Project 4 Writeup

Data Collection

In the getAsteroidCollectorAction method when we get path from the Astar, we are taking the values of ship's energy at that time and the distance to the target which will be the asteroid and also the data regarding if the asteroid is moveable or not and finally taking the data if it is reaching the target or not. The model is being trained only once where the values are getting predicted and ship reaching the goal, but the new data is not getting trained continuously.

ShipEnergy: This feature indicates the energy remaining in the ship. In the context of logistic regression, it's a numerical variable that could directly influence the possibility of reaching the goal.

PathDistance: This is another numerical feature representing the distance that's there from ship to goal.

IsMoveable: This feature seems to be a binary (0 or 1) variable indicating whether the asteroid is capable of moving.

IsGoalReached: This is the target variable for logistic regression model. It's a binary variable indicating whether the goal was reached 1 or not 0

Learning

So based on this data, we are training the logistic regression model and getting the predictions if the goal will be reached or not based on the features ship's energy, distance to the asteroid and if the asteroid is moveable or not and making the ship to take that path if the predicted value is 1 or else it checks for another asteroid.

Based on this predicted value we are making the ship to take that path, based on this decision we are making sure that ship won't make its

energy waste by knowing that the ship won’t reach the target. So, this will ensure that the performance is increased.

Learning Method

The training procedure adjusts the model's weights and bias via an optimization method known as gradient descent, which minimizes the difference (or error) between the model's predictions and the actual labels. This training occurs over several iterations, with a learning rate controlling how much the weights and bias change in each iteration. A lower learning rate ensures that the training will be slow but gives good results. Here the sigmoid function is the difference between linear and logistic regression methods.

References:

https://www.geeksforgeeks.org/implementation-of-logistic-regression-from-scratch-using-python/