**Machine learning – Lab 2**

1. Find the attached excel file and user Solver to solve the linear programming problem described at the following link.

<https://www.youtube.com/watch?v=6xa1x_Iqjzg>

Note: In Excel 2016, you may have to choose File -> Options -> Add Ins -> Solver -> Go -> Solver

-> Ok

You can find solve under the ‘Data’.

If you’re trying the following exercises on your own pc/laptop, you may install Anaconda first.

<https://www.anaconda.com/distribution/>

1. Open Anaconda Navigator -> Jupyter Notebook. Upload LP\_pulp.ipynb and run it. Select Run all to run the notebook. Add one more constraint and see how the output changes.

Note: If you get an error saying that pulp is not installed. Open Anaconda Prompt and run

*pip install pulp --user*

*pip install pulp* If running on your own pc/laptop

After running the above command, close and open Jupyter notebook again to run the LP\_pulp notebook.

1. Copy the ga.py file to C:\users\<<your username>> directory (or your home directory if you’re using Linux or Mac). Upload the GA\_test.ipynb (notebook) and run it. Change the number of generations and the initial population size and the no. of parents mating in each generation to see how the output changes.

The tutorial for the above notebook is available at:

<https://towardsdatascience.com/genetic-algorithm-implementation-in-python-5ab67bb124a6>

**Submission:**

Upload the updated excel file and the Jupyter notebooks in a single zip file to courseweb. The filename should be your registration number (e.g. ITXXXXXXX.zip). You can find the notebooks at your C:\users\<<username>> directory or your home directory for Linux or Mac users. If not, you can download the notebook by File->Download as-> Notebook in Jupyter notebook.