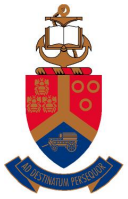

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

COS 710: Artificial Intelligence
Assignment 1: Genetic Programming and Symbolic Regression
Due Date: 7 September 2020, 23:30

This assignment involves implementing genetic programming to evolve a model for forecasting COVID-19 infections, deaths and recoveries for a particular day for a particular country. Use the `covid_19_data.csv` at `https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset?select=covid_19_data.csv` to evaluate your genetic programming approach for forecasting COVID-19. Papers describing two previous studies using GP for forecasting have been included in the assignment folder as examples.

Assignments must be submitted via clickUP. The source code, compiled code and report must be submitted.

The report must include:

- A description of the representation used.
- A description of initial population generation.
- A description of the fitness function used.
- A description of the selection method used.
- A description of the genetic operators used.
- A description of the termination criterion.
- A description of the experimental setup, i.e. parameter values used for the genetic programming algorithm, data set used, the training and testing process employed, technical specifications of the machine used to develop the program and run simulations.

- Perform a minimum of ten runs, each with a different random number generator seed. List the best mean square error, average mean square error, fitness and average fitness (if different from MSE) and average runtime over the ten runs for each problem instance.

Total: 35