Assignment No. 8 Rubric

EECS 658

Introduction to Machine Learning

Due: 11:59 PM, Thursday, December 12, 2024

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# Point Breakdown

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| ***Graded Value*** | ***Points Possible*** | ***Criteria*** |
|  | 0 | Your assignment will receive a zero and not be graded unless the following are submitted:   * Name of the zip file: FirstnameLastname\_Assignment8 (with your first and last name). Files in other formats (e.g., .tar will not be graded). * Name of the Assignment folder within the zip file: FirstnameLastname\_Assignment8 * Copy of Rubric 8.docx. * Python source code |
|  | 2 | Part 1: N(s), S(s), and V(s) arrays printed out for epoch 0 and are correct |
|  | 1 | Part 1: N(s), S(s), and V(s) arrays printed out for epoch 1 and are correct |
|  | 1 | Part 1: N(s), S(s), and V(s) arrays printed out for epoch 10 and are correct |
|  | 2 | Part 1: N(s), S(s), and V(s) arrays printed out for the final epoch and are correct |
|  | 1 | Part 1: Array showing k, s, r, γ, and G(s) for all values of k for epoch 1 printed out and is correct. |
|  | 1 | Part 1: Array showing k, s, r, γ, and G(s) for all values of k for epoch 10 printed out and is correct. |
|  | 2 | Part 1: Array showing k, s, r, γ, and G(s) for all values of k for the final epoch printed out and is correct. |
|  | 1 | Answer to Part 1, Question 1 |
|  | 3 | Plot of the error value vs. t with 𝜖 labeled for Part 1. (This may be included in your screen print). |
|  | 2 | Part 2: N(s), S(s), and V(s) arrays printed out for epoch 0 and are correct |
|  | 1 | Part 2: N(s), S(s), and V(s) arrays printed out for epoch 1 and are correct |
|  | 1 | Part 2: N(s), S(s), and V(s) arrays printed out for epoch 10 and are correct |
|  | 2 | Part 2: N(s), S(s), and V(s) arrays printed out for the final epoch and are correct |
|  | 1 | Part 2: Array showing k, s, r, γ, and G(s) for all values of k for epoch 1 printed out and is correct. |
|  | 1 | Part 2: Array showing k, s, r, γ, and G(s) for all values of k for epoch 10 printed out and is correct. |
|  | 2 | Part 2: Array showing k, s, r, γ, and G(s) for all values of k for the final epoch printed out and is correct. |
|  | 1 | Answer to Part 2, Question 2 |
|  | 2 | Plot of the error value vs. t with 𝜖 labeled for Part 2. (This may be included in your screen print). |
|  | 2 | Part 3: N(s), S(s), and V(s) arrays printed out for epoch 0 and are correct |
|  | 1 | Part 3: N(s), S(s), and V(s) arrays printed out for epoch 1 and are correct |
|  | 1 | Part 3: N(s), S(s), and V(s) arrays printed out for epoch 10 and are correct |
|  | 2 | Part 3: N(s), S(s), and V(s) arrays printed out for the final epoch and are correct |
|  | 1 | Part 3: Array showing k, s, r, γ, and G(s) for all values of k for epoch 1 printed out and is correct. |
|  | 1 | Part 3: Array showing k, s, r, γ, and G(s) for all values of k for epoch 10 printed out and is correct. |
|  | 2 | Part 3: Array showing k, s, r, γ, and G(s) for all values of k for the final epoch printed out and is correct. |
|  | 1 | Answer to Part 3, Question 3 |
|  | 2 | Plot of the error value vs. t with 𝜖 labeled for Part 3. (This may be included in your screen print). |
|  | 1 | Answer to Part 4, Question 4 |
|  | 2 | Part 4: Array showing the Q-Learning Rewards Matrix (R). |
|  | 2 | Part 4: Array showing Q-Learning Value Matrix (Q) for episode 0 printed out and is correct. |
|  | 1 | Part 4: Array showing Q-Learning Value Matrix (Q) for episode 1 printed out and is correct. |
|  | 1 | Part 4: Array showing Q-Learning Value Matrix (Q) for episode 10 printed out and is correct. |
|  | 2 | Part 4: Array showing Q-Learning Value Matrix (Q) for the final episode printed out and is correct. |
|  | 1 | Answer to Part 4, Question 5 |
|  | 1 | Answer to Part 4, Question 6 |
|  | 2 | Plot of the error value vs. t with 𝜖 labeled for Part 4. (This may be included in your screen print). |
|  | 2 | Part 5: Array showing the SARSA Rewards Matrix (R). |
|  | 2 | Part 5: Array showing SARSA Value Matrix (Q) for episode 0 printed out and is correct. |
|  | 1 | Part 5: Array showing SARSA Value Matrix (Q) for episode 1 printed out and is correct. |
|  | 1 | Part 5: Array showing SARSA Value Matrix (Q) for episode 10 printed out and is correct. |
|  | 2 | Part 5: Array showing SARSA Value Matrix (Q) for the final episode printed out and is correct. |
|  | 1 | Answer to Part 5, Question 7 |
|  | 1 | Answer to Part 5, Question 8 |
|  | 1 | Answer to Part 5, Question 9 |
|  | 2 | Plot of the error value vs. t with 𝜖 labeled for Part 5. (This may be included in your screen print). |
|  | 2 | Part 6: Array showing the Decaying Epsilon-Greedy Rewards Matrix (R). |
|  | 2 | Part 6: Array showing Decaying Epsilon-Greedy Value Matrix (Q) for episode 0 printed out and is correct. |
|  | 1 | Part 6: Array showing Decaying Epsilon-Greedy Value Matrix (Q) for episode 1 printed out and is correct. |
|  | 1 | Part 6: Array showing Decaying Epsilon-Greedy Value Matrix (Q) for episode 10 printed out and is correct. |
|  | 2 | Part 6: Array showing Decaying Epsilon-Greedy Value Matrix (Q) for the final episode printed out and is correct. |
|  | 1 | Answer to Part 6, Question 10 |
|  | 1 | Answer to Part 6, Question 11 |
|  | 1 | Answer to Part 6, Question 12 |
|  | 2 | Plot of the error value vs. t with 𝜖 labeled for Part 6. (This may be included in your screen print). |
|  | 4 | Part 7: One chart showing the Cumulative Average Reward for Parts 4, 5, and 6 |
|  | 1 | Answer to Part 7, Question 13 |
|  | 1 | Answer to Part 7, Question 14 |
|  | 15 | Software is adequately commented. |
|  | **100 pts** |  |

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| **Rubric for Program Comments** | | |
| **Exceeds Expectations**  **(90-100%)** | **Meets Expectations**  **(80-89%)** | **Unsatisfactory**  **(0-79%)** |
| Software is adequately commented with prologue comments, comments summarizing major blocks of code, and comments on every line. | Prologue comments are present but missing some items or some major blocks of code are not commented or there are inadequate comments on each line. | Prologue comments are missing all together or there are no comments on major blocks of code or there are very few comments on each line. |

# Adequate Prologue Comments:

* Name of program contained in the file (e.g., EECS 658 Assignment 1)
* Brief description of the program, e.g.,
  + Check versions of Python & create ML “Hello World!” program
* Inputs (e.g., none, for a function, it would be the parameters passed to it)
* Output, e.g.,
  + Prints out the versions of Python, scipy, numpy, pandas, and sklearn
  + Prints out “Hello World!”
  + Prints out the overall accuracy of the classifier.
  + Prints out the confusion matrix.
  + Prints out the P, R, and F1 score for each of the 3 varieties of iris.
* All collaborators
* Other sources for the code ChatGPT, stackOverflow, etc.
* Author’s full name
* Creation date: The date you first create the file, i.e., the date you write this comment

# Adequate comments summarizing major blocks of code and comments on every line:

# Provide comments that explain what each line of code is doing.

# You may comment each line of code (e.g., using //) and/or provide a multi-line comment (e.g., using /\* and \*/) that explains what a group of lines does.

# Multi-line comments should be detailed enough that it is clear what each line of code is doing.

# Each block of code must indicate whether you authored the code, you obtained it from one of the sources listed in the prolog, or one of your collaborators authored the code, or if it was a combination of all of these.

# Collaboration and other sources for code:

# When you collaborate with other students or use other sources for the code (e.g., ChatGPT, stackOverflow):

# Your comments must be significantly different from your collaborators.

# More scrutiny will be applied to grading your comments in particular explaining the code “in your own words”, not the source’s comments (e.g., ChatGPT’s comments).

# Failure to identify collaborators or other sources of code will not only result in a 0 on the assignment but will be considered an act of Academic Misconduct.

# Students who violate conduct policies will be subject to severe penalties, up through and including dismissal from the School of Engineering.

# Grader Comments