Directory Structure: avirigin_nkaandru_prajeshg_final_project

avirigin_nkaandru_prajeshg_final_project.zip/

- Custom_MARL-DroneDelivery/   Contains everything related to Custom MARL DroneDelivery env
  - codes/
    - DoubleQLearning.py   Contains code for DoubleQLearning algorithm
    - DQN_DroneDeliveryEnv.ipynb   Contains codes for everything related to DQN applied on DroneDelivery for:

      Algorithm

      Training

      Evaluation of greedy policy

      Plots for total rewards, epsilon decay, greedy evaluation for 10 episodes

      Render one greedy episode
    - DroneDelivery_Env.py   Contains code for Custom MARL DroneDelivery env
    - QLearning.py   Contains code for QLearning algorithm
    - QMIX_DroneDeliveryEnv.ipynb   Contains codes for everything related to QMIX applied on DroneDelivery for:

      Algorithm

      Training

      Evaluation of greedy policy

      Plots for total rewards, epsilon decay, greedy evaluation for 10 episodes

      Render one greedy episode
    - SARSALearning.py   Contains code for SARSA algorithm
    - Tabular_Methods_DroneDeliveryEnv.ipynb   Main runner file for Custom MARL DroneDelivery env for tabular methods. This contains all the outputs of all the tabular methods

- utility_functions.py   Contains methods for:

  Loading saved Q-values

  Loading saved rewards and epsilons

  Plotting total training rewards

  Plotting epsilon decay

  Performing greedy evaluation

  Plotting greedy evaluation for 10 episodes

  Rendering one greedy episode

- images/   contains images for rendering the DroneDeliverySystem Env
- pickle/   contains saved:

  Q-tables of SARSA, QLearning, and DoubleQLearning

  Trained network weights of DQN and QMIX

  Rewards of SARSA, QLearning, DoubleQLearning, DQN, and QMIX

  Epsilon values of SARSA, QLearning, DoubleQLearning, DQN, and QMIX

- Rendering/   contains PDF visualizations of environment behavior
  - double-Q-learning-rendering.pdf
  - DQN-rendering.pdf
  - Q-learning-rendering.pdf
  - QMIX-rendering.pdf
  - Sarsa-rendering.pdf

- Existing_MARL-SimpleSpreadv3/   Contains everything related to SimpleSpreadv3 env from PettingZoo.org
  - agents/   contains codes for algorithms: DQN, DoubleDQN, DuelingDQN
    - DoubleDQLTrain.py
    - DQLTrain.py

- DuelingDQLTrain.py

- double_dqn_models/ contains trained model weights and logs for Double DQN agents
  - epsilon_history.npy
  - final_agent_0.pt
  - final_agent_1.pt
  - final_agent_2.pt
  - final_rewards.npy
- dqn_models/ contains trained model weights and logs for DQN agents
  - epsilon_history.npy
  - final_agent_0.pt
  - final_agent_1.pt
  - final_agent_2.pt
  - final_rewards.npy
- dueling_dqn_models/ contains trained model weights and logs for Dueling DQN agents
  - epsilon_history.npy
  - final_agent_0.pt
  - final_agent_1.pt
  - final_agent_2.pt
  - final_rewards.npy
- gifs/ contains environment run visualizations
  - double_dqn_run.gif
  - dqn_run.gif
  - dueling_dqn_run.gif
- SimpleSpreadV3_MARL.ipynb Main runner file for SimpleSpreadv3 MARL env. This contains all the outputs
- utility/

- network_utility_functions.py   Contains methods for:

  Loading saved model, rewards, and epsilons

  Plotting total training rewards for agent 0, agent 1, and agent 2 individually

  Plotting average of total training rewards across agents 0, 1, and 2

  Plotting epsilon decay

  Performing greedy evaluation

  Plotting greedy evaluation for 10 episodes

  Rendering one greedy episode

-avirigin_nkaandru_prajeshg_final_project.pdf

-README.pdf