

Abstract

Our team concentrates on developing a sleep cycle alarm clock, which can provide user an optimal wake up experience at the cost of slightly reduce the sleeping length by collecting movement data for analysis of sleep cycle and choosing a proper time to wake the user up.

In modern world, people tend to have fast-paced life on working. This leads to the problem that most of people do not have a regular sleep pattern for daily life. Using normal alarm clock could be a choice to wake people up but we all have the experience feeling dizzy and exhausted after waken by the alarm clock. The reason is that normal alarm clock cannot recognize the sleep cycle and it may wake you up when you are having deep sleep.

Therefore our motivation is to develop the application to track the general sleep cycle and give predicted time which would be a proper time to wake users up during their light sleep. The user interface we choose is Android and we use gyroscope in smartphones to collect movement data which determine the general sleep cycle after denoise. For prediction, we use Support Vector Machine (SVM) and Auto Regression as our algorithm to give recommend time to wake user up. The application first lets user to choose the latest time to wake user up. Then lets user select time period for us to choose the best time to ring the alarm clock. For instance, if user chooses 7:00 AM as the latest time and chooses 30 minutes as time period, the application will pick the most proper time during 6:30 AM to 7:00 AM. The application could also plot the figure of movement data for user to see the general sleep cycle directly.