HOW STUDENTS ARE MOSTLY AFFECTED BY USING MOBILE PHONE IN BANGLADESH

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering.

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APPROVAL

This Project titled **"How the students are mostly affected by using mobile phone in Bangladesh"** submitted by Nawaj shah, ID:172-15-9923, Md. Imran Hossain, ID:172-15-10112, Md. Tuchar Imran, ID:172-15-10114 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **September 2020**.
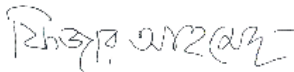
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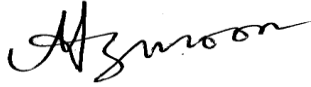**Dr. Mohammad Shorif Uddin**
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Ms. Nazmun Nessa Moon, Assistant Professor, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.
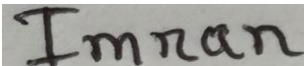
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ABSTRACT

This research titled "How Students Are Mostly Affected by Using Mobile Phone in Bangladesh" focus on mobile device with strong hardware capabilities which facilitate wider software, internet and multimedia functionalities such as music, video, cameras, and gamming in one unit. This obviously is a very useful device for us. Today, most of the students are using smart phones for the large part of the day to meet purposes like education, gamming, watching video, accessing social media, hearing music and so on. Amongst them, use of mobile phone for learning and education system is considered very helpful. But when they spend hours over it, other factors included, it could be proved very harmful for them. They facing some health hazards. Besides, a number of them are getting excessively technology dependent and addicted to smart phones. Now, an effective method to identify these effects is a burning question of the time. We use here XGBoost classifier to classify the effects on academic result, health hazard, family relation, and gender issues. This system can identify the effects which the students are facing by using mobile phone.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

Data classifier is an important study for exploring artificial intelligence and machine learning. It is one of the most used technologies to solve our problems in daily life. Recently, it has become a popular research topic, too, as the analysis of data is being increasingly essential to scientists and corporate personals alike. In the world of technology, with more and more new discoveries every day, we are facing newer challenges as well. One of the biggest of those issues is data analysis and management. Although the huge amount of data is impossible to be handled by even a highly expert human team, it can easily be tackled and solved by using artificial intelligence and classifiers. One such ever spreading technology is mobile phone, and knowing the effects of mobile phone usage in our life is a very complex issue to the researchers. It is a common knowledge that using mobile phone has some disadvantages just as it has many an advantage. But identifying them has become a great problem as they vary from user to user. To solve this problem, we took a strategy, which is to know how much time we spend on mobile phone, first, and then to find out which effect is good and which is bad according to a list of deciding factors. As mobile phone is deeply enrooted in our daily life now, a long time user cannot understand the effects in their lives easily. So we are taking some data from students and we are analyzing them under certain categories such as affect's on health, study, socialization etc. We will use classifier algorithms to mark who are more affected than the others by setting up a standard normal use time from the data analysis. This statistic's will help researchers and conscious users to decide how to use mobile phone to the best interest.

1.2 Motivation

In Bangladesh, thousands of students are becoming new mobile phone users every single day. From their general perspective, mobile phone is the best solution to socialization, safety and

privacy. Unfortunately, most of them do not have any clear idea about whether they are benefitted or harmed more by this device. Even the largest part of these students do not know how much time they are spending over it. They also are not concerned about in how many ways they can be affected by it. More regretting is the fact that the guardians or the educators are also equipped with a very little vague information regarding this. Even when they try to control the addiction of the young ones, they cannot come up with strong statistic and proofs. So the present study aims to investigate the behavior of mobile phone user including the addicts and both the positive and the negative effects of it on the mental health and other related concerns of school, college and university students.

1.3 Rationale of the Study

There are lots of attempts to find out the effects of mobile use on students' life. But using data classifier is the most efficient and reliable approach. It can show accurate output with less training data. This made us interested to work with it.

At the present time, we can see the use of machine learning everywhere and we can also see how the capacity to predict mobile use effects is becoming a burning need to us. So we have decided to use data mining in machine learning to analyze those effects.

1.4 Research Questions

- Does use of mobile phone impact academic result positively, negatively or neutrally?
- Does use of mobile phone impact the students of school, college or university students the most?
- Which health impact is found most from using mobile phone - insomnia, hearing deficiency, eye sight weakening, phantom pocket syndrome, stress, headache, neck pain or back pain?

1.5 Expected Output

Expected outcome of this research based project is to build a system to help the mobile users to predict the effects of mobile use upon the user's health, study, and social relationship according to the time of use.

1.6 Report Layout

In **chapter 1,** all about this project is written here. The reason of choosing this project, how will this project be completed, project motivation, expected outcome and so on is discussed briefly. In a word, chapter 1 is elaboration of introduction of this project.

In **chapter 2,** related works on this area which were studied are showed. Their findings and limitations are summarized and hence the scope and challenges of the research are also mentioned.

In **chapter 3,** research methodology discusses research subject and instrumentation, data collection procedure, statistical analysis and implementation requirements.

In **chapter 4,** experimental results and discussion Experimental Results and Descriptive Analysis are presented.

In **chapter 5,** presents a short conclusion, and list of references.

CHAPTER 2
BACKGROUND

2.1 Introduction

In this chapter, we will discuss related research or project about data classifier which is related to data mining. In the first section we will discuss about previous related work, then in the second section we will show the outcome or a summary of my study of the related work and then we will discuss about the benefits and challenges that we facing to do this project.

2.2 Related Works

In a research done by Hui-Jen Yang1 and Yun-Long Lay2 [1] in Factors Affecting College Student's Mobile Phone Dependence and Anxiety classified usage rate, habit, and dependence on mobile phone. A valid questionnaire survey of 435 college students in Taiwan found strong support for the research model. They proved that usage rate, habit, and dependence have individually impacted on mobile phone communication anxiety. Usage rate had a direct influence on habit. Usage rate and habit had direct effect on mobile phone dependence, respectively. Digital Audience Research Group found over 70 percent's of students has anxiety while not bringing their mobile phone. Among these, 20 percent's of students have extremely anxiety. Many people are dependent on mobile phone. If no mobile phone, it is possible to lead to the symptom of anxiety.

Licopp and Heurin [2] proposed that the use of mobile phone in interpersonal relationship has an immediate availability and the dependent level get higher in peers when using the mobile phone as many times as possible. Therefore, users would feel anxiety without mobile phone on hand. Preoccupied is a negative view about self and feels lower than others. This type of anxiety always worries about that others don't care about them and very depend on interpersonal relationship. Most of college students have preoccupied anxiety. Searle and Meara applied Bartholomew and Horowitz's research concept and found preoccupied anxiety will be afraid of leaving their mobile phone. Based on aforesaid theoretical and empirical

evidence, we assume that habit is one of factors to affect dependence of mobile phone. When habit becomes stronger, the dependence of mobile phone becomes higher which will also lead to the communication anxiety.

A research done by David North and at all [3] from Ophoff University of Cape Town, South Africa on the topic The Use of Mobile Phones by South African University Students worked on the main reasons of using mobile phones by South African university students. Through a quantitative approach, data was collected from 362 participants using a survey. They found that for socializing, as well as for safety and privacy purposes. Usability and price emerged as the top purchasing factors. The respondents showed some signs of addiction to their mobile phones. Differences in mobile phone use by gender were found, with female students showing increased mobile phone use for safety and socializing, interest in brand and trends, as well as signs of addiction.

Zahra Babadi-Akashe MSc, and at all [4] investigated the behavior of mobile phone addicts and mental health of university students in their research The Relationship between Mental Health and Addiction to Mobile Phones among University Students of Shahrekord, Iran. Based on the results, the majority of students, according to the categories of addictive behaviors of mobile phone, were placed in the three categories of habitual behaviors (21.49%), voluntary behaviors (21.49%), and dependent behaviors (21.49%). Besides, students, with regard to mental health, had higher rates of depression (17.30%), obsessive-compulsive disorder (OCD) (14.20%), and interpersonal sensitivity (13.80%). It also showed that with confidence interval of 0.99 and P < 0.001, there was a relationship between mental health and four out of six categories of mobile phone addiction (habitual behaviors, dependent behaviors, addictive behaviors, and involuntary behaviors).

2.3 Comparative Analysis and Summary

With an extensive research over relevant papers and projects, we have come to the decision of using XGBoost Classifier because,

- It outperforms several other well-known implementations of gradient tree boosting. It works best with the data which we have used.
- XGBoost Classifie*r* is the most accurate among others data classification algorithm which has the accuracy of 65% or above if the training and labeling are proper.
- It is easy to use and convenient for working on further development.
- It is highly scalable/parallelizable, quick to execute, and typically out performs other algorithms.
- We have received a great result and high accuracy by using XGBoost Classifier with proper training.

We decided to use XGBoost Classifier as the main classification model. So, we have worked with extreme Gradient Boosting. It is a library of gradient boosting algorithms optimized for modern data science problems and tools. It leverages the techniques mentioned with boosting and comes wrapped in an easy to use library. Because CoLab is widely used, easy, and fast implementing, we have set our main goal with Google CoLab. We have used both CoLab and Google's own GPU in runtime so that we can get the best result. We use Google drive, too. Our aim was to make a system to predict the impacts of use of mobile phone from different dimensions and comparing the accuracy with the whole data set in order to get the output. So we have used the booster**,** silent and nthread parameters for creating XGBoost parameters. We worked with CGPA, health hazard, impact on education level and gender. We have remained careful cannot about bad accuracy and output. By using dimensions, we have got good accuracy range in order to find the best comparison possible

2.4 Scope of the Problem

The main focus of this research work is making a system that can predict the effects of mobile using upon different spheres of student's users lives. In future, we will try to set up this system in mobile producer companies, educational institutes and youth organizations. We will make our system open source and freely available to all. So that anyone like the students and their

guardians or educators in Bangladesh or outside can use this system to predict whether they will have a positive or negative outcome from mobile phones according to the using time. It will make their decisions easier. For this system school, college and university students also can identify any disadvantages they are facing by excessive mobile phone use.

2.5 Challenges

1) Data Collection

Since there are available multiple factors related to mobile use effects, data collection had faced one of the major difficulties for this research project. When we started collecting data locally it became too much difficult because most of the users did not like the paper works. For more accuracy we need more train data. So we decided to collect data online. Through survey questionnaire, we could collect more than thousand students' survey results afterwards.

2) Model Selection

Model selection is one of the hardest parts of a research. The success of any research relies on Data set and Model selection. If we can choose the model correctly, there should be a positive outcome soon. On the other hand, choosing a bad one may lead to failure as a sure fact. For this, we have tested some models with our test data in search of the most suitable one for our research project. But from that entire search, we have come to the conclusion that XGBoost Classifie*r* algorithm as the easiest and the best one for us. When we have found that it provides an easy to use library, we understood that the classifier work would be more convenient. We could work with Google CoLab, too, as Google provides free virtual GPU. So we finalized this model for our use.

3) Data Labeling

Data labeling was the most important part of our work. Because it makes code faster to run and less time consuming for data training. We use Label Encoder in Python for labeling our data.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

In this part, we will describe about our research methodology and procedures. Moreover, tools for the research project, data collection, research topic, pre-processing, processing, statistical analysis, and its implementation will be discussed in this session.

3.2 Research Subject and Instrumentation

We notice that data is the main part of the research. It is a very critical part for a researcher to find out perfect data and perfect algorithm or model for our research work. We also need to study about related research papers. Then we need to make several decisions:

1. Which data should be collected?
2. How to ensure that collected data are ok?
3. How each data should be organized?
4. How each data should be labeled?
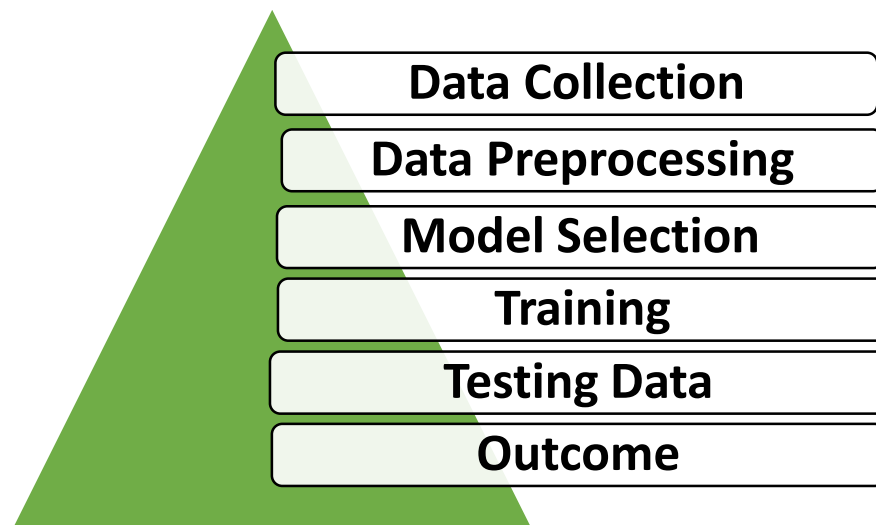
3.3 Methodology

Data Collection

Data Preprocessing

Model Selection

Training

Testing Data

Outcome

Fig 3.1: Methodology at a Glance

3.3.1 Data Collection

In survey, we used a questionnaire as dataset. These data are mainly selected according to the effects of mobile use on a student's academic result, health condition, social relationship, and psychological status. We collecting data from different types of students from different educational sector. Such as School students, College students, Diploma students, University students and others.

3.3.2 Data Pre-processing

Data pre-processing refers to the pre phase of processing datasets. Generally raw data sets are not able to perform operations and generate expected outcome. As a result, data pre-processing is required. And, it is considered to be one of the most important parts of research. In this phase, we have collected more than 1000 surveys. Here, the use of smart phone and the usage time are noted separately. Gender and user's controlling capabilities were also collected as individual entries. The questionnaire contained twenty one independent pieces of information to be analyzed through machine learning.

3.3.2.1   Data Organizing

For organizing the data, we have tested and trained the data and saved them in two folders. Besides, we have also used validation folder to check train data validation. Then we have created sub-folders in the test and train folders like health hazard, impact on social relationship, impact on academic result etc.

3.3.2.2   Data Storing

In this part we store all the data in Google drive because it makes our work easier. In Google drive, we can use those online stored data in our project we haves saved all the data as CSV files. Then we have stored them in Google drive so that they are not lost. Later, we could use those data in our project work through coding by following some simple step or code.

3.3.3 Model Selection

For our recharge we select XGBoost classifier. Because this classifier gives us expected accuracy. And we were used two other classifiers. One KNN another is Navy Bares. But

that classifier did not give us perfect accuracy and those classifiers not perfect for our data set. So we deny those classifiers and we selected XGBoost classifier. And another reason to select this classifier is this classifier works when we call this classifier another classifier such as Decision tree, Random forest, Logistic regression and other algorithm automatically called and then it ensemble. This algorithm works tabular data set. From that entire research, we have come to the conclusion that XGBoost Classifie*r* algorithm as the easiest and the best one for us. When we have found that it provides an easy to use library, we understood that the classifier work would be more convenient. We could work with Google CoLab, too, as Google provides free virtual GPU. So we finalized this model for our use.

3.3.4 Train and Test data

When we collect data from different types of students we see that some students are gives Funny types data. Then we clean all data and create a data set. Then we think is data set work perfectly? And for our data set whether machine learning algorithms works properly. When we published our data set and other researcher are research our data set. So we test and train two part. First we training our data set with XGBoost classifier and then we tasting our data set with XGBoost classifier. Here we training 80% data and testing 20% data. And we get out data set work perfectly.

3.3.5 Outcome

After training and testing our data set we run data set with XGBoost classifier. And we get accuracy 65%. Then we find out which students are mostly affected by using mobile phone. Which effect are affected by them are given below.
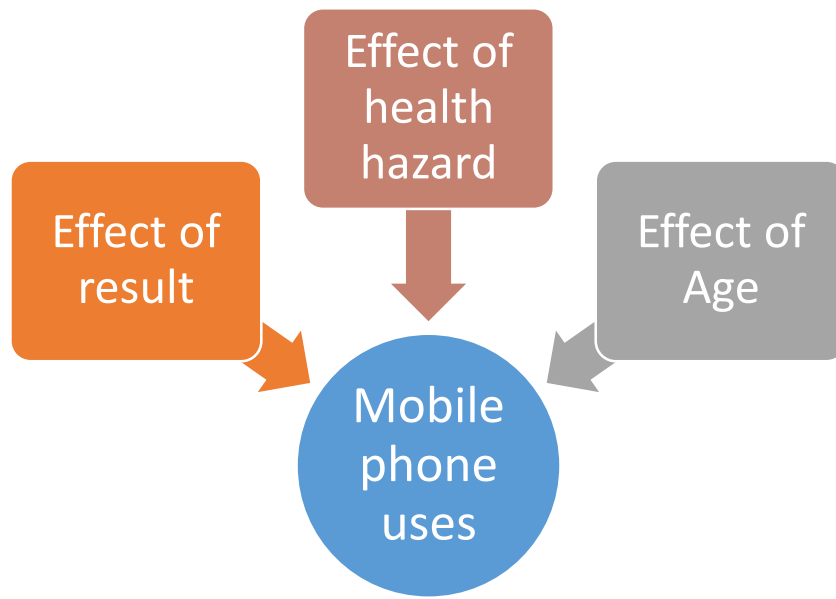
Fig 3.2: Effect of students

3.4 Statistical Analysis

The amount of our total survey data is more than 1,000 that we collect but after preprocessing we get total 936 data. The accurate data amounts are given below,

Table 3.1: Data amount

Students type	Amount
University students	400
College students	212
Diploma students	309
School students	90

3.5 Implementation Requirements

• Python 3.8

Python 3.8 is a Python version. It is a high level programming language. Most of the researchers use it to do their research. It is a highly recommended programming language for AI based work and it is very popular among new generation's programmers because it is very easy to learn and understand.

• Google CoLab

Google CoLab is a free to use open source distributor of Python programming language. We can work here online through our browser as well as through Jupiter notebook. But the main benefit of Google CoLab is it provides us free online virtual GPU access.

• Hardware/Software Requirements

1. Operating System (Windows 7 or above)
2. Web Browser (Preferably Chrome)
3. Hard Disk (Minimum 4 GB)
4. Ram (More than 4 GB)

CHAPTER 4

EXPERIMENTAL RESULTS AND DISCUSSION

4.1 Experimental Setup

For our model implementation and code implementation we have collected the data first. The procedure is given below,

• As we have worked with prediction of impacts on academic result, health risks, social relationship, and gender from mobile phone usage time, we had to collect student's data from different educational level.

• The largest part of our allotted time for the research project was spent in collecting students from the school, college and university by taking survey.

• We have also collected data from online by using Google Form.

• After we have labeled the data, they become perfect for further use.

• Then we have converted them to numeric type.

• Then we have finalized and normalized the data so that we can begin the training.

• Then we have preprocessed our data.

4.2. Model Summary

We have used a sequential model with parameters such as data, label, missing, weight, silent, feature_names, feature_types, nthread. We have used all of those parameters in our research. These have provided accuracy in our work. In fact, by researching on other such works, we have found that using all the parameters gives the best results with the model. We then, have taken the opportunity so that we can optimize the model with best accuracy and output from it.

4.3 Experimental Results & Analysis

We have run our dataset to create a model from the given data. It provided us with the desired the output. Then, we have compared academic result with the time and pass column which gave us 65% accuracy. Then again, comparison between health hazard vs time have resulted average in 70% accuracy. Besides, a compare of age with time and pass column was 65% accurate.

4.3.1 Effect of Result

When we run dataset we get a graph for CGPA vs Time and accuracy 65%. Graph is given below.

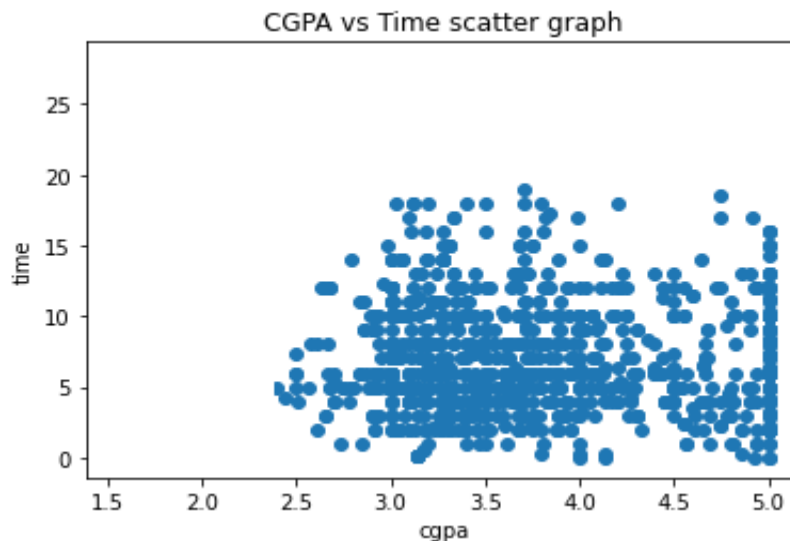Fig 4.1: CGPA vs Time scatter graph

Hear we all result are convert to CGPA 5.00. And we have taken all result are three range. In this range result>=4.50 = best, result>=3.00 & result<4.50 = good and result<3.00 = bad. From graph which students are use mobile phone in 2-12 hours there CGPA are around 3.00 to 4.40 in that. Almost 70% students are in this range. So we can say that their result is good. Again we get some students are use mobile phone in this range there result 4.50 – 5.00. But the number of such students is very low. Then we get which students are use mobile phone 0 to 5 hours, there results are 4.50 – 5.00. By monitoring the data this type of students, we found that they are only using

mobile phones to learn. And only 25% student under this range. And those students are using mobile phone 10 to 15 hours or more then there result 2.50 – 3.75 it's in. and we get 5% students in this range. By analyzing data of this type of students we get gamming, watching video, and social media spend more time when they use mobile phone. So their result is bad.

4.3.2 Effect of Health Hazard

Here are some of the health hazard categories we select in this research. Insomnia, neck and back pain, headache, hearing impairing, stressed, phantom pocket syndrome, eye problem and others. What kind of time do they face these problems? Now we compare each health hazard with time and find which problem they are facing. For this we create a new data set for each health hazard. Below we discuss all types of health hazard.

4.3.2.1 Insomnia

In this part we compare time vs insomnia. For this we create a new dataset from our main data set. Then we run the dataset with Python in Google CoLab and get a graph. Here we use XGBoost classifier and we get the accuracy 70%. Graph is given below.
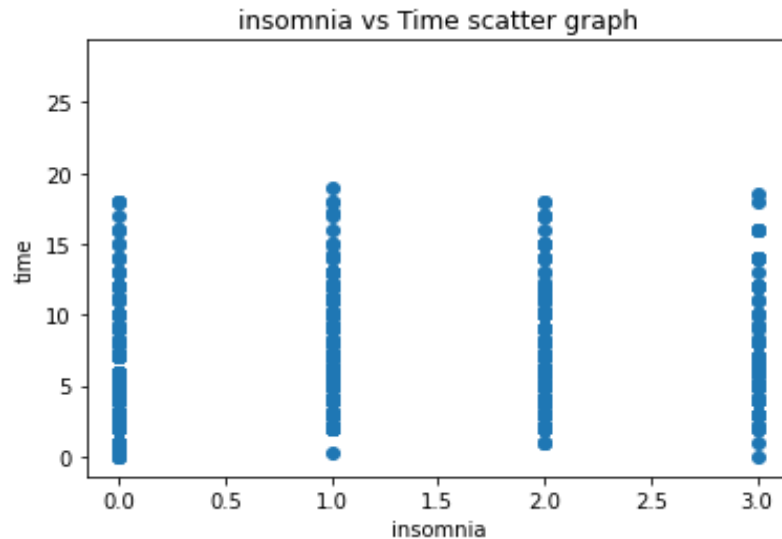
Fig 4.2: Insomnia vs Time scatter graph

When we collect data from students for effect of insomnia this data was string. Then we convert data numeric type. Such as not at all = 0, Several days=1, Most of days = 2, and Every day = 3. Now we get from graph and data set almost 33% students facing insomnia by not at all and they use mobile phone vary rarely. Then we get 32% students are facing insomnia by several days. And they use mobile phone 2-8 hours but some students are use mobile phone more then, that they facing this problem. 24% students are facing insomnia by most of days. They use mobile phone 4-11 hours. And 11% students facing insomnia by every day. They use mobile phone 7-14 hours. But we got more some students use mobile phone long time but they do not face insomnia. Their quantity is very low.

4.3.2.2   Neck and Back Pain

Here we compare time respect Neck and back pain. We create a data set for insomnia. Then run the data set by using Python in Google CoLab and we get a scatter graph. Here also we use XGBoost classifier. And get accuracy 62 %. Graph is given below.
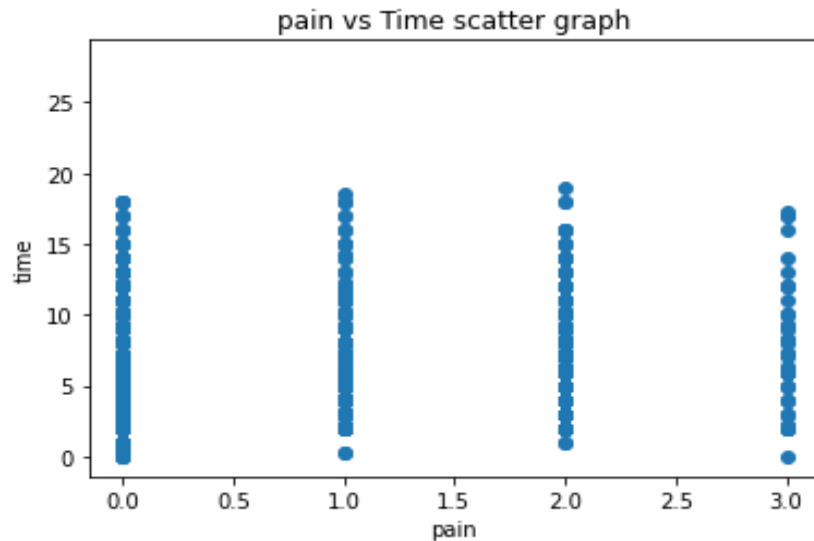
Fig 4.3: Pain vs Time scatter graph

Since we collect string data. So first we convert all string data in numerical from. Such as not at all = 0, Several days=1, Most of days = 2, and Every day = 3. Now we get from graph and data set almost 49% students back and neck pain by not at all and they use mobile phone 2-5 hours. Then we get 26% students are facing insomnia by several days. And they use mobile phone 3-9 hours but some students are using mobile phone more then that they facing this problem. 20% students are facing back and neck pain by most of days. They use mobile phone 4-12 hours. And 5% students facing back and neck pain by every day. They use mobile phone 7-14 hours. But we got more some students are use mobile phone long time but they do not face back and neck pain. Their quantity is very low.

4.3.2.3 Headache

Here we compare time respect headache. We create a new data set for headache. After that we run the data set by using Python CoLab and we get a scatter graph. Here also we use XGBoost classifier. And get accuracy 70 %. Graph is given below.
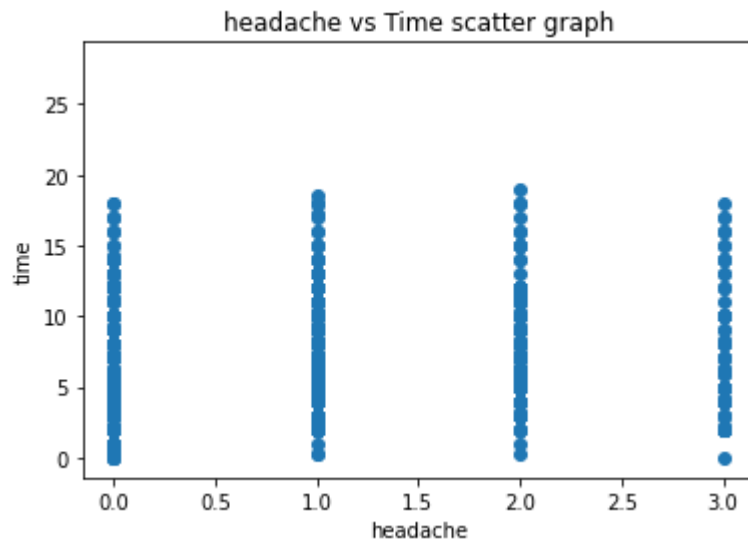
Fig 4.4: Headache vs Time scatter graph

Since we collect string data. So first we convert all string data in numerical type. Such as not at all = 0, Several days=1, Most of days = 2, and Every day = 3. We get some information from graph and data set. Almost 35% student facing headache by not at all and they use mobile phone 2-7 hours. Then we get 34% students are facing headache by several days. And they use mobile phone 4-10 hours but some students are use mobile phone more then that they facing this problem. 23% students are facing headache by most of days. They use mobile phone 3-12 hours. And 8% students facing back and neck pain by every day. They use mobile phone 2-15 hours. But we got more some students are using mobile phone long time but they do not face back and neck pain. Their quantity is very low.

4.3.2.4   Hearing Impact

Here we compare time respect hearing impact. We create a new data set for hearing impact. After that run the data set by using Python in Google CoLab and we get a scatter graph. Here also we use XGBoost classifier. And get accuracy 60 %. Graph is given below.
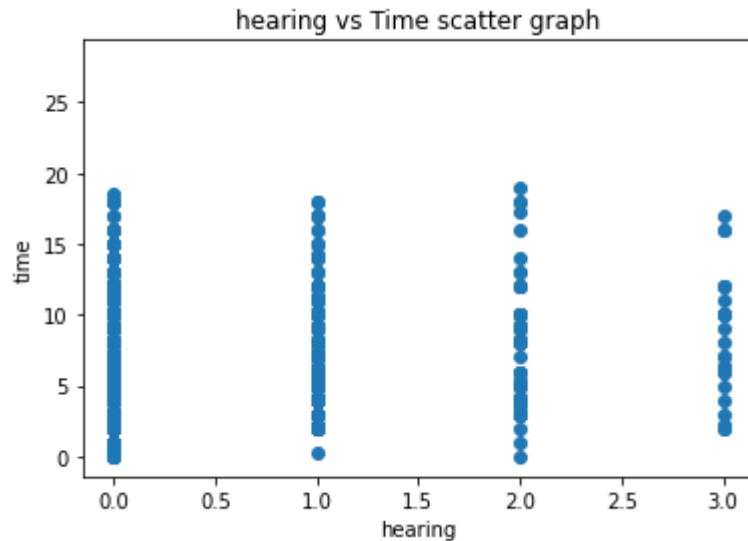
Fig 4.5: Hearing impact vs Time scatter graph

Here we collect string data. First we convert all string data in numerical type. For example, not at all = 0, Several days=1, Most of days = 2, and Every day = 3. We get some information from graph and data set. Almost 75% students facing hearing impact by not at all and they use mobile phone 2-6 hours. Then we get 17% students are facing hearing impact by several days. And they use mobile phone 3-9 hours but some students are use mobile phone more then, that they facing this problem. 5% students are facing hearing impact by most of days. They use mobile phone 4-10 hours. And 3% students facing hearing impact by every day. They use mobile phone 6-10 hours. But we got more some students are using mobile phone long time but they do not face haring impact. There quantity is very low.

4.3.2.5 Phantom Pocket Syndrome

Here we compare time with phantom pocket syndrome. We create a new data set for phantom pocket syndrome. After that run the data set by using Python in Google CoLab and we get a scatter graph. Here also we use XGBoost classifier. And get accuracy 70 %. Graph is given below.
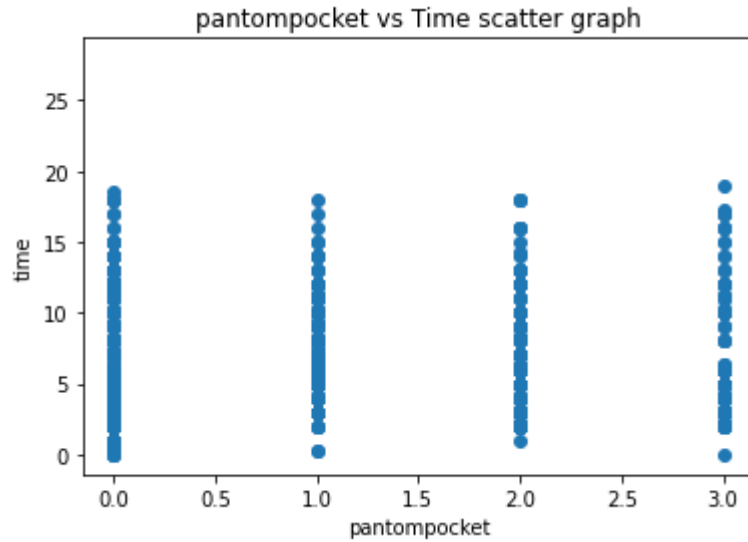
Fig 4.6: Phantom pocket syndrome vs Time scatter graph

Here we collect string data. So first we convert all string data in numerical type. For example, not at all = 0, Several days=1, Most of days = 2, and Every day = 3. We get some information from graph and data set. Nearly 59% students facing phantom pocket syndrome by not at all and uses mobile phone 2-6 hours. Then we get 17% students are facing phantom pocket syndrome by several days. Almost 2-8 hours they use mobile phone. We get to see more some students are using mobile phone more then, that they too facing this problem. 14% students are facing phantom pocket syndrome by most of days. They use mobile phone 4-10 hours. And 10% students are facing phantom pocket syndrome by every day. They use mobile phone 6-14 hours. Then we get see more some students are using mobile phone long time but they do not face phantom pocket syndrome. After very few students inside this.

4.3.2.6   Stress

This stage we compare time with stress. Foremost We create a new data set for stress. Here we use XGBoost classifier. After that we run the data set by using Python in Google CoLab. Then we get a scatter graph. And get accuracy 68 %. Graph is given below.
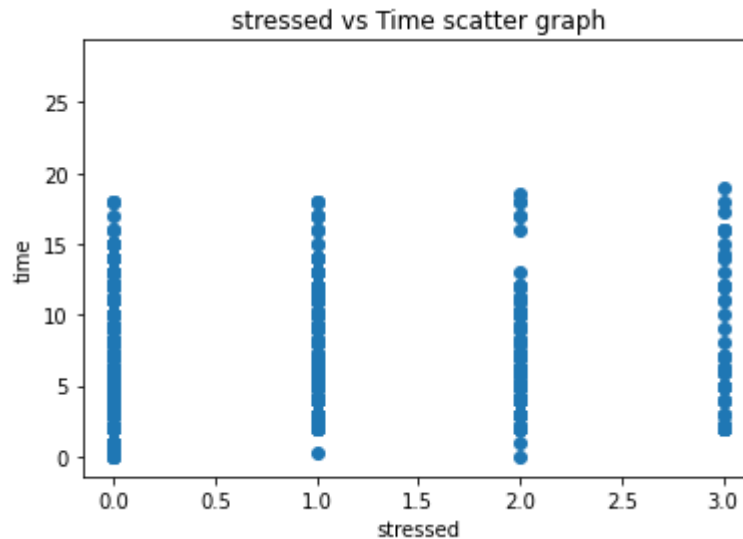
Fig 4.7: Stressed vs Time scatter graph

Here we collect string data. So first we convert all string data in numerical type. Such as not at all = 0, Several days=1, Most of days = 2, and Every day = 3. We get some information from graph and data set. Nearly 57% students are facing stress by not at all and they are using mobile phone 5-6 hours. Then we get 23% students are facing stress by several days. Almost 5-10 hours they are using mobile phone. Here we see that some students are using mobile phone more then, that they are facing this problem. 14% students are facing stress by most of days. They are using mobile phone 4-10 hours. After that 6% students are facing stress by every day. They are using mobile phone 2-12 hours. Here also we see that few students are facing stress by no means but they are using mobile phone long time. After very few students inside this.

4.3.2.7 Eye

Here we compare time respect eye effect. We create a new data set for eye problem. After that run the data set by using Python in Google CoLab and we get a scatter graph. Here we use XGBoost classifier. And get accuracy 73 %. Graph is given below.
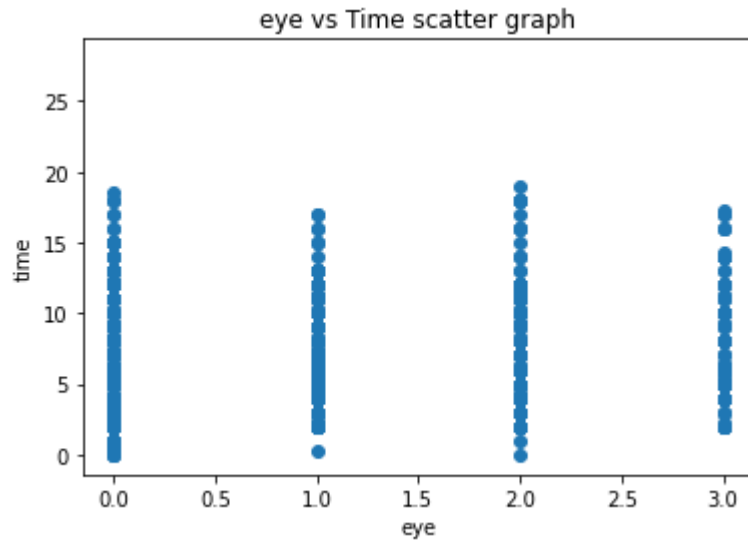
Fig 4.8: Eye vs Time scatter graph

Since we collect string data. So first we convert all string data in numerical type. Such as not at all = 0, Several days=1, Most of days = 2, and Every day = 3. We get some information from graph and data set. Almost 52% students are facing eye problem by not at all and they using mobile phone 4-6 hours. Then we get 20% students are facing eye problem by several days. And they using mobile phone 2-10 hours but some students are using mobile phone more then, that they face this problem. 17% students are facing eye problem by most of days. They use mobile phone 4-10 hours. And 10% students are facing eye problem by every day. They using mobile phone 5-14 hours. But we got more some students are using mobile phone long time but they do not face eye problem. There quantity is very low.

4.3.3 Effect of Age

Here we have observed which class students are mostly affected by using mobile phone. At first we select different categories students which are using mobile phone 5 hours upper. Such as SSC students, HSC students, Diploma students and all higher studies students. For this we create a new data set. After that we compare Pass and Time column for a scatter graph. Then run this data set with Python in Google CoLab. And we get a graph. Graph is given below.
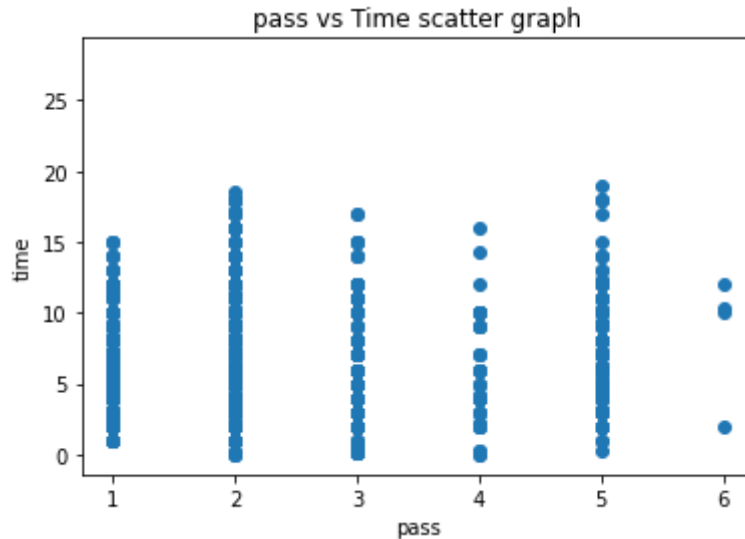
Fig 4.9: Pass vs Time scatter graph

In this graph x axis represents Pass column and y axis represents Time column. Here we convert all string data to numeric form. In graph 1 represent SSC, 2 represent HSC, 3 represent Diploma, 4 represent JSC, 5 represent all higher studies and 6 represent PSC. This part we discuss SSC, HSC, Diploma and higher studies students. First we choose a range for using mobile phone. We select $0 - 5$ and 5 to upper under this range. So we get which HSC students are using mobile phone 0 to 5 hours, there average result almost is 3.95 and they are using mobile phone average 2.88 hours. Again we get which HSC students are using mobile phone 5 hours. upper their average result almost 3.88 and they are using mobile phone average 10.20 hours. Now which SSC students are using mobile phone 0 to 5 hour their average result almost 4.03 and they are using mobile phone average 2.96 hours. And which SSC students are using mobile phone 5 hours' upper their average result almost 3.95 and they are using mobile phone average 8.63 hours. For Diploma and all higher studies students of result we convert in scale CGPA 5.00. Then we see that which Diploma students are using mobile phone $0 - 5$ hour their average result almost 4.09 and they average use mobile phone 2.88 hours. And which Diploma students are using mobile phone 5 hours, upper their result almost 4.03 and their mobile phone uses time 6.98 hours. Now we get which higher studies

students are using mobile phone under 5 hours their average result almost 3.49 and they average using mobile phone 2.86 hours. Again we get which students are using mobile phone 5 hours, upper their average result almost 3.30 and they are using mobile phone average 9.48 hours. From this data analysis we reached a decision which students are using mobile phone long time their result is bad and they are facing different types of problem.

4.4 Discussion

We have revised our dataset and mode. From the revision, we understand that this classifier is usable for all types of comparing dataset to predict whether they are accurate. We have become successful in defining the accuracy of 75% of impact predictions. It can compare between the impacts on CGPA, health hazard, behavior and social relationship, age and study level, and gender. The model makes it convenient to compare as well as find the outcome properly.

CHAPTER 5

SUMMARY AND IMPLICATION FOR FUTURE RESEARCH

5.1 Summary of the Study

We have developed this research project to predict the impacts of using mobile phone on the students' academic results, their health, their behavior in social relationships, and their gender against the time of usage and study level. The project has proved that the best data classifier algorithm for its research is XGBoost Classifier. We have collected student data for this. Those data sets are collected from different schools, colleges, polytechnics, universities, and online surveys. Afterwards, we carefully applied data pre-processing rules so that we could make them perfect for the systems environment. Data sets need to be trained so that they can meet the data handling purpose. In our research works, some of the data sets are trained whereas the other ones are tested.

5.2 Conclusions

Today's world is one of rapidly advancing technology. But this situation is creating both positive advancements and negative influences at the same time. Handling big data is a very complex problem in the technological field. With more and more data, it needs newer and newer methods and inventions. In a world, linked with information and communication technology, using mobile phone has become unavoidable from many perspectives. But, the impacts it is creating in our life, especially amongst the youth, are not unmixed blessings. But, identifying those impacts have become very difficult as the numbers of user and factors involved are numerous. So this simple but efficient system that we have built can solve this major issue with machine learning.

5.3 Recommendations

So many development steps can be materialized by big data analysis like finding out impacts of mobile phone use. The future of this world lies in Artificial Intelligence. Machine learning

is a very important part in that technology. So developing systems using machine learning to solve our problems is critical to the advancement of today's inventions. So technologists and authorities need to focus on this sector. Data classifier is one of the most important parts of machine learning. It may change the entire concept about the earlier understandings regarding the device.

5.4 Implication for Further Study

- We shall work with more data to make our research more efficient.
- We shall include more categories of data to widen our research areas.
- We will build an open source working platform with huge amounts of data.

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APPENDIX

RESEARCH REFLECTION 1

During project activities, we faced several problems. But three problems ware major among them. one is selecting best algorithm, creating survey question and another is data collecting. Before working with XGBoost algorithm we tried many ways to solve our problem and we failed to get best output. When we get to create survey question we face some problem. One of them is to create question and select question. To collecting data, we faced too much difficulty. Because locally data collection is time consuming and hard for student. So, we have to collect some data from online sources. And after a long time and a lot of attempts and hard work we got succeed.

Our data collection question given below.

How The Students Are Mostly Affected By Using Mobile Phone In Bangladesh?

Please fill up the table......

Gender	Age	CGPA	Height	Weight
☐ Male ☐ Female	☐ Year ☐ Month	☐ (In scale 5.00) ☐ (In scale 4.00)	☐ Fit ☐ Inch	☐ Kg

1. What is your last pass exam?
   ☐ PSC   ☐ JSC   ☐ SSC   ☐ HSC/Diploma   ☐ BSc /BBA/Honors

   ☐ MSc/MBA/Master's
2. Are you using smart phone?
   ☐ Yes   ☐ No
3. Do you use internet?
   ☐ Yes   ☐ No
4. What do you use to access the internet most with?
   ☐ Mobile   ☐ Laptop /PC   ☐ Tab   ☐ other device
5. How much time you using mobile phone daily?
   ☐ Hours
6. Which time you mostly use mobile phone?
   ☐ Day ☐ Night (after 10 pm) ☐ Night (before 10 pm)

7. Do you think internet is helpful for learning?
   ☐ Yes   ☐ No
8. What do you think, which procedure is better for your learning?
   o Online learning with device ☐
   o Study in alone with reading note/books ☐
   o Group study ☐
   o Discussion with friends through online ☐
9. When you use mobile phone how much time you spend for-------
   • Learning ☐ hours
   • Social media ☐ hours
   • Gaming ☐ hours

- Chatting [____] hours
- Talking [____] hours
- Watching video [____] hours
- Others [____] hours

10. Can you control yourself to going another site while learning in mobile phone?
    I can control [____]   Can't control me [____]

11. If you can't control, then which sites attack you more-----
    [____] Facebook/Social media [____] Gamming [____] Chatting [____] YouTube

12. Can you concentrate in your study after using long time mobile phone?
    [____] Yes   [____] No

13. What do you feel after using long time mobile phone?
    [____] Interesting [____] satisfied [____] Depressed [____] Upset [____]
    Unhealthy

14. Which physical problem do you face after using long time mobile phone?
    o You feel insomnia--- (lack of sleep)
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Neck and back pain
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Headache
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Hearing impairing
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Stressed
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Phantom pocket syndrome (phone ring confusion arising)
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Eyes problems
      [____] Several days [____] Most of days [____] Every day [____] Not at all
    o Others

15. Are you using spectacles?
    [____] Yes   [____] No
    If is your answer is yes, how much power of your spectacles----
    [____] Left eye   [____] Right eye

16. How much time do you spend with your family members?
    [____] Hours   [____] minutes

17. Which meal do you eat with your family members?
    [____] Breakfast   [____] Lunch   [____] Dinner

18. Do you use mobile phone----
    o When you eat along [____] Yes [____] No
    o Eat with your family members [____] Yes [____] No
    o Study time [____] Yes [____] No
    o Class time [____] Yes [____] No
    o Family get together [____] Yes [____] No

    o   Meet with friends   [   ]   Yes   [   ]   No

19. How many times do you communicate with your family member in a day?

Average   [   ]   Times

20. After using long time mobile your behavior is-

[   ]   Angry   [   ]   out of control   [   ]   Sad   [   ]   Lonely   [   ]   Normal

[   ]   Regretful for time waste

21. So what's your opinion mobile phone is-

[   ]   Helpful   [   ]   Disturbing   [   ]   Time consuming   [   ]   Unhealthy

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