

## Assignment-2

- This report evaluates the functionality and performance of a C program that aims to create an artificial intelligence (AI) model for classifying data points. The program reads data from the "data.txt" file, calculates minimum and maximum values, and separates the data into two classes using a separator. To find the separator, the program evaluates possible label combinations and error rates, selecting the combination with the lowest error rate. The program then uses this separator and label combinations to classify test data in the "test 1.txt" file. This report will explain the program's code with sample outputs, calculate the success rate of the training model, and demonstrate how the program interacts with its user interface.

### Examples

```
ynalbant@DESKTOP-UV42VUV:~/assignment2$ gcc --ansi last_version.c -o deneme
ynalbant@DESKTOP-UV42VUV:~/assignment2$ ls
a.out      data.txt:Zone.Identifier  deneme.c  kenrar      last_version  'test 1.txt'  test-final.txt
data.txt   deneme                 deneme.txt  kenrar.c    last_version.c  'test 1.txt:Zone.Identifier'  test-final.txt:Zone.Identifier
```

```
ynalbant@DESKTOP-UV42VUV:~/assignment2$ ./deneme
1. Explore Data : Implement functionality to read and display the data points from the data.txt file,
allowing the user to explore the dataset.
2. Train Model : Develop code to construct AI model using the data points read from the data.txt file.
Use the algorithm implemented in Question 2.
3. Test Model : Create functionality to read test data points from the test.txt file,
predict their class labels using the trained AI model, and display the results.
4. Exit : Provide an option for the user to exit the program.
```

```
Choice : 1
label 0 : x[1,48] y[3,45]
label 1 : x[5,49] y[0,49]
```

```
Choice : 2
The tag combination with the lowest error:
R1 = 0, R2 = 1, R3 = 1, R4 = 0
Separator coordinates: X = 15, Y = 27
Training error of the model = 14
Number of attempts : 12
-----
```

```
Choice : 3
Success : % 91.67
x= 26 y = 31 label = 1
x= 27 y = 15 label = 0
x= 22 y = 48 label = 1
x= 13 y = 27 label = 1
x= 27 y = 27 label = 0
x= 25 y = 32 label = 1
x= 3 y y = 30 label = 1
x= 5 y = 8 label = 0
x= 41 y = 45 label = 1
x= 23 y = 29 label = 1
x= 29 y = 12 label = 0
x= 10 y = 43 label = 0
x= 45 y = 5 label = 0
Choice : 4
Exiting...
```

```
Choice : 3
you can't test your model without training it !
Choice : 2
The tag combination with the lowest error:
R1 = 0, R2 = 1, R3 = 1, R4 = 0
Separator coordinates: X = 15, Y = 27
Training error of the model = 14
Number of attempts : 12
-----
Choice : 3
Success : % 91.67
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x= 27 y = 15 label = 0
x= 22 y = 48 label = 1
x= 13 y = 27 label = 1
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x= 3 y = 30 label = 1
x= 5 y = 8 label = 0
x= 41 y = 45 label = 1
x= 23 y = 29 label = 1
x= 29 y = 12 label = 0
x= 10 y = 43 label = 0
x= 45 y = 5 label = 0
Choice : |
```

```
Choice : 3
you can't test your model without training it !
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The tag combination with the lowest error:
R1 = 0, R2 = 1, R3 = 1, R4 = 0
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x= 5 y = 8 label = 0
x= 41 y = 45 label = 1
x= 23 y = 29 label = 1
x= 29 y = 12 label = 0
x= 10 y = 43 label = 0
x= 45 y = 5 label = 0
Choice : e
invalid choice
```

Youtube Link :

<https://youtu.be/XMqk7Glxihw>