Research Papers on 'PUBG'

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Paper 1:

Your Identity is Your Behavior -- Continuous User Authentication based on Machine Learning and Touch Dynamics

Date: 2023-04-24

Time: 13:45:25

Authors:

Brendan Pelto, Mounika Vanamala, Rushit Dave

Summary:

- The aim of this research paper is to look into the use of continuous authentication with mobile touch dynamics, using three different algorithms: Neural Network, Extreme Gradient Boosting, and Support Vector Machine. Mobile devices are constantly increasing in popularity in the world, today smartphone subscriptions have surpassed 6 billion. Mobile touch dynamics refer to the distinct patterns of how a user interacts with their mobile device, this includes factors such as touch pressure, swipe speed, and touch duration. Continuous authentication refers to the process of continuously verifying a user's identity while they are using a device, rather than just at the initial login. This research used a dataset of touch dynamics collected from 40 subjects using the LG V30+. The participants played four mobile games, PUBG, Diep.io, Slither, and Minecraft, for 10 minutes each game. The three algorithms were trained and tested on the extracted dataset, and their performance was evaluated based on metrics such as accuracy, precision, false negative rate, and false positive rate. The results of the research showed that all three algorithms were able to effectively classify users based on their individual touch dynamics, with accuracy ranging from 80% to 95%. The Neural Network algorithm performed the best, achieving the highest accuracy and precision scores, followed closely by XGBoost and SVC. The data shows that continuous authentication using mobile touch dynamics has the potential to be a useful method for enhancing security and reducing the risk of unauthorized access to personal

devices. This research also notes the importance of choosing the correct algorithm for a given dataset and use case, as different algorithms may have varying levels of performance depending on the specific task.

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Paper 2:

Prediction of the final rank of Players in PUBG with the optimal number of features

Date: 2021-07-01

Time: 07:44:45

Authors:

Diptakshi Sen, Rupam Kumar Roy, Ritajit Majumdar, Kingshuk Chatterjee, Debayan Ganguly

Summary:

- PUBG is an online video game that has become very popular among the youths in recent years. Final rank, which indicates the performance of a player, is one of the most important feature for this game. This paper focuses on predicting the final rank of the players based on their skills and abilities. In this paper we have used different machine learning algorithms to predict the final rank of the players on a dataset obtained from kaggle which has 29 features. Using the correlation heatmap,we have varied the number of features used for the model. Out of these models GBR and LGBM have given the best result with the accuracy of 91.63% and 91.26% respectively for 14 features and the accuracy of 90.54% and 90.01% for 8 features. Although the accuracy of the models with 14 features is slightly better than 8 features, the empirical time taken by 8 features is 1.4x lesser than 14 features for LGBM and 1.5x lesser for GBR. Furthermore, reducing the number of features any more significantly hampers the performance of all the ML models. Therefore, we conclude that 8 is the optimal number of features that can be used to predict the final rank of a player in PUBG with high accuracy and low run-time.

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Paper 3:

Moment-to-moment Engagement Prediction through the Eyes of the Observer: PUBG Streaming on Twitch

Date: 2020-08-17

Time: 10:40:34

Authors:

David Melhart, Daniele Gravina, Georgios N. Yannakakis

Summary:

- Is it possible to predict moment-to-moment gameplay engagement based solely on game telemetry? Can we reveal engaging moments of gameplay by observing the way the viewers of the game behave? To address these questions in this paper, we reframe the way gameplay engagement is defined and we view it, instead, through the eyes of a game's live audience. We build prediction models for viewers' engagement based on data collected from the popular battle royale game PlayerUnknown's Battlegrounds as obtained from the Twitch streaming service. In particular, we collect viewers' chat logs and in-game telemetry data from several hundred matches of five popular streamers (containing over 100,000 game events) and machine learn the mapping between gameplay and viewer chat frequency during play, using small neural network architectures. Our key findings showcase that engagement models trained solely on 40 gameplay features can reach accuracies of up to 80% on average and 84% at best. Our models are scalable and generalisable as they perform equally well within- and across-streamers, as well as across streamer play styles.

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Paper 4:

Survival of the Fittest in PlayerUnknown BattleGround

Date: 2019-05-15

Time: 09:39:46

Authors:

Brij Rokad, Tushar Karumudi, Omkar Acharya, Akshay Jagtap

Summary:

- The goal of this paper was to predict the placement in the multiplayer game PUBG (playerunknown battleground). In the game, up to one hundred players parachutes onto an island and scavenge for weapons and equipment to kill others, while avoiding getting killed themselves.
The available safe area of the game map decreases in size over time, directing surviving players into tighter areas to force encounters.
The last player or team standing wins the round. In this paper specifically, we have tried to predict the placement of the player in the ultimate survival test. The data set has been taken from Kaggle.
Entire dataset has 29 attributes which are categories to 1 label(winPlacePerc), training set has 4.5 million instances and testing set has 1.9 million. winPlacePerc is continuous category,

which makes it harder to predict the survival of the fittest. To overcome this problem, we have applied multiple machine learning models to find the optimum prediction. Model consists of LightGBM Regression (Light Gradient Boosting Machine Regression), MultiLayer Perceptron, M5P (improvement on C4.5) and Random Forest. To measure the error rate, Mean Absolute Error has been used. With the final prediction we have achieved MAE of 0.02047, 0.065, 0.0592 and 0634 respectively.

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