Research on Cell Phone Usage Model Oriented College Students

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Abstract. Based on People's general dependence on using cell phone, this paper mainly investigates the distance between the daily activities of human body and mobile phone. Through the questionnaire, we statistic mobile phone using frequency and the distance change of human specific pointing at different time nodes in 24 hours. Through the questionnaire, we simulate the frequency and distance of mobile phone using in a day. The data is used to analysis and to get the changes and influence while human body using the phone. The analysis shows that the high frequency period of using mobile phones during a day. It states the negative effects for human body of using cell phone in high frequency and make suggestions on it.

Introduction

Different people use cell phone in different situations. Suppose that the cell phone is a movable point, which can be limited in a definite range. While the targets of the research are students, office workers and the elder person, at this time, the research scope can be used as the research content of mobile model construction through the main feature activities of these groups.

Due to the different professions and the range of activities, the phone using frequency is more diversity. The old use phone to make a call and read news very often. The frequency of phone and hands' relative displacement is much lower than other professions. In most situations, their hands, eyes won't touch the phone directly. The office workers are group who use cell phone in the highest frequency, while in the process of human act, the distance between the phone and hands can be regarded as 0.While taking the public transport or taking part in every different kinds of activities, the phone almost swing as human body, however the distance between eyes and phone changes according to different requisite at different time quantum, all the changes can be limited in a definite range.

Surveys on the Use of Mobile Phones in College Students

Because of the difference and repeatability of each person doing things every day, the research object is taken as the case of the university students in detail, and the time node is divided into sections. In this paper, 350 questionnaires were collected, 330 of which were valid, by means of statistics and data analysis on the results of the questionnaire survey of dozens of college students in China.

Question 1: school & specialty
A wide selection of materials from 180 schools in 25 districts makes the survey more representative.

Question 2: length of mobile phone service per day
To investigate the length of cell phone use time of college students, divide them into high frequency, middle frequency and low frequency.

Question 3: the use of high frequency cell phone time period
According to the questionnaire, the period of high frequency use of mobile phone was studied. High frequency periods during which mobile phones move with their hands and eyes during a simulated day of activity. The most high frequency periods of the day are 18:00-23:00. The free time of the day at the end of the day.
Question 4: adverse effects of prolonged use of mobile phones
Long-term high frequency use of mobile phones, the human body to produce a variety of adverse reactions, including visual fatigue, attention loss, difficulty in getting up, back pain, skin greasy and severe hair loss.

Question 5 to 12: the distance between the mobile phone and the eyes and hands in each time period

The distance between the cell phone and the eyes at 23:00 to 7:00 (sleep time)
The distance between the mobile phone and the hand at 23:00 to 7:00 (sleep time)
The distance between cell phone and eyes at 8:00 to 12:00, 13:00 to 17:00 (class time)
The distance between cell phone and hand at 8:00 to 12:00, 13:00 to 17:00 (class time)
The distance between cell phone and eyes at 7:00 to 8:00, 12:00 to 13:00, 17:00 to 18:00 (mealtime).
The distance between the mobile phone and the hand at 7:00 to 8:00, 12:00 to 13:00, 17:00 to 18:00 (mealtime)
The distance between the mobile phone and the eyes at 18:00 to 23:00 (free activity)
The distance between the mobile phone and the hand at 18:00 to 23:00 (free activity)

Divide 24 hours a day into seven periods, to investigate the displacement of cell phone relative to human eyes and hands in each period of time.

Some information is used to collect about the mobile phone usage of college students and the distance between the mobile phone and human eyes and hands, which is mainly studied in this article. These college students come from different majors in different universities. From the collecting data, the data is analyzed from null - five hours, five - six hours, six - seven hours, seven -- eight hours, eight - ten hours, ten - sixteen hours, more than sixteen hours and investigated mobile phone using high-frequency time periods (Fig.2). As the data acquisition time, mobile phone is explored usage time for college students in 24 hours (Fig.1). We stipulate that students have to sleep for eight hours a day and sleep time for the evening of 23:00 to 7:00. Mobile phone usage time more than 16 hours are seriously affect individual daily life. The use of mobile phones for a long time body adverse reactions (Fig.3), and the lower mobile phone use hours, the more reasonable use of mobile phones.
According to the questionnaire, the high frequency time period of mobile phone was studied, and
the high-frequency time period of mobile phone about human hand and eye movement being
simulated. During the day, the high frequency time for mobile phone usage is 18:00-23:00 to end the
free time of studying and living.

When the distance between the mobile phone and the eye is specific to the exact digital distance,
the distance between the mobile phone and the eye is within 30cm, 30cm -- 1m, and >1m. Standard of
the distance between mobile phone and the hand is from 0 (are using mobile phones), 0-1 m (phones
on side), and more than 1 m (don't use mobile phone), according to the same group for the same
period for all mobile phone use frequency for these groups to simulate different times mobile devices.

Figure 3. Adverse Reactions to Cell Phone Use for a Long Time.

Figure 4. 23:00 – 7:00 The Next Day the Distance between the Cell Phone and the Eye.

Figure 5. 23:00 -7:00 The Next Day the Distance between the Phone and the Hand.
According to the frequency of using the phone, the students are divided into three groups, high frequency use the phone, low frequency use the phone and medium frequency use the phone. From the online questionnaire investigation, depending on the phone users for different frequencies whose phone tracks throughout and the displacement of the human movement during the day. The figure above shows the distribution in different time periods, different people use phone frequency to move the phone tracks throughout. (According to the pie chart and table) On the basis of data analysis, distance which between phone and eyes and hands in one day can be regarded as a self-organizing network of random walk models.
Table 1. Table of Timetable and Distance between Students and Eyes.

| Time   | Frequency | high frequency | medium frequency | low frequency |
|--------|-----------|----------------|------------------|--------------|
| 23:00-7:00 | stay away from the phone | stay away from the phone | stay away from the phone |
| 7:00-8:00  | Play with mobile phone | Play with mobile phone | stay away from the phone |
| 8:00-12:00 | Play with mobile phone | Free edge | Free edge |
| 12:00-13:00 | Play with mobile phone | Play with mobile phone | stay away from the phone |
| 13:00-17:00 | Play with mobile phone | Free edge | Free edge |
| 18:00-23:00 | Play with mobile phone | Play with mobile phone | Play with mobile phone |

Note: stay away from the phone (more than 1m, distance from eye more than 1m)
Play with mobile phone (distance from hand 0 m, distance from eye less than 30cm)
Free edge (30cm-1m from the hand, 30cm-1m from the eye)

According to the chart and data analysis, high frequency and low frequency use the phone are minority, medium frequency use the phone is majority. People use phone for 0-6 hour is in the majority. Most people use phone for long time, their body will unhealthy such as eye fatigue, mind cannot be concentrated. It makes us pay attention to the impact of phone to human body, to reduce the time using your phone. The birth of phone has provided many conveniences for our life, but it also affects us deeply. Use your phone correctly, reasonably and make the phone play a real role.

Table 2. Distance between Mobile Phone and Hand.

Table 3. Distance between Mobile Phone and Eye.

Summary
This paper searches the human moving track in different time states, and then divide them into three groups by different using frequency.
Students' daily behavior movement is modeled based on distance data which from the phone to eyes...
and hands, this model is divided by every two hours. Changing state according to time, and associate
this model to the appropriate people's common adverse reaction. Also, it draws the different
characters of these three groups. Based on the actual survey data obtained, compared these three
groups' data and the common adverse reaction, the results suggest that people who use phone in a long
time have to keep their phones stay or close to their hands and eyes, moreover in midnight the average
distance between human body and phone far more shorter than the mild and medium. If the situation
lasts for a long time, the physical quality of people who use mobile phones more often will be much
worse than those of the other two groups.
This paper analyzes the comprehensive data of phones' using frequency in different time states. It's
also combined with long time phone using may affect human physical repair and may bring us
overload operation. Phones' overuse may cause human body to unhealthy situation. To this condition.
Some measures can be taken to adjust the phones' using frequency to prevent physical sub-health.
Through this survey, the real situation can be shown that the real situation can be shown that of
college students' mobile phone use, and make unreasonable use of mobile phones do harm to the body
through investigation and analysis. To remind college students to use mobile phones more rationally.

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