

**Game Playing Effects On Academic Performance Of University  
Students**

**BY**

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

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**DAFFODIL INTERNATIONAL UNIVERSITY**

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## APPROVAL

This Thesis titled “**Game playing effects on academic performance of university students**”, submitted by **Md. Mizanur Rahman**, ID No: **221-25-145** 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 M.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 17-01-2023.

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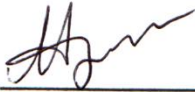
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## DECLARATION

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

**Supervised by:**



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## **ABSTRACT**

This thesis titled “Effects on university students' education by playing online games in Bangladesh using data mining techniques” is used to determine how online game affects students' education. So that the student can spend their time effectively and concentrate their studies and careers. Here, I used data mining techniques to demonstrate how much time they were wasting. Find out the confusion matrix and numerous bar charts for the factors that affect it as well. I also apply five machine learning algorithms to predict the best performance. These algorithms are: logistic regression, SMO (Sequential Minimal Optimization), random forest, bagging classifier, Ada boost classifier. All of these algorithms SMO give the best accuracy of 66%. For this analysis I was collected 800 data from university level student, and this data was collected through google from.

# TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
Approval	i
Declaration	ii
Acknowledgement	iii
Abstract	iv
<b>CHAPTER</b>	
<b>CHAPTER 1: INTRODUCTION</b>	<b>1-5</b>
1.1 Introduction	1
1.2 History of Mobile Game	2
1.3 Mobile Games Affect University Students' Health	2
1.4 Introduction of Gaming Platform with Lonely	3
1.5 Motivation	4
1.6 Objectives	4
1.7 Outcome	5
1.8 Research Questions	5
1.9 Report Layout	5
<b>CHAPTER 2: LITERATURE REVIEW</b>	<b>6-9</b>
2.1 Analysis Some of Previous Research Work	6

<b>CHAPTER 3: METHODOLOGY</b>	<b>10-18</b>
3.1 Explanation of the Data	10
3.2 Algorithm Description	11
3.2.1 Logistic Regression	11
3.2.2 MLP	12
3.2.3 Bagging	12
3.2.4 Ada Boost	13
3.2.5 SMO	13
3.3. Data implementation	14
3.3.1 Input Data	14
3.3.2 Split Data	15
3.3.3 Algorithm	15
3.3.4 Calcification Results	15
3.3.5 Best Algorithm	15
3.4. Chart Analysis	16
<b>CHAPTER 4: RESULT ANALYSIS</b>	<b>19-21</b>
4.1 Correlation Matrix Result Analysis	19
4.2 Confusion Matrix Result Analysis	20
<b>CHAPTER 5: CONCLUSION</b>	<b>22</b>
5.1 Conclusion	22
5.2 Future Work	22
<b>REFERENCES</b>	<b>23-24</b>
<b>Appendix</b>	<b>25</b>

## LIST OF FIGURES

<b>FIGURES</b>	<b>PAGE NO</b>
Figure 3.1: Data Implementation	14
Figure 3.2 Ratio of Can Not Play Game in Whole Day	16
Figure 3.3: Average Sleeping Time	16
Figure 3.4: Mental Situation Ratio	17
Figure 3.5 Ratio of Education Level	17
Figure 3.6: Age Ratio	18
Figure 4.1: Playing Time vs CGPA	21



## LIST OF TABLES

<b>TABLE NAME</b>	<b>PAGE NO</b>
Table 4.1: Evaluated Result for All Algorithm	19
Table 4.2: Result of Confusion Matrices	20

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Modern machine learning differs from machine learning in the past due to new computational power. Scholars and practitioners in AI technology sought to see if machines could teach given information; recognition systems and also the idea that they can learn without even being trained to do certain jobs gave rise to that too. machine learning and data mining is the part of artificial intelligence identifying irregularities, trends, or connections in huge data in order to forecast events is known as data mining. To use a variety of strategies, businesses may put this knowledge can raise profits, lower expenses, strengthen bonds with clients, reduce chances, and many other things. In this paper, using data mining techniques I try to analyze the effect of mobile gaming on students. Pupils might well be lured by smartphone games to go to unhealthful places. By staying in their bedrooms and playing games on their phones, students could be missing out on opportunities that are better for their growth.

Mobile addiction is an illness characterized by obsessive use of handheld devices, which is typically assessed as the number of occasions people open their smartphones and the total span of hours they actually spend within a specific time frame. Screen time is only one sort of addictive behavior. Globally, more than two billion individuals play games, and by 2020, it was predicted that the sector in the United States would be worth \$90 billion. Every week, the typical player spends roughly six hours playing [1]. Playing video games, also known as internet gaming disorder, is a disease in which you have little influence on daily gambling behavior, which has a detrimental impact on a variety of the existence, especially personality, connections, education, or job. Gaming addiction has a severe impact on a student's emotional development in addition to overall educational performance, according to surveys. Youngsters who seem to be addicted to playing video games might be more likely to engage in violent & disruptive conduct, because adolescents may not be capable of gaining relationships between social. People's minds are particularly susceptible to developing patterns or behaviors.

## **1.2 History of Mobile Games**

Tetris was the inaugural game officially launched for a smartphone for the Risk associated MT-2000. Nevertheless, it wasn't until 1997, when Snake for the Nokia 6610 was launched, that mobile gaming truly started to take off. It continues to receive a lot of praise as a game. Games also advanced along with technology. A technical standard called the General Packet radio Protocol was created to make it possible for mobile phones to access the web. Regardless matter which parameter you take into account - the number of active applications, the number of downloads, the amount of time, or even the money earned - video games are still the most popular in the Apple and Android app store. 10 percent of the total time spent on smartphones is spent playing a game. This 2020 epidemic offered industry business a big boost even though console phones have been popular for the past ten years. In a research, it was said that "63percent of the total of participants answered a rise in play duration, especially in so nations badly touched with COVID-19. It is projected that 75% of a net rise in smartphone gameplay will persist when the "new reality" is formed inside the following two years [2].

## **1.3 Mobile games affect university students' health**

Gamers complain constantly about vision issues. A typical issue with vision is ocular stress, which can result in migraines or impaired focus. Epilepsy has been linked to playing, which has prompted box cautions. Additionally, linked to psychiatric problems are games. Additional research is required to determine the accuracy and intensity of the links between gaming and poor sleep like sleeplessness, circadian disorders, depression, anger, or stress.

IGD is defined as achieving 5 of the 9 requirements below so over course of a year:

1. Gaming distraction
2. Depletion

3. Tolerance
4. Loss of interest in other pursuits
5. Trying to dismiss usage
6. Loss of possibilities for relationships, education, or employment gaming
7. To avoid or relieve stress, remorse, or even other negative mood states inability
8. To manage persistent gaming despite psychological issues

#### **1.4 Introduction of Gaming Platform with Lonely**

According to definitions, melancholy is an uncomfortable feeling that results from significant gaps in one's network of social connections. The relationship between melancholy with addictions to mobile games has constantly been supported by earlier research. Prior studies have shown that gambling addiction offers little to support the creation or development of lasting relationships, despite its potential to momentarily give a respite from the unpleasant emotions associated with social deficits [3].

The most prevalent anxiety condition in adolescents, social phobia is the feeling of anxiety or uncomfortable individuals face in social circumstances. Social anxiety is substantially higher in people who have a strong propensity for game addiction than it is in people who occasionally play games.

To bring an end to mobile game addiction, throw aside its joystick and take a break. This may be challenging, which is why so many computer game junkies eventually managed to rehabilitate once they either stopped playing the games or went on such a forest vacation. If games have a serious issue, there may need to be severe measures taken. Someone's existence shouldn't revolve around gamers, if it does, it provides a chance to break out of the confines of the display. If one's existence is becoming completely controlled by a game addiction, users might need to think about getting help.

## **1.5 Motivation**

Maximum students spend a lot of time playing online games like PUBG, Free Fire, FIFA, PES, etc. They did not sit enough for their educational work. All the time they try to play this type of game. So, I want to do research to find out the effect of this game to their education. So, that they can be utilized their time and focused on their study as well as their career.

## **1.6 Objective**

1. To find the ratio of male female of playing game.
2. To find their mental condition for playing game. Nevertheless, if games are enjoyed mindfully and then in balance, they can serve as a reliever, a boost to overall psychological health, as well as a tool for interpersonal skills training.
3. To find out how many time a student gives his family or friends. Most circumstances, encouraging parents to get involved in their kids' gaming lives is the most effective approach to finding a solution. Play with, assist in establishing sensible boundaries, and constantly seek a wide range of online games for kids to engage with.
4. To find out the maximum playing time that effect on student results.

## 1.7 Outcome

Some numerical analysis and use of data mining techniques to show their wasted time. Also, find out the confusion matrix and so many bar charts of their related factor.

## 1.8 Research Questions

1. Does it predict an actual output by given sample data with the system?
2. Can it classify if they can not play game by using a machine learning algorithm?
3. Does every algorithm work perfectly (yes/no)?
4. Do I know the addiction ratio of Students ages?

It can, really. All of the data were completing this activity, and the information was correctly compiled. 800 data points from university-level students were gathered by me through the use of Google. Although I obtained a great outcome, the other algorithms didn't provide us with adequate accuracy or information.

Yes, it classifies if they cannot play game by using a machine learning algorithm. I show it with confusion matrix.

Yes, every algorithm work perfectly. I apply five machine learning algorithm. This algorithm are: logistic regression, SMO (Sequential minimal optimization), random forest, bagging classifier, Ada boost classifier.

Yes, I know the addiction ratio of Students ages. In fig 4 I shown these

## 1.9 Report Layout

**Chapter 1** This part includes information on my motivation, objectives, and the usual results of my work.

**Chapter 2** In this part, I examined relevant research, comparable studies.

**Chapter 3** I'll be talking about the subject of my study, the tool I used, how I went about gathering data, data analysis, and implementation.

**Chapter 4** It's the part of results analysis.

**Chapter 5** Here I discuss about conclusion and future work.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Analysis Some of Previous Research Work**

With the aid of Omega or Spearman  $r$  correlation studies, Santos et al. looked into the relationship between pupils' spent hours playing at home and at school, the games they played most frequently at both locations, their motivations for gaming Wow, and their opinions toward the game. The scientists used a subset of shuttered items from an identity online survey. The undergraduate participant's descriptive statistics, playing characteristics, validity, and reliable measurement of both concepts - student's views about mobile legends internet - were presented first in the discussion of the findings. The findings showed a significant  $r = -0.188$  and  $p = 0.039$  correlation between the number of hours teens spend enjoying online or mobile games at home and their educational success. Additionally, a substantial significant clear association between educational outcomes as well as the kinds of online smartphone total games by pupils at school was found ( $r = 0.203$ ,  $p = 0.045$ ) [4].

To comprehend gamification elements with reference to educational objectives, Schmitz et al. evaluate recent research on the subject. They present an analytical methodology built upon prior research on mobile game development trends and training effects. The paradigm focuses on two elements: learning incentive. 43 empirical papers spanning 2001 through 2011 were examined. They gathered information on recently concluded practical initiatives that offered statistics in a variety of industries. The report's findings indicate a weak positive correlation between various forms and consequences of cognition. In terms of information acquisition, the PhD project will only further look into it [5].

Krouska et al. investigate the instructional utility of MGbL online learners' engagement in such settings during the COVID-19 outbreak, utilizing particular requirements. Even during the 2020 shutdown time, MGbL software was utilized as a testing ground for this project to teach the programming language C# in postsecondary learning. The

framework, which was developed to identify the feasibility of MGBL technologies as a teaching resource, is made up of seven variables. The focus on students in universities and the fact the use of MGBL was evaluated but not compared to other strategies like LMS (Learning management system), educational social networking sites, etc. are also disadvantages of this research [6].

Elaish et al. looked into why the created VocabGame could inspire local Arab students to be taught English to function better. 64 students were equally divided into two groups: the experimental and the control group. According to the study of the correlation analysis, which was predicated on the drive to know, there was also a link here between which was before and comment results, with a  $p_2$  of 0.148. The creation of a mobile software game to encourage Arab-native students to take English as a second and foreign language proved effective. The major purpose of this research was to develop a smartphone game application that might increase the effectiveness and motivation of native Arab students learning English vocabulary [7].

The goal of Cai et al. is to determine if mobile gaming is an addition to or a replacement for conventional games. They used K-mean segmentation to identify several groups of video game fans and Partial Least Squares and construct linear regression models for both the full sample and the segment they had found. According to the cluster analysis's findings, our population may be divided into two groups: Unassailable stayers or Strong intentional emigrants. The information was gathered over the period of four weeks in the spring of 2018 utilizing the online survey tool Qualtrics. In all of the information analysis processes, the R program code (R 3.5.0 with RStudio v1.1.453) is utilized. In exchange, gamers of traditional console benefit from the addition of mobile computing [8].

Alhalafawy et al. develop and evaluate a proposed paradigm of mobile online distribution applications based on gaming. Their research group made utilizing the "My Academic Advisor" compared with those obtained, which were created utilizing the suggested concept. Its user's findings demonstrated the efficiency of the suggested enrichment



approach in fostering psychological health among the experimental group of students as opposed to those who were in the treatment group [9].

Syvertsen et al. look into problematic mobile gaming, concentrating here on behaviors among players, the environments wherein they play, and also the effects of playing within those environments. According to the research authors, PG was positively linked with the number of hours played on smartphones per week and the length of each activity. Respondents were classified as not experiencing PG (8.7%), quite at threat of PG (13.3%), and not reporting any playing issues (78.0%). Mobile gaming is thought to be linked with problematic games, but to a smaller extent than platform & online gaming, hence continued studies must take particular assessments of this phenomenon [10].

The use of mobile learning and game-based learning in education settings is examined by Troussasa et al. They also examine the educational benefits of its implementation. This article introduces Quiz Time!, a mobile application that plays android applications that encourage individualized and group study. Concerning the assessment data, the computer engineering professionals confirmed the user's suitability for educational usage, while the undergraduates emphasized its value and favorable effects on education [11].

In order to understand the impact on student learning outcomes, Su et al. examine how the game-based learning approaches affect scientific learning outcomes in a situationally mobile environment. I created an investigation where participants performed a carefully created gamification task in a mobile environment in accordance with the user viewpoint. Relying on a relatively non, this investigation was conducted. Students of various genders perform differently on comment tasks ( $P=.044$ ). The student's academic enthusiasm additionally resulted in a statistically significant difference in post-exam performance ( $P=.000$ ), indicating that pupils who already are enthusiastic about entomology perform better academically [12].

To overcome these difficulties, Mulhem et al. suggested two teaching gaming situations. In the initial case, students had access to an instructional smartphone version that included the "scaffolding strategy," whereas, in the latter, they got given access to the identical activity without that. Participants in this experiment were split into a control and an experimental unit as part of the research setup. Unlike the other project was not, another of the programs was created using a scaffolds method. They concluded that perceived enjoyment, subjective standards, and performance expectancy of using it all had an impact on the behavioral intention to utilize instructional multiplayer apps. According to the hierarchical model's outcomes per intervention class, two hypotheses—H6 and H9—were confirmed while eight others—H1, H2, H3, H4, H5, H7, and H8—were discarded [13].

In a study of adolescence, Wang et al. looked somewhere at connections involving mobile game playing and chronic phobia, melancholy, or isolation. The participants (n = 600) inside the seven, eighth, & nine classes of a secondary school in Guizhou Province provided the information needed for this study. When gender issues inside the processes connecting mobile phone addiction to all these psychological outcomes were further analyzed, research findings discovered that male teenagers typically express higher levels of anxiety when they utilize smartphone games in an abusive manner. Challenges or consequences for psychiatric care too were covered [14].

Chen et al. designed their study, In order to comprehend the evolution of UGEM & investigate all variables influencing consumers' behavior verification, pleasures, or continuation aspirations towards smartphone Language activities goal of the research was to obtain an identity questionnaire survey on how soul viewed and then used mobile English-learning games. So order to derive fresh insights into the identity that occurs whenever mobile English-learning applications were used, information collected from 1121 participants in Taiwan were applied to investigate the study's UGEM framework that used a variances analysis methodology. Additionally provided are practical and theoretical consequences [15].

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Explanation of the data**

For collecting data I make a google form and add this question after then I was collected data from many student. In my google form I added this parameter as my analysis question.

- 1.Age(number)
- 2.Gender (M, F)
- 3.Current educational position ()
- 4.Current Cgpa ()
- 5.Higher Secondary School results ()
- 6.Where are you staying now (hall or family)
- 7.Do you play games on mobile or pc? (hours)
- 8.When you go to sleep(time)
- 9.Do you attend your morning class regularly? (yes|no)
- 10.Average time you spend more in playing game(hours)
- 11.Which type game you addict more (fifa, pubg, pes, coc, ige)
- 12.Do you read newspaper? (yes|no)
- 13.What is your point of view Is playing a game effect on study? (yes|no)
- 14.Which type of game did you play most? (Paid | Non Paid)
15. How many time you spend with family and friend?(hours)
- 16.How you fill when you can not play game in whole day? (Upset | Depressed | Angry | Positive)
- 17.How you fill to complete game level? (Excited|Bored)
- 18.If you didn't finish games last level what is your feeling? (Stressed | Excited to complete level | No feeling)

## **3.2 Algorithm Description**

Now a day machine learning have contribute more for analysis. In my research analysis I have analyzed my research using five machine learning algorithms which I described below.

### **3.2.1. Logistic Regression**

This model is frequently in use in stats to simulate the probability of a particular class or occurrence happening, like the chance that a squad will succeed, that a patient will be in excellent health, etc. This may be expanded to represent a number of other situations, such as determining whether an image is of a creature such as a dog,cat, lion, or the other. It was anticipated that there would be one major detected object in the picture, with each object's significance ranging from zero to one. The logistic model's log-odds for the value designated "1" are a linear synthesizing of one or maybe more connections between the predictions; the two parameters can each be a binary classifier issue or any actual value. The logistic function, thus the title, translates file to likelihood; the average diameter of the value labelled "1" might fluctuate between 0 and 1, therefore the labeling. The standard unit of measurement for the logarithmic scale is the logit, from the logistic unit; consequently, the relatively distinct. The distinguishing characteristic of the logistic regression model is that increasing one of the individual variables computer resources scales the likelihood of the specific result at a constant speed, with each predictor variable having its own parameter; for binary predictors, this extrapolates the hazard ratio. Equivalent models, such as the probit model, can be used in place of the likelihood of stagnation. A binary logistic regression model with two levels represents the dependent variable. When there are more than two results in an output, multinomial logistic regression is utilized to model it. In the event that the numerous categories are ordered, ordinal logistic regression is utilized.

### 3.2.2 MLP

A multilayer perceptron is a neural network that connects many layers in a directed graph, meaning that the signal only travels in one direction across the nodes. Other than the input nodes, every node has a nonlinear activation function. Backpropagation is a supervised learning method used by an MLP. MLP is a deep learning method because neurons are arranged in layers. MLP is frequently used in supervised learning issues, parallel distributed computing, and computational neuroscience research. Machine translation, speech recognition, and image recognition are examples of applications.

### 3.2.3 Bagging Classifier

The Bootstrapping integration is a ML technique that combines a mechanism intended to increase the legality and reliability of algorithms employed during processing and retrieval, as well as what is thought to just be content. By adding, variability is decreased and overdosing is prevented. Bulk predictions are frequently made using bootstrap predictive models, which may be used to include a variety of predictive models. The subdivision or retrospective rule was implemented to every random subset, and a new forecasting measuring device forecasts from viewers of each foundation in the setting of hindsight. This resource might be a simple general rule for all duplicates of the bootstrapping measurement device of a main training session carried out. Once the issue of segregation has been handled, the lowest student forecast grading system includes a bully vote in mass or by evaluating any open division possibilities.  $X$  is a guessable record,  $f_{bag}$  is the bagged forecast, and  $f_1(X), f_2(X), \dots, f_b(X)$  are forecasts from users of each basis. It's going to be connected to Calculation.

$$f_{bag} = f_1(x) + f_2(x) + \dots + f_b(x) \quad \dots\dots\dots 1$$

Because of the aggregation strategy, bagging efficiently lowers the variation of the a personal learning algorithm (— in other words, average reduces variability); yet, bagging does not constantly enhance a private base learner. Bagging is extremely beneficial with volatile, multi-variable trainees that prediction accuracy varies dramatically in response to minute adjustments in coaching input. This includes the call tree and K nearest

algorithms. Sacking, on the other hand, produces less rise in anticipated outcomes for systems with high unit stability or bias because there is less fluctuation.

### **3.2.4 Ada Boost Classifier**

A meta-estimator called an Ada Boost classifiers starts by having to fit a classification model to the original data. It then appears to fit multiple copies of the classification to the identical set of data, with the weight training of situations that were misclassified being changed such that later classifiers would start concentrating more on challenging cases.

AdaBoost is an ensemble learning method (also known as “meta-learning”) which was initially created to increase the efficiency of binary classifiers. AdaBoost uses an iterative approach to learn from the mistakes of weak classifiers, and turn them into strong ones.

### **3.2.5 SMO**

During the training of support-vector machines, the quadratic programming (QP) problem can be solved using the sequence minimum optimization (SMO) algorithm (SVM). John Platt created it in 1998 at Microsoft Research.

Think about a binary classification problem with the datasets, in which  $x_i$  is an integral gain and  $y_i$  is a binary label that corresponds to it (-1, +1). The double form of a quadratic problem, which is solved to train a gentle support vector machine, is as follows:

### 3.3 Data Implementation

In this section, I create a diagram to give better idea about my analysis. This diagram every part explanation is given below this figure.

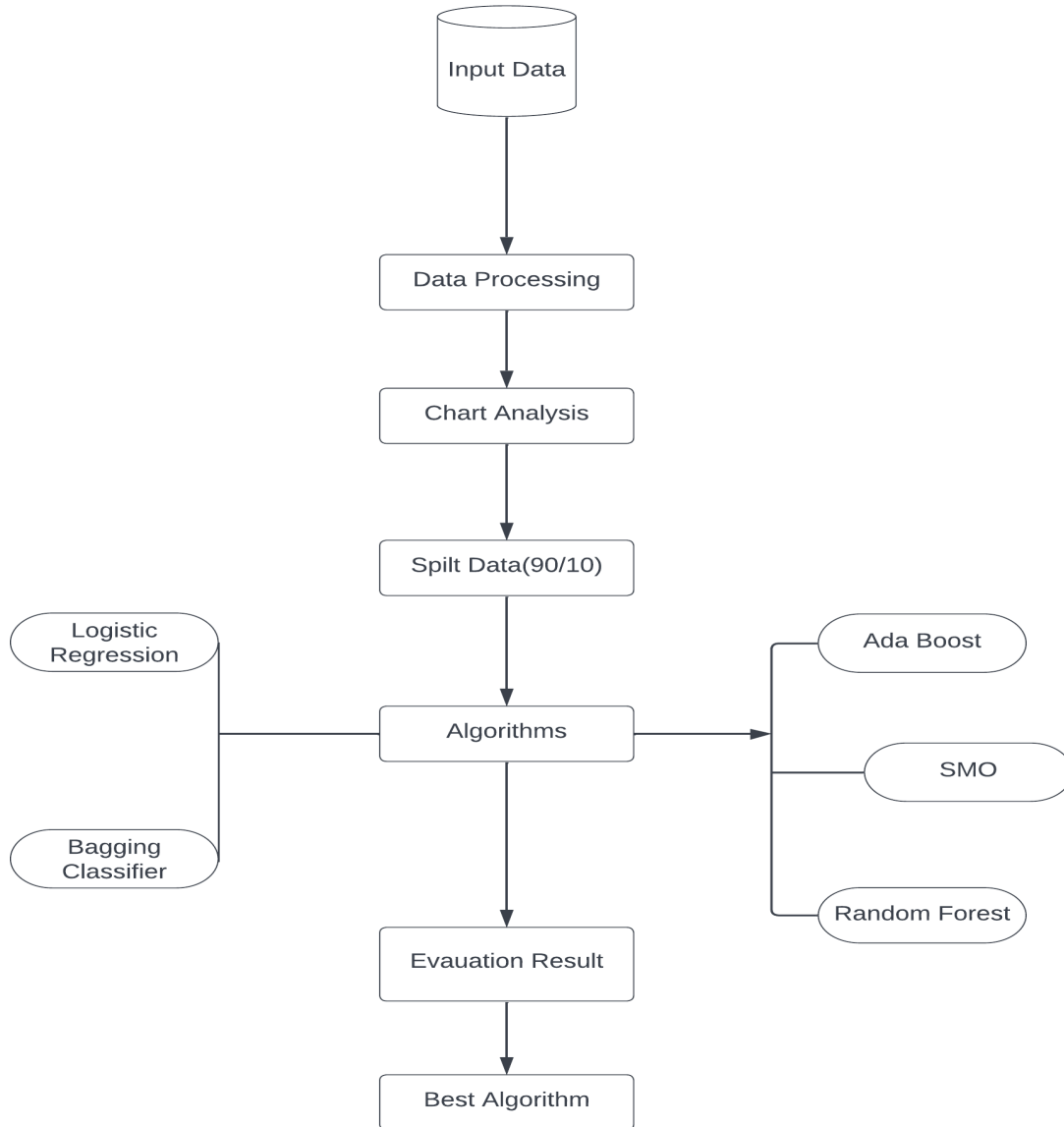


Figure 3.1:Implementation process diagram

**3.3.1 Input Data:** A system file holding data that will be utilized as input by a system or piece of software is known as input data. the source file Computational engineering is the branch of engineering technology that uses machines to study processes and structures that are calculable.

**3.3.2 Data Processing:** Data processing, as used in machine learning language, refers to the transformation of new characteristics into knowledge that a machine learning model can understand and utilize. Most real data sets will have a few gaps in them. There are several potential causes for this. Measurement errors may have been made by the framework that produced the data, or a valuation may not have been performed because it is not important for a certain subset. Data cleansing, trying to import missing values, binning, and feature scaling are all included in data pre-processing.

**3.3.3 Split Data:** Machine learning frequently employ the approach of dividing data into separate groupings. To train the model, data information is often separated into train and test sets. choose the model's hyperparameters, and test the prediction error or accuracy of the model. The training datasets won't include enough data for the model to learn an effective translation from source to destination when the datasets is split into train and test sets. Additionally, the test technique would lack enough information to properly evaluate the model's performance. In this analysis 90/10 ration is spiting to find result.

**3.3.4 Algorithm:** For my analysis I used five algorithm to find out confusion matrix correlation matrix and so on. All this result given in table section

1. Logistic Regression. (LR)
2. Random Forest
3. Bagging Classifier
4. Ada Boost Classifier
5. SMO (Sequential Minimal Optimization)

**3.3.5 Classification Result:** After applying algorithm I find out the correlation matrix, confusion matrix, f 1 measure and many more, for this analysis I use weka tools.

**3.3.6 Best algorithm:** I analysis five algorithm in this five algorithm one algorithm gives the best accuracy and also give the best confusion matrix result



### 3.4 Chart Analysis

In this section, I analysis some visualization to fulfil my research. Here I gives five chart analysis to shown that ratio of different parameter.

#### 3.4.1 Ratio of Different Question

If you didn't finish games last level what is your feeling?

800 responses

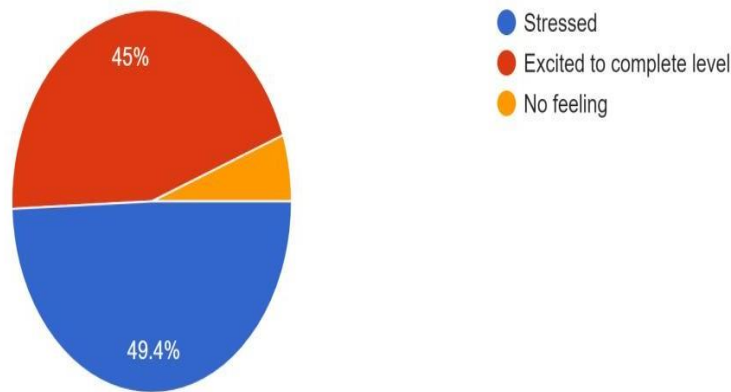


Figure 3.2: Ratio of can not play game in whole day

When you go to sleep?

800 responses

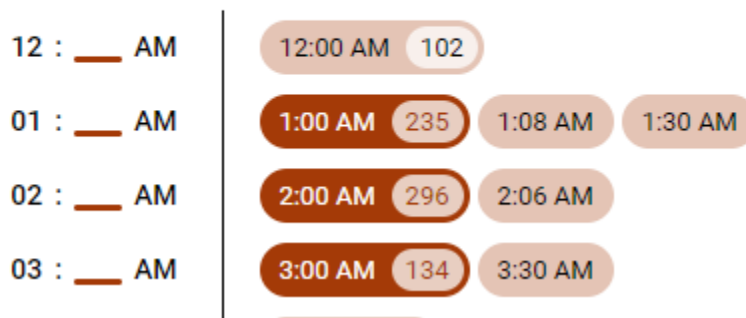


Figure 3.3 Average sleeping time

How you fill when you can not play game in whole day?

800 responses

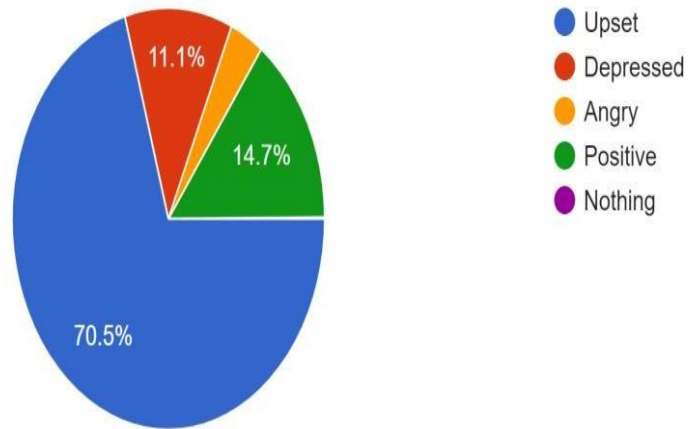


Figure 3.4: Mental situation ratio

Current educational position?

800 responses

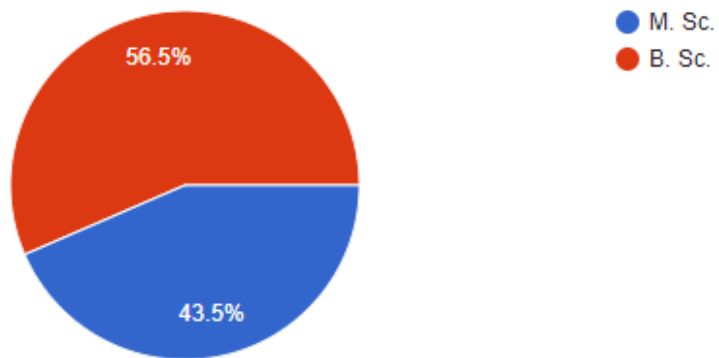


Figure 3.5 Education level ratio

## What is your age?

800 responses

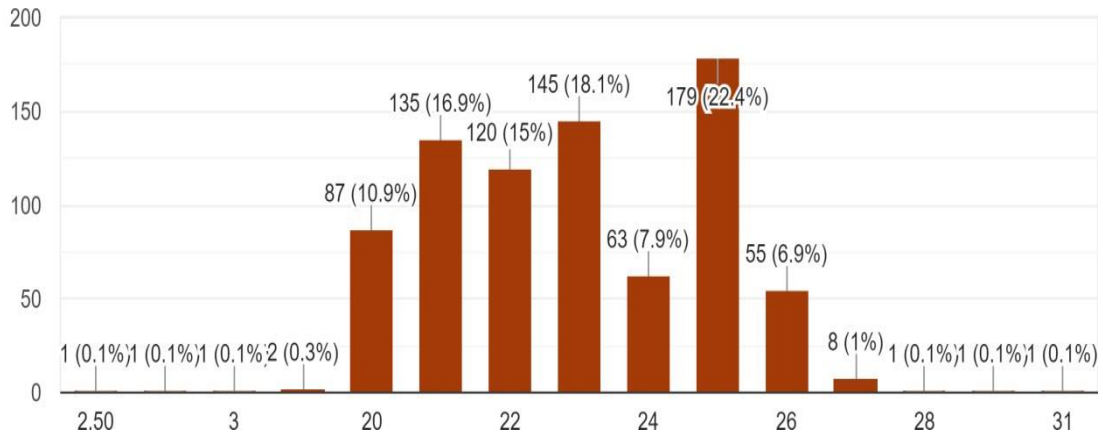


Figure 3.6: Age ratio

Figure 3.2 represent that 45% of this analysis are excited to complete their game level and 49.4% being stressed for not to completing final level and rest of them are no filing.

Figure 3.3 represent that many people are going to sleep after 2 am and then they can miss their morning class

Figure 3.4 represent that 70% student fill upset if he can not play game on a single day and also someone is depressed and angry.

Figure 3.5 represent the age ratio. This result is for 800 students which I collected data for analysis.

## CHAPTER 4

### RESULTS ANALYSIS

#### 4.1 Correlation Matrix Result Analysis

This table was the analysis result of my five algorithm. For finding this result I used weka tools.

Table 4.1: evaluated the results of all algorithms.

Classification	Class	TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	PRC Area
Ada Boost Classifier	Stressed	0.902	0.769	0.552	0.902	0.685	0.675	0.630
	No feeling	0.000	0.000	0	0.00	0.000	0.790	0.117
	Excited	0.250	0.091	0.692	0.250	0.367	0.659	0.571
Bagging	Stressed	0.634	0.487	0.578	0.634	0.605	0.619	0.642
	No feeling	0.000	0.000	0.000	0.000	0.000	0.654	0.225
	Excited	0.500	0.386	0.514	0.500	0.507	0.592	0.569
Logistic Regression	Stressed	0.683	0.410	0.636	0.683	0.659	0.646	0.654
	No feeling	0.333	0.026	0.333	0.333	0.333	0.913	0.475
	Excited	0.556	0.295	0.606	0.556	0.580	0.649	0.623
MLP(Multi-layer Perceptron)	Stressed	0.585	0.436	0.585	0.585	0.585	0.627	0.651
	No feeling	0.333	0.013	0.500	0.333	0.400	0.606	0.375
	Excited	0.528	0.409	0.514	0.528	0.521	0.602	0.566
SMO	Stressed	0.780	0.436	0.653	0.780	0.711	0.678	0.625
	No feeling	0.333	0.000	1.000	0.333	0.500	0.658	0.358
	Excited	0.556	0.227	0.667	0.556	0.606	0.669	0.573

## 4.2 Confusion Matrix Result Analysis

Table 4.2: Results of confusion matrix and accuracy

Classification	Accuracy	Label	Stressed	No feeling	Excited to complete level
Ada Boost Classifier	58%	Stressed	37	0	4
		No feeling	3	0	0
		Excited	27	0	9
Bagging	55%	Stressed	26	0	15
		No feeling	1	0	2
		Excited	18	0	18
Logistic Regression	55%	Stressed	28	1	12
		No feeling	1	1	1
		Excited	15	1	20
MLP(Multi-layer Perceptron)	55%	Stressed	24	0	17
		No feeling	1	1	1
		Excited	16	1	19
SMO	66%	Stressed	32	0	9
		No feeling	1	1	1
		Excited	16	0	20

In this analysis, I was find the 66% accuracy from SMO and this confusion matrix ratio is good on the analysis of others. I find out the result of confusion matrix. A chart called a confusion matrix is utilized to describe how well a classification system performs. The output of a classification method is shown and summarized in a confusion matrix. The accuracy, sensitivities, & specificity of three crucial characteristics are found using the components of the confusion matrix. Here, I learn how accurate these 5 models are. The accuracy of Logistic Regression 55%, Ada Boost Classifier 58%, Bagging Classifier 55%, SMO 66% and MLP 55%.

## Average playing time vs CGPA

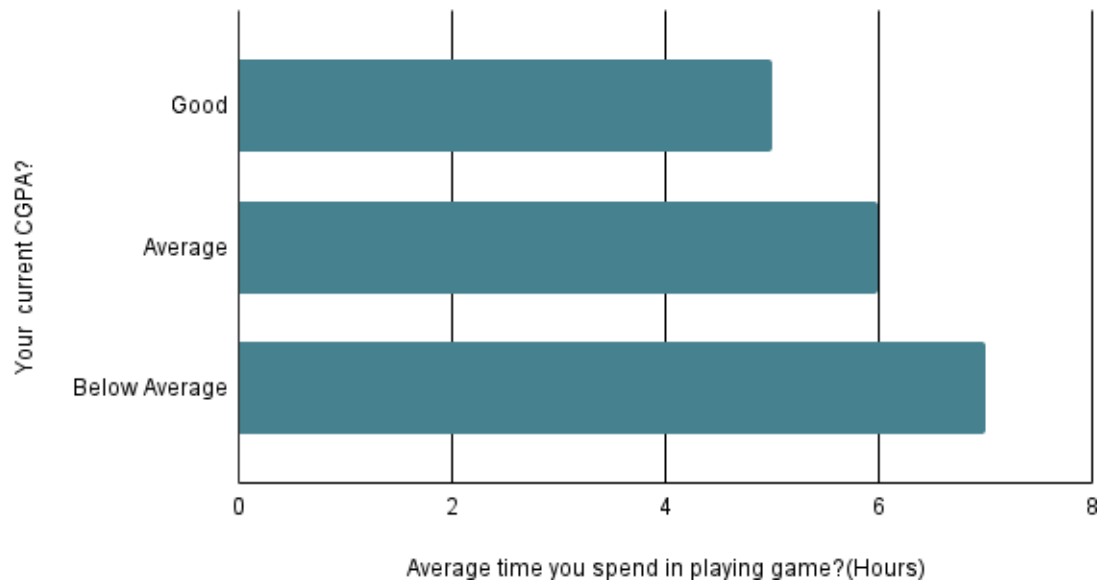


Figure 4.1: Playing time vs CGPA

In this chart I analyzed that when a student play more then 6 hours per day then then can not do well in their examination. For this analysis I divided their cgpa into three part for good part I keep 3.5 - 4.00 result, for average part I keep the result of 3.00 to 3.49, for below average I keep the value 2.00 - 2.99. This chart represent that those who play more then 6 hours they will suffer and those who can not give less time on play game they can do well.

## **CHAPTER 5**

### **CONCLUSION**

#### **5.1 Conclusion**

In my research work I was collected 800 dataset of the student who are addicted to playing games. In this research, when I analyzed this dataset I found that most of the student are very much addicted to playing game and they also miss their morning class. They can not give enough time to their family and all day they only think about how they can complete their game final level. As a result their concentration and all the activity will be break down as my opinion. After that, I also applied some machine learning classifier such as Logistic Regression, Ada Boost Classifier, Bagging Classifier, SMO (Sequential Minimal Optimization), and MLP (Multi-layer Perceptron), from this classifier I got 66% accuracy from SMO(Sequential Minimal Optimization).

#### **5.2 Future work**

I will build an open source working platform with huge amounts of data collected from both male and female. This research will be extend with adding some parameter how university help a student to reduce stress and better in their job market by analysis datasets.

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## **APPENDIX**

Abbreviation:

ML: Machine Learning

LR: Logistic Regression

SMO: Sequential Minimal Optimization

MLP: Multi-layer Perceptron

FIFA: Federation Internationale de Football Association

PES: Pro Evolution Soccer

PUBG: Player Unknown's Battlegrounds

CGPA: Cumulative Grade Point Average

## Mizan

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