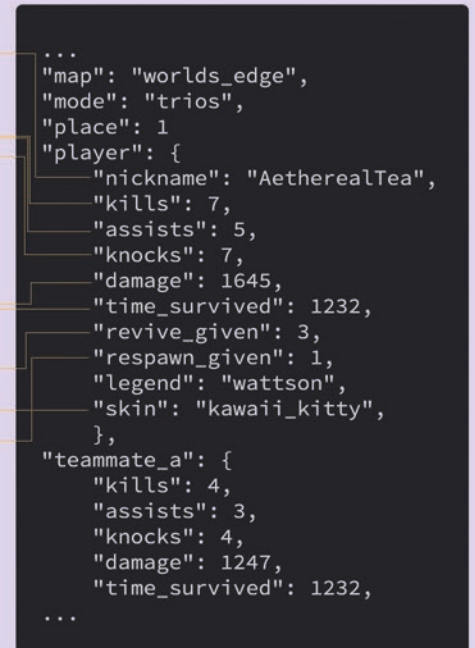# Project Voidwalker

Project Voidwalker is an open-source Python application designed for Apex Legends players who want to track their in-game performance and extract valuable data for analysis. By continuously analyzing the screen during matches, the program can detect useful information and compile it into a single JSON file for further processing. Currently, the app tracks game modes, legends picked by each teammate, and end-of-game stats such as kills and damage. The program was initially developed for personal use only and has some limitations, but future plans include making it more robust and convenient to use.

How it works

IInitially built for conducting research on the correlation between character skins and performance metrics, this application resembles a Python script and utilizes OpenCV for image processing and Tesseract for OCR. The program runs in a loop, continuously capturing and analyzing the screen by comparing selected regions of interest with predetermined markers to detect select frame types. If it detects certain frame with useful information, it attempts to extract this information and compiles it into a single JSON file for further processing after the match ends.


```json
...
"map": "worlds_edge",
"mode": "trios",
"place": 1,
"player": {
    "nickname": "AetherealTea",
    "kills": 7,
    "assists": 5,
    "knocks": 7,
    "damage": 1645,
    "time_survived": 1232,
    "revive_given": 3,
    "respawn_given": 1,
    "legend": "wattson",
    "skin": "kawaii_kitty",
    },
"teammate_a": {
    "kills": 4,
    "assists": 3,
    "knocks": 4,
    "damage": 1247,
    "time_survived": 1232,
...
```

Features

The program is able to:

- Recognize three main game modes: trios, duos, ranked

- Parse end-of-game stats (kills, damage, knockdowns, etc.) for each teammate using the after-match summary

- Track legends picked by each teammate during legend selection screen

- Recognize certain skins with certain characters picked by a player

Benefits

By using the app, Apex Legends players can gain a deeper understanding of their gameplay and make more informed decisions during matches, identifying areas for improvement and working on honing their skills. Additionally, the open-source nature allows for collaboration and further development by the community.
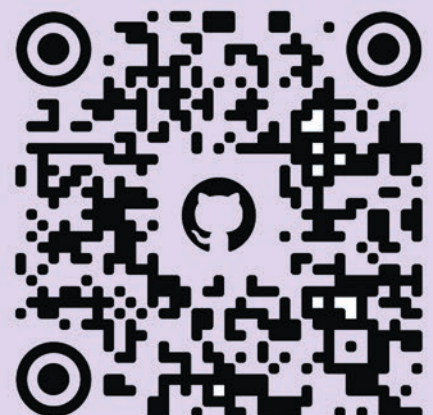
Plans

Future plans for the project development include:

- Fine-tuning the Tessaract OCR with a dataset gathered from the in-game labels to raise the accuracy of the text extraction

- Increasing the robustness of the program by enabling the independent asyncronus capture of a game window and refactoring the code to be resolution-agnostic

- Extracting dynamic metrics during the match itself (e.g., ping, weapons used, ammo), including those with no visible text (e.g., incoming damage, shooting accuracy, movement plans)

- Adding convenient graphic user interface with ways to natively process and visualize data inside the app

Contribution

https://github.com/aetherealtea/voidwalker

Artwork by kiriakatsune