Masters Programmes in Communications

Software for Network Services (SNS) Project Assignment

2020/2021

Assignment Issued: 7th December 2020

Guidelines:

- All assignment deliverables to be handed in by: **26th[t] of March 2021**
  Penalties will be applied for late submissions in accordance with the guidelines:
  https://wwws.ee.ucl.ac.uk/masters/masters-docs/regulations/late-coursework-penalties

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1 Objective: COVID 19 Forecasting

As the covid-19 pandemic is changing the world as we know it, a fundamental problem facing the medical and research community is short/medium term forecasting of covid-19 data (cases, hospitalizations, intensive care bed and deaths). In this project you will build a covid-19 data forecasting engine using neural networks and python.

Guidelines:

- You can choose whatever country you want. You can also choose more than one country or the world at large.
- You can choose whatever output(s) you want to predict: cases, hospitalizations, intensive care occupancy, etc.

- You can choose whatever sources for input you want. These may include past data of cases, mobility data, population density data, healthcare data (e.g. vitamin D intake, BCG vaccine), social network data (e.g. geolocated sentences that indicate symptoms), etc. Be creative on what source you use. Some potential sources can be found here:
    - https://coronavirus.data.gov.uk
    - https://ourworldindata.org/coronavirus-testing
    - http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?lingua=english&id=5367&area=nuovoCoronavirus&menu=vuoto
    - https://datastudio.google.com/reporting/3ffd36c3-0272-4510-a140-39e288a9f15c/page/U5lCB
    - https://www.worldpop.org/events/china
    - https://www.google.com/covid19/mobility/

- Your report should be done in HTML and put available online (this could be put in your home directory public_html of your account in the departmental servers). It should include the following sections:
    - Introduction: What is the problem you are trying to solve and the general framework to solve it. 1 to 2 pages
    - Data sources: explanation of what these are, how they were collected and how you pre-processed the data
    - Machine learning framework and code. This should use neural networks.
    - Results. You should present all your results results you may have but you need to present a table with the accuracy of your results for several days in advance as the one in the following:

• Days in advance	• Accuracy
• 1	• 90%
• 2	• 80%
• …	• 70%
• n	• …

- Conclusions

In the submission form you just put the URL of the report.

2 Evaluation

Your project will be assessed on the basis of the following:

60% on the quality of your model and code. How you convert the inputs, activation functions, loss function, etc.
20% on your chosen sources and how they were pre-processed
10% on presentation of your report/page.

END OF ASSIGNMENT