**Project Charter Document**



**Project Name:** PUBG Game Analysis

**Department:** Gaming

**Focus Area:** Win Prediction Model and Cheating Analysis

**Product/Process:** Data Analysis



**Prepared By**

| **Document Owner(s)** | **Project/Organization Role** |
| --- | --- |
| Isaac Stong | Team Lead |

**Project Charter Version Control**

| **Version** | **Date** | **Author** | **Change Description** |
| --- | --- | --- | --- |
| 1.0 | 10/22/21 | Isaac Stong | Document created |
| 2.0 | 10/28/21 | Isaac Stong | Separated data into its three game types |
| 3.0 | 11/2/21 | Joyce | Handled outliers and NAN values in data |
| 4.0 | 11/6/21 | Ray Kusama | Performed EDA and normalization on the data as needed |
| 5.0 | 11/9/21 | Asalah | Performed analysis to determine if kills and distance have a heavy impact on winning and the direction of said impact |
| 6.0 | 11/10/21 | Isaac Stong | Did analysis on cheaters in the game and extracted usable methods to catch cheaters using game data |
| 7.0 | 11/11/21 | Alberto Leon | Performed feature engineering based on linearity and colinearity as well as handled overly influential data points |
| 8.0 | 12/12/21 | Hung | Performed model building and performed analysis on which features impacted the model the most |
| 9.0 | 12/13/21 | Isaac Stong | Compiled all findings into a final write up and finished all last detail changes on charter |
| 10.0 | 12/21/21 | Whole Team | Technical document was made and finished as well as deployment of models as web app using Django. |

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* **PROJECT CHARTER PURPOSE**

Identify key features in winning or scoring high in a round of *PlayerUnknown’s Battlegrounds.* We also need to identify how to catch cheaters in game and create a reliable system for stopping these cheaters from ruining the game for others.



* **PROJECT EXECUTIVE SUMMARY**
* Project goals
  + prediction of game placement for a given group or individual. As well as identification of cheaters in the game.
* Objectives
  + The objective of the project is to predict the placement of a group or individual so we can better understand which features help with chances of winning. We also hope to find trends that will assist in identifying cheaters in the game.
* Scope

To identify what factors play a larger role in winning a game of PUBG and find factors that point to in game cheating.

* Assumptions

The data we received is accurate and are factors in winning a game of PUBG.

* Risks

The main risk we hope to solve is that of players leaving because cheating is prevalent in the game. Also to avert people leaving the game for the reason they don’t feel they’re improving. This project will both give a clear answer to what makes some players win more and what makes it clear someone is cheating.

* Timeline

We hope to finish this project in one month’s time starting on Oct. 22, 2021 and ending Nov. 22, 2021.

* Approach

Our approach will be to split EDA, model building, and write ups into different tasks for the prediction model. For the trend finding we will be giving that to an individual as its own task.



* **PROJECT OVERVIEW**

*PlayerUnknown's Battlegrounds* (PUBG) is an online multiplayer battle royalegame developed and published by PUBG Corp. *Battlegrounds* is a player versus player shooter game in which up to one hundred players fight it out in a battle royale, a type of last man standing deathmatch.

Using a large set of data from anonymized PUBG game statistics composed of player post-match statistics, the project objective is to build a model that predicts what a player's chances of winning are for a given set of post-match stats. Additionally we'll determine whether certain stats, specifically kill count and distance traveled in a game, have a measurable impact on the win chances. And finally we also seek to find ways to detect fraudulent players, i.e. cheaters, by analyzing the stats.



* **PROJECT SCOPE**
  + **Project Deliverables**

| **Milestone** | **Deliverable** |
| --- | --- |
| 1. Explore Business | * Research all the aspects of PUBG and how the workings of the game affect winning and cheating. |
| 1. Explore and simulate the sample data | * Clear documentation on Data and data preprocessing / Cleaning |
| 1. Data Cleansing | * Data Cleansing using Exploratory data analysis * Perform Feature engineering, Hypothesis testing based on that feature selected for analysis purpose |
| 4. Exploratory Data Analysis | * Complete documentation on the data with all stats and graphs using Python programming tool along with automated Python code |
| ● Apply Linear Regression Models and come up with the best fit model. | * Analysis of how this model works and how this information can be used to improve your own game. |

* + **Project Duration (Start date: 10/22/2021 - End date: 11/22/2021)**

| **Project Milestone** | **Date Estimate** | **Deliverable(s) Included** | **Confidence Level** |
| --- | --- | --- | --- |
| Understanding the Problem Statement | 22.10.2021  to  24.10.2021 | * Prepare task lists and notes on problem understanding. | High |
| Prepare Project charter | 25.10.2021  to  28.10.2021 | * 1.Goals and Objectives * 2.Project Deliverables * 3.Deliverables Out of Scope * 4.Project Duration | High |
| Data Understanding | 28.10.2021  to  31.10.2021 | * Reviewed data supplied and * 2.Discussed the Possible features to be included as part of the feature set and the ML techniques to be applied. | High |
| Data Preparation | 01.11.2021  to  08.11.2021 | * Prepare the initial data set by removing outliers, NAN’s, and applying various feature engineering techniques. | Medium |
| Modeling | 09.04.2021  to  14.11.2021 | * 1.Apply ML modeling techniques such KNN,Random forest,Ensemble learning,catboost * 2. Model Selection and Fitment * 3.Using Python, R and SQL( if required) | Medium |
| Evaluation | 15.11.2021 | 1. Evaluate Results and test it with Real data from the Client.  2. Evaluate with the Stakeholders and approval | Medium |
| Deployment | 21.12.2021 | 1. Deploy model using Django. 2. Release to the public via github. | High |



* **PROJECT CONDITIONS**
  + **Project Assumptions**
* Data is based on real games played by real players.
* Cheating is a prevalent problem in any game and our data has captured at least some instances of player cheating.
* Data is relevant to target variable and will help find trends in high ranking players vs. low ranking players
  + **Project Issues**

**Priority Criteria**

1 − High-priority/critical-path issue; requires immediate follow-up and resolution.

2 − Medium-priority issue; requires follow-up before completion of next project milestone.

3 − Low-priority issue; to be resolved prior to project completion.

4 − Closed issue.

| **#** | **Date** | **Priority** | **Owner** | **Description** | **Status & Resolution** |
| --- | --- | --- | --- | --- | --- |
| 1 | 11/10/21 | 4 | Isaac Stong | There was no indicator as to whether a player was cheating or not. | Upon research it was easy to discover popular cheating methods and devise a system for spotting cheaters using outliers in given data. |

* + **Project Constraints**

**\* minimize player cheating**

* **Project Structure Approach**

The project implementation to be done using CRISP-DM process



* **Project Team Organization Plans**

| **Project Team Role** | **Project Team Member(s)** | **Responsibilities** |
| --- | --- | --- |
| Project Management | Isaac Stong | ● Project Charter  ● Code Review  ● Document Review |
| Data Handling | All Team | ● Data Research  ● Data Understanding |
| Data Preparation/ EDA | Joyce  Ray Kusama  Alberto Leon | ● Data Cleansing  ● Data Visualization  ● Exploratory Data Analysis. |
| Model Building | Hung | ● Model Research  ● Model Building  ● Model Improvement |
| Deployment | Isaac Stong | ● Web Application  ● Django Deployment  ● GitHub Relese |
| Documentation | All Team | ● Project Document  ● Error Document  ● Technical Document  ● User Manual |

* **APPROVALS**

**Prepared by** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Manager

**Approved by** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Sponsor

