CSCI 397: Mystery Algorithm

Due Date: Friday, December 8th @ 11:59 PM

Introduction

This assignment aims to deepen your understanding of a Reinforcement Learning (RL) algorithm. You will identify a specific RL algorithm, explain its workings, and analyze the major components of its code. You will be working in partners to complete this assignment, only one of you should turn in the submitted report and commented code.

Tasks

1. Select an RL Algorithm: determine which Reinforcement Learning algorithm has been given to you. You will need to figure out what that algorithm is doing and what it's name is.
2. Research the Algorithm: Conduct thorough research on the chosen algorithm. Understand its historical context, its development, and its significance in the field of RL.
3. Explain the Algorithm:
   - Conceptual Explanation: Provide a detailed explanation of how the algorithm works. This should include:
     - The problem it solves.
     - Its core concepts and principles.
     - The type of learning it employs (e.g., model-based, model-free).
     - Its strengths and weaknesses.
   - Mathematical Foundation: Explain the mathematical foundation of the algorithm, including any relevant equations and their significance.
4. Code Analysis:
   - Code Selection: Choose a piece of code that implements your selected algorithm (this can be from an open-source platform).
   - Major Components: Identify and explain the major components of the code, such as:
     - Initialization of parameters.
     - The learning loop.
     - The reward mechanism.
     - The update rule.
   - Functioning of the Code: Explain how these components work together to make the algorithm function. Include flowcharts or pseudocode if necessary for clarity.

Deliverables

1. A report (PDF) discussing each of the tasks listed above. Make sure to completely answer each question but there is no need to be unnecessarily wordy here. Just make sure you get the appropriate answers.

2. Ensure that the code is well-commented, you should go through and comment up the assignment to make sure that there are appropriate doc strings and in line comments that help to clarify what the code is doing.

Good luck!