has been able to achieve an accuracy of 66.54%. The results and the comparative evaluation show that both the concept and solution have room for improvement. At the same time, the results indicate that the different types of data about a user that can be collected unobtrusively using their mobile phones can be used to detect human mood.

Key Words: Human Mood, Mental Health, Machine Learning, Neural Networks