Waventure

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Abstract :

Our project would be software that the user would launch at the start of a battle in the game Waven. The software would aim to see and understand the placement of enemies as well as their types and statistics. He must also be able to read and know the cards he has available to play. His mission will then be to play against the enemies. To play, he will have to perform two actions: move/attack (in Waven the attack is an extension of the movement) as well as cast cards (spells) to overcome enemies.

If we succeed in the project, there are two very similar ways to improve it. The first is to ensure that the software can launch itself into the game and that it can navigate the menus on its own. The second would be that he can repeat the same mission a defined number of times to collect rewards in large quantities, allowing us to try other characters easily. It would also be interesting to teach our project to play with characters that have more complex gameplay.

A quick look at Waven :

"Waven" is a video game released on June 19, 2023. This game is free and developed by Ankama, continuing the storyline of the company's previous works such as the MMO Dofus or the animated serie Wakfu.

The game exclusively focus on his turn by turn combat system, giving player 20 classes and dozens of spell and gears to defeat all challenges available, alone or in team with one or two other players. It's this combat systeme we will be trying to automate.

The downside for our software is that trying to automate a game with so much customisation is gargantuan, so we only provide the software for a specific class, the Brutal Fairblade, and build.

For more informations concerning the comabt system and scope of the project, please look at the documentation file.

Methodology :

To find the optimal turn to make, the software will read all the needed informations by analysing screenshots taken from your screen in game. All the data extracted will go in specific objects to get the basic understanding of the overall challenge to solve.

Then we begin the simulation, we first observe all cells we can reach and choose the ones that allows melee attack. If no melee attack can be land, we choose all possible mouvement. Then, we test all combinations of spells we can cast this turn after all the possible movements, try to naivly predict foes' mouvements and grade our calculated outcomes.

To grade our outcomes and choose the best ones we compare the simulated boards with the initial situation and see how many damages were dealt, receives, if ennemies were defeated or if you was defeated yourself. We obviously want to make a maximum of damages while taking the less and not being defeated.

Data Extraction

To extract all the data we need we begin by looking at a pixel on each cell of the arena. If the pixel color isn't the one it should have a charcater may be on it. We double-click on the cell and check for the color of a pixel where a status screen which should open if a character is on the cell. If a status screen does appear, we take a screenshot of it, erase all unnecesary informations by changing the color of pixels to only have digits left. Finaly we use a function to read those numbers by looking at the pixels colors oonce again.

All these data are used to create some character objects which will be used by the AI for its simulation.
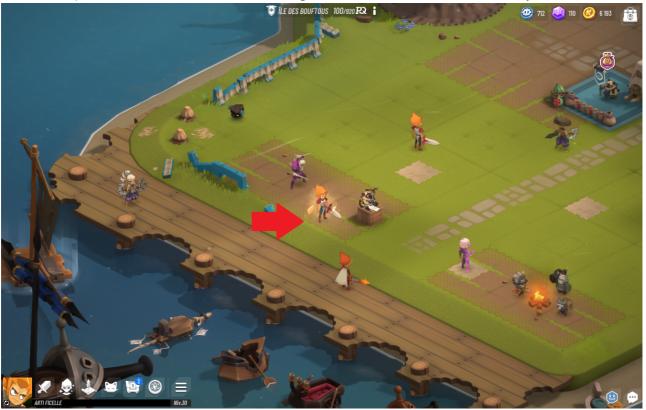
Now for spells, we have a critic pixel which color differs for each spell, allowing us to distinguish them by looking at it.

How to run

- Install Waven from Ankama official website (https://www.waven-game.com/en/download)
- install all the librairies named in requirements.txt If your using your native CMD and pip, type this command in the source folder : `pip install -r requirements.txt`
- log in with the appropriate character (please contact us if you need the test account)
- Disable the fullscreen option if needed in your settings
- launch frame.py with a python IDE such as VSCode or Spyder
- Make sure your game is recognized

- Go on this specific tile on bouftou island, the diagonal from the cat, normal zoom on your character:

- Click on the quest cat, select any level and press the start button on Waventure.
- Enjoy