BONUS Assignment: Training ANN using GA Challenge

April 22, 2020

Reward (up to 7 marks added into your mid1 exam)

You have to implement the ANN's Feed Forward Network and train it using GA. You will use the Irsi/Fisher's Flower data set. This data set has three classes. You can assign a class label of 1, 2 and 3 to these classes.

The ANN will have the following configuration:

1. Input layer: 4 nodes
2. Hidden layer: 10 nodes
3. Output layer: same as number of classes

You will use sigmod as activation functions. The population size is 100.

CONSTANTS

Typically, the chromosome size would be (4 * 10 + 10 + 10* 3 + 3) but you can experiment with different chromosomes.

Your goal is to achieve the best accuracy (in comparison with other students of AI-C and AI-D) without changing the ANN's architecture.

You can play around with different schemes and try out different things to get an improved accuracy. You can try different fitness functions. You can also have a more targeted approach where you only target/mutate/crossover a specific **part of the chromosome** because it is either very fit or very unhealthy etc.

Testing: After you believe you have built a good training model, you may test it.

You will apply 2-fold cross validation and use accuracy (i.e. percentage of number of samples correctly identified) of up to 2 decimal places as evaluation method.

Split data into 2 parts. Train each part (75 samples) separately and use the other to test.

Suppose the number of correctly classified samples are 100. Then accuracy is 100/150 * 100 = 67.67%.

After experimentation if you get a good accuracy you WILL record it here:
https://docs.google.com/spreadsheets/d/1gCOt2MAL46zwVfjSHaTGPzHoa2pwn6W8gso_oiV-G-0/edit?usp=sharing

At the moment I am leading with 3% accuracy.

Evaluation: You code will be run on a completely different data set and you will be graded accordingly.

Challenge ends by May 21 2020 5:00 PM.

Good luck!