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CSC 426-01

Dr. Bloodgood

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D5 Deliverable: Group Reflection Write-Up

1.) This project has allowed us to further our understanding of the ID3 algorithm. By implementing the function ourselves, we were able to develop a deeper understanding of how entropy and information gain can be used to learn a decision tree.

2.) None

3.) The easy parts of the assignment were implementing the entropy and information gain functions. Implementing the entropy function mainly involved transferring the entropy formula to python. The information gain function was also simple because it only required multiple calls to the entropy function, just on different sets of values.

4.) The most challenging part of the assignment was putting together the ID3, information gain, and entropy functions. Since the work was divided among group members, differing data structures and function parameters prevented the program from working at first. While it was not too challenging, some changes needed to be made to syntax and the data types being used. In particular, the ID3 function needed to have its calls to the information gain function adjusted to have its data types for the parameter of the set of training examples match with the Information Gain function definition. Other references to the set of training examples within the ID3 function also had to be adjusted since accessing the elements of the set required different syntax for the different data types.

5.) Our group worked by dividing tasks among group members then reconvening to merge our solutions. Lana and Gordon developed the ID3 algorithm, while Luke and Jason worked on the information gain and entropy functions. Upon meeting again, the whole group worked via a zoom call to check over each other's algorithms, merge solutions, debug the program, then test the program. Gordon and Luke took charge in the coding due to their familiarity with python, while

Lana and Jason supported by analyzing and debugging code and preparing write-ups and the README. Additionally, Lana created and tested input and output for task 4.

6.) Overall, the project was a great learning experience that helped reinforce topics taught in class. Implementing the algorithm helps develop a deep understanding of the algorithm as well as the key concepts behind it, in this case information gain and entropy. Therefore, the project was very beneficial for our understanding of machine learning.