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# Implementation of Mechanical Learning Simple Linear Regression Accuracy Level of Mobile Legend Game Addiction for STMIK Kaputama Students

**I Gusti Prahmana[1], Meri Nova Marito Br Sipahutar[2], Ade Linhar P[3], Kristina Annatasia Br Sitepu[4], Selfira[5]**

[1,4,5] STMIK Kaputama
[2,3] Universitas Mandiri Bina Prestasi
*igustiprahmana4@gmail.com[1], merinovamarito@yahoo.com [2], adelinhar22@gmail.com [3], kannatasia88@gmail.com[4], selfira.yap@gmail.com[5]*

**Abstract**

This study aims to apply the Simple Linear Regression algorithm in measuring the accuracy of the addiction level of the Mobile Legend game based on the GAS (Game Addict Scale) scale. GAS is a scale used to assess a person's level of gaming addiction, which consists of several scoring items with various indicators of addiction. In this study, data was collected from a group of respondents who had filled out the GAS questionnaire. The value of the GAS scale is used as an independent variable (X) and the level of addiction to the Mobile Legend game is used as a dependent variable (Y). The method used is Simple Linear Regression, where a model will be developed to predict the level of addiction based on the GAS scale. The collected data is divided into two sets: a training set and a test set. The model is built using a training set and then tested using a test set to evaluate its accuracy. The results show that the Simple Linear Regression model is able to provide a fairly accurate prediction of the level of addiction to Mobile Legend games based on the GAS scale. Accuracy evaluations are performed using metrics such as Mean Squared Error (MSE) and R-squared ($R^2$). The evaluation results show that the model has a low MSE value and a high $R^2$ value, which indicates that the independent variable (GAS scale) has a significant linear relationship with the dependent variable (Mobile Legend game addiction level). The Simple Linear Regression Algorithm can be used as an effective predictive tool to measure the level of game addiction based on the GAS scale. This research contributes to understanding the relationship between the GAS scale and game addiction, as well as opens up opportunities for further research in developing more complex and accurate prediction models.

***Keywords***: *Machine Learning, Game Addict Scale, Accuracy Level, Mobile Legend, Simple Regression Linear*

## 1. Introduction

An online game is a game that can be accessed and can be played online, meaning that players must use the internet network to play it [1]. Online games can also be played using your own or rented gadgets, games that are often played are usually varied and mobile games that are often played by many people because they are easy to access [2]. Online game fans are not only children but also many teenagers and adults who play online games as their reflection, online games can have a positive impact if used for entertainment where all fatigue and stress can be reduced by playing games [3]. In today's era with technological advances that make it easier to obtain various information needed to play games, it can provide positive and negative things for gamers, according to Eryzal Novrialdy in his research entitled Online Game Addiction in Adolescents shows that Adolescents are the age group most likely to have problems in using technology to play online games. One of them is game addiction [4]. The value of the GAS scale is used as an independent variable (X) and the level of addiction to the Mobile Legend game is used as a dependent variable (Y). The method used is Simple Linear Regression, where a model will be developed to predict the level of addiction based on the GAS scale. The collected data is divided into two sets: a training set and a test set. The model is built using a training set and then tested using a test set to evaluate its accuracy. The results show that the Simple Linear Regression model is able to provide a fairly accurate prediction of the level of addiction to Mobile Legend games based on the GAS scale. Accuracy evaluations are performed using metrics such as Mean Squared Error (MSE) and R-squared ($R^2$). The evaluation results show that the model has a low MSE value and a high $R^2$ value, which indicates that the independent variable (GAS scale) has a significant linear relationship with the dependent variable (Mobile Legend game addiction level). The Simple Linear Regression Algorithm can be used as an effective predictive tool to measure the level of game addiction based on the GAS scale. This research contributes to understanding the relationship between the GAS scale and game addiction, as well as opens up opportunities for further research in developing more complex and accurate prediction models.

# 2. Research Methods

## 2.1. Previous Methods

To understand the relationship between the GAS (Game Addiction Scale) scale and the level of addiction to Mobile Legends games using a simple linear regression, here are the steps that can be taken.

## 2.2. Machine learning

Machine learning is a branch of artificial intelligence (AI) that focuses on developing algorithms and models that allow computers to learn from data and make predictions or decisions without being explicitly programmed for the task. This learning process allows computer systems to improve their performance over time by exploiting patterns and information contained in the data. Artificial Intelligence is a field in computer science that is aimed at creating software and hardware that can function as something that can think like a human [5].

## 2.3. Skala GAS (Game Addiction Scale)

The GAS Scale (Game Addiction Scale) is a measurement tool used to assess the level of addiction or addiction in playing computer games or video games. The scale was developed to assist researchers and mental health professionals in identifying individuals who may be experiencing gaming addiction issues. The GAS scale typically consists of a series of questions or statements designed to assess different aspects of gaming behavior that can indicate addiction. For example, questions on this scale might include how often you play games, how hard it is to stop playing, whether games interfere with daily activities, and so on. Assessments using the GAS scale can provide valuable information about a person's level of addiction to gaming and aid in planning appropriate interventions or treatments if needed [6].

## 2.4. Addiction

Addiction, in a general context, refers to a state in which a person becomes so dependent on a thing or activity that it is difficult to control or stop the behavior despite being aware of its negative impacts. Addiction can occur to a variety of things, from substances such as alcohol or drugs, to activities such as gambling, excessive shopping, or excessive use of social media. Psychologically, addiction is often related to changes in the brain, especially in the reward system that makes a person feel satisfied or feel good after performing certain behaviors. This can become very disruptive to a person's daily life, affecting social relationships, work, and overall health. Recognizing and overcoming addiction usually requires professional help, whether from a psychologist, counselor, or support group. Therapy and social support are often used in the recovery process from addiction [7].

## 2.5. Mobile Legends

Mobile Legends is a very popular MOBA (Multiplayer Online Battle Arena) mobile game, developed and published by Moonton. In this game, players form teams with four other players to fight against the opposing team in 5 vs 5 battles. The main objective of the game is to destroy the opponent's base while defending your own base. Each player chooses a character or hero who has different skills and roles in the match, such as assassins, healers, or tanks. Players work together in teams to strategize, take over territory, and kill opposing heroes to gain the upper hand. Mobile Legends offers a variety of game modes, including classic mode, brawl mode, and ranked mode. In addition, the game also has eSports tournaments and competitions that appeal to players who want to compete professionally.
One of them is the Mobile Legends Bang Bang game which has become a tournament branch at the Asian Games and the champion is also from Indonesia. The game released by the game making company, Moonton, in 2016 has successfully captivated the hearts of Indonesian gamers, both amateurs and professionals [8].

## 2.6. Simple Regression Linear

Simple linear regression is a statistical method used to model the relationship between two variables using linear equations. Simple linear regression involves one independent variable (predictor) and one dependent variable (response). The goal is to find the most suitable straight (linear) line that minimizes the difference (error) between the predicted value and the actual value [9].

Minimizing the mean or total square error between the observation and output of the model is the main concern behind the parameters. First, there is a variable known as the dependent variable and the other is known as the independent variable by which the dependent variable is desired which should be estimated based on the others. Equation (1) shows the relationship between dependent and independent variables where a and ß are known as the coefficients of the simple regression model between the independent dependent variables X and Y.

A statistical method that observes from a data that is free of Y and a set of data that is not free X1, ..., Xp. Predicted value of Y for a given value of X. Regression has a variable result that is not free X and to predict the free variable Y. The equation for a simple linear regression model is as follows. [3]

The scalar variable y as well as one or more denoted by X. There are many linear regression domains used [10], [7].

$$Y = a + bX \quad (1)$$

y = free response variable
x = non-free response variable (Bound)
a = contended assessment b = confessing a predicate result

$$a = \frac{(\sum y)(\sum x^2)-(\sum x)(\sum xy)}{n(\sum x^2)-(\sum x)^2} \quad (2)$$

.

$$b = \frac{n(\sum xy)-(\sum x)(\sum y)}{n(\sum x^2)-(\sum x)^2} \quad (3)$$

Assessment A is a slop, b is an intercept and the value of N data is used in calculating

### 2.7. Python

A Python application is a piece of software created using the Python programming language. Python is a high-level programming language that is often used in various fields such as software development, data analysis, artificial intelligence, web development, and more. Python applications can be of various types, from simple programs to complex and large applications, depending on the needs of their use. Python is known for its clean, easy-to-understand, and quick implementation syntax, making it a popular choice for software developers.
Python is an interpreter programming language and can be done with an object-oriented programming paradigm, functions, or in the usual way, namely procedural-oriented programming, the application of python is used in making lightning analysis on transmission lines using an object paradigm. Oriented programming [11], [12].

## 3. Results And Discussion

### 3.1 Research Methods

The linear regression algorithm must have data that is processed as a calculation analysis to find accuracy where the data is in the form of testing data and training data, the following is the data that will be carried out in the calculation process of finding the implementation that has been researched with a total of 37 data of students who play games. The following data is below:

### 3.2 Research Supporting Data

**Table 1:** Student questionnaire data collection

| Semester | Departments | Class | Rank Moblie Legend | Spending my free time playing games | Ignoring important activities (such as school, work, and sports) to play games |
|---|---|---|---|---|---|
| 8 | SI | Sore | Glorius Mythic | 0 | 0 |
| 4 | SI | Pagi | Glorius Mythic | 4 | 0 |
| 4 | SI | Pagi | Epic | 0 | 1 |
| 2 | SI | Pagi | Epic | 1 | 1 |
| 4 | TI | Pagi | Glorius Mythic | 1 | 2 |
| 4 | SI | Pagi | Glorius Mythic | 2 | 1 |
| 2 | TI | Sore | Grandmaster | 2 | 1 |
| 6 | SI | Pagi | Legend | 2 | 0 |
| 4 | SI | Pagi | Legend | 0 | 0 |
| 4 | SI | Pagi | Epic | 1 | 0 |
| 8 | TI | Pagi | Glorius Mythic | 2 | 1 |
| 4 | SI | Sore | Legend | 0 | 1 |
| 8 | SI | Pagi | Grandmaster | 2 | 0 |
| 4 | MI | Pagi | Legend | 0 | 0 |
| 2 | TI | Pagi | Epic | 1 | 0 |
| 2 | TI | Pagi | Epic | 0 | 0 |
| 2 | TI | Pagi | Warrior | 2 | 2 |
| 8 | SI | Pagi | Mythic | 0 | 0 |
| 4 | TI | Sore | Glorius Mythic | 0 | 1 |
| 2 | SI | Pagi | Warrior | 2 | 1 |
| 6 | SI | Sore | Mythic | 0 | 0 |
| 4 | TI | Pagi | Legend | 2 | 2 |
| 8 | SI | Pagi | Legend | 4 | 0 |
| 2 | TI | Pagi | Mythic | 1 | 0 |
| 2 | TI | Sore | Mythic | 2 | 0 |
| 8 | TI | Sore | Mythic | 0 | 0 |
| 8 | TI | Sore | Glorius Mythic | 0 | 2 |
| 4 | MI | Pagi | Legend | 1 | 1 |
| 4 | MI | Pagi | Epic | 0 | 0 |
| 4 | MI | Pagi | Epic | 1 | 0 |
| 4 | MI | Pagi | Glorius Mythic | 0 | 2 |
| 4 | MI | Pagi | Mythic | 1 | 1 |
| 4 | MI | Pagi | Glorius Mythic | 0 | 0 |
| 4 | MI | Pagi | Legend | 0 | 2 |
| 4 | MI | Pagi | Epic | 2 | 2 |
| 6 | SI | Pagi | Legend | 2 | 0 |
| 8 | SI | Pagi | Legend | 1 | 0 |

**Table 2:** Assessment of data format changes

| Answer | Initialize answers in the form of numbers |
|---|---|
| Never | 0 |
| Infrequently | 1 |
| Sometimes | 2 |
| Often | 3 |
| Very Often | 4 |

## 4. Implementation

The results of the program display of the linear regression algorithm prediction process against students' addiction in playing mobile legend can be seen in the image below:

```
In [10]: # Menghitung Model Persamaan Regresi Linier.
         x = sm.add_constant(x1)
         results = sm.OLS(y,x).fit()
         results.summary()
```

Out[10]:

OLS Regression Results

| | | | |
|---|---|---|---|
| **Dep. Variable:** | Y | **R-squared:** | 0.000 |
| **Model:** | OLS | **Adj. R-squared:** | -0.028 |
| **Method:** | Least Squares | **F-statistic:** | 0.003142 |
| **Date:** | Tue, 11 Jun 2024 | **Prob (F-statistic):** | 0.956 |
| **Time:** | 15:55:47 | **Log-Likelihood:** | -43.241 |
| **No. Observations:** | 37 | **AIC:** | 90.48 |
| **Df Residuals:** | 35 | **BIC:** | 93.70 |
| **Df Model:** | 1 | | |
| **Covariance Type:** | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| **const** | 0.6558 | 0.183 | 3.581 | 0.001 | 0.284 | 1.028 |
| **X** | -0.0068 | 0.121 | -0.056 | 0.956 | -0.252 | 0.239 |

| | | | |
|---|---|---|---|
| **Omnibus:** | 7.077 | **Durbin-Watson:** | 1.963 |
| **Prob(Omnibus):** | 0.029 | **Jarque-Bera (JB):** | 4.608 |
| **Skew:** | 0.701 | **Prob(JB):** | 0.0998 |
| **Kurtosis:** | 1.987 | **Cond. No.** | 2.65 |

**Fig. 1:** Linear regression model calculation data

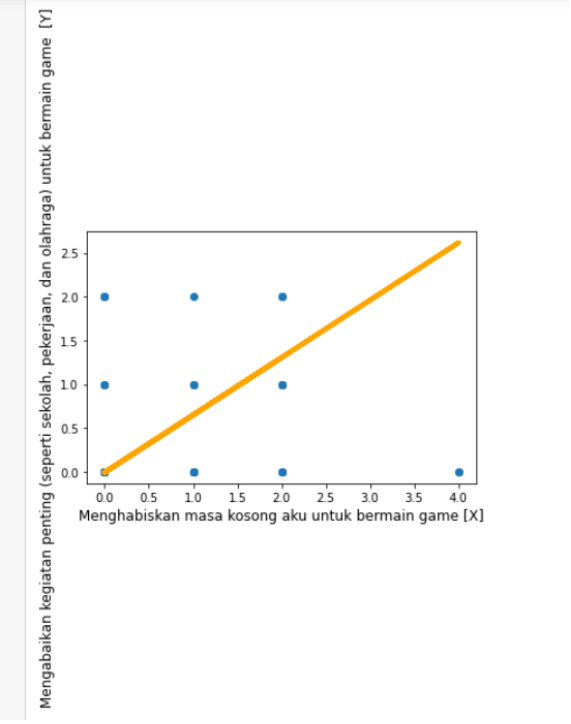


**Fig. 2:** Grafik hasil prediksi regresi linier

## 5. Conclusion

The results of the research carried out which will be predicted to be the result of the Constant Value and Coefficient is 0.65% Percent of students who commit the level of addiction to playing mobile legend games at STMIK Kaputama. The Std error rate is greater than the Coefficient and Constant Values with a value of 0.18%. The results were not good.

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