# **Suit Collector**

## **Requirements**

1. Knowledge of Python programming language, including concepts such as variables, functions, loops, and conditional statements.
2. Experience with using VS code or any code editor for coding and debugging.
3. Installation of Anaconda and creation of a Python 3.9 Anaconda environment.
4. Installation of the required packages: NumPy, Gymnasium, TensorFlow and Keras.
5. Knowledge of the game Suit Collector, including the rules and the actions that the agent can take.
6. Understanding reinforcement learning concepts, including Markov Decision Processes, reward functions, and policy optimization.
7. The knowledge of concepts adapted in our project such as Neural Networks, Deep learning, Epsilon Greedy, DQN, Experience Replay.

## **Project Setup**

You can execute the following steps to set up the environment. It is assumed that you already have the requirements specified above.

1. Install Anaconda from the official Anaconda website.
2. Open the terminal and run the following command to create a new conda environment: *> conda create -n gputest python=3.9*
3. Activate the conda environment using the following command: *> conda activate gputest*
4. Install gymnasium: *> pip install gymnasium*
5. Install TensorFlow using: *> conda install tensorflow*
6. Next, we need to install Keras: *> conda install tensorflow.keras*
7. Skip this step if you do not have a dedicated GPU, install cuda using: *> conda install -c nvidia cuda-nvcc*
8. Finally, unzip Raider\_Squad\_prototype2\_V1.zip and extract all the files to get started.

## **Train the models**

To start training of the model for phase 1 follow the following steps:

1. To train phase 1, navigate to phase1.py file and run > python phase1.py

To start the training of the agent for phase 2, follow the following steps:

1. Open the terminal in visual studio code
2. Navigate to ./Train/Phase2/: *> cd .\Train/Phase2\*
3. Run setEnv to set the environment in conda: *> .\setEnv.bat*
4. Next run train.bat file to train the agent: *> .\train.bat*
5. From the given prompt select 1 to 4 to train the respective agent.

## **Running Test Cases**

1. Activate the conda environment using the following command: *> conda activate gputest*
2. Navigate to the game directory where this server.py file is located.
3. Run this command: python server.py
4. After point, the directory mentioned, now run the command “runme.bat”
5. On the console, there will be a port number visible for the UI execution. For example, it may be 8000.
6. Type localhost:[port\_number] in the browser to open the UI. For example, localhost:8000.
7. After this, you should be able to access the UI, from where all the code can be executed from a single point.
8. Next, you can select the suitable options from the dropdown menus to start playing against the agents.
9. This is how we have integrated all the models into one user interface.