**Project Notes**

Literature

Hierarchical reinforcement learning for self‐driving decision‐making without reliance on labelled driving data

* Independent Manoeuvre Selection and Motion Control
* APRL – Asynchronous Parallel RL – Each learner has own policy network, average is taken at each iteration, learners synchronise form shared network before making new decisions

Hands-On Reinforcement Learning with Python

* Reinforcement Learning Basics – Policy Function, Value Function, Agent-Environment Interface, Q Function, MDP, Bellman Equation, Monte Carlo Methods
* Policy Optimisation
* Feature exploitation vs Feature exploration

Deep Learning, Reinforcement Learning and World Models

* Generalised Policy Updates
* World Models

Lightweight 3D hand pose estimation by cascading CNNs with reinforcement learning

* CNN and feature extraction
* Feature exploitation vs Feature exploration

## Installing Mario-env

Was using python 3.12, needed Descartes package -> Pillow -> zlib.

Zlib not recognised by pip, tried .exe install, that didn’t work.

Found .whl archived package at <https://www.lfd.uci.edu/~gohlke/pythonlibs/#pillow>

Only compiled versions were python version <=3.11

Uninstalled python 3.12 and installed 3.11,

Installed pillow package on 3.11

## Changes to Mario Env

As I will be using a different approach so these trajectories are not as necessary

Removed all references to trajectories in state-handler

Removed Pangolin visualiser

## Key Memory Locations

|  |  |  |
| --- | --- | --- |
| Location | Offset | Description |
| 0x809BD70C | 0x61 | Moving Direction  (1: forward, 2: backward) |
| 0x809BD70C | 0x3C | Steering Direction  (0: left, 7: straight, 14: right) |
| 0x809BD730 | 0xF8 | Current Lap Completion  (float 0-3) |
| 0x809BD730 | 0x1B9 | Minutes |
| 0x809BD730 | 0x1BA | Seconds |
| 0x809BD730 | 0x1BC | Third-Seconds |
| 0x809C2EF8 | 0x40 + 0x0 | X Position (float) |
| 0x809C2EF8 | 0x40 + 0x4 | Y Position (float) |
| 0x809C2EF8 | 0x40 + 0x8 | Z Position (float) |

Source - <https://github.com/JackWBoynton/mariokart-rl/README.md>

Dolphin Config : GFX.ini -> Added `DumpFramesAsImages = True` in `[Settings]`

: Added hotkeys for frame advancing, learning can run independent of game framerate. Can be done not in real time

Installed Tesseract OCR Engine <https://github.com/tesseract-ocr/tesseract>

Funky Flame Runner

MT = 113

Wheelie = 97

Normal = 84