



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

COS 710: Artificial Intelligence

Assignment 4: Genetic Programming and Classification

Due Date: 24 May 2019

This assignment involves employing genetic programming as a classification algorithm to perform multiclass classification. The data sets used for the assignment are from the UCI Machine Learning Repository (<https://archive.ics.uci.edu/ml/index.php>). Implement a genetic programming algorithm to produce classifiers for ONE of the following data sets:

- Rice Leaves Diseases - <https://archive.ics.uci.edu/ml/datasets/Rice+Leaf+Diseases>
- Iris Data Set - <https://archive.ics.uci.edu/ml/datasets/Iris>

Implementation should be in Java or C++. Follow the same format for the report as for the previous assignments. The report must include:

- A brief description of the data set used
- A description of the GP algorithm in terms of the following:
 - The representation used to represent a classifier
 - Define the fitness function used
 - The selection method used
 - Describe the genetic operators used
- Tables presenting the best, average and standard deviation of the accuracy for training and accuracy for testing
- A discussion on the performance of the evolved classifiers, comparing the accuracy to that reported in the literature on previous studies for the data set.

Total: 25