P78 – DATA ANALYTICS AND DEEP LEARNING IN BETTER UNDERSTANDING COVID 19

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1

Victoria's hospitals strain under 'extraordinary' demand as Covid cases surge

Authorities address concerns over 10-minute wait times on triple zero calls while staff reportedly struggle with workload
- Follow our Covid live blog for the latest updates
- Victorian restrictions
- Vaccine rollout tracker; Covid cases and data tracker
- Get our free news app; get our morning email briefing

▲ The demand on Royal Melbourne hospital's emergency department amid Victoria's Covid surge has forced it to

Discuss the motivation behind your research project and the problem you are attempting to solve.

▶ The uncertainty that Coronavirus brings to our lifestyle

▶ Hospitals are running out of resources and unable to plan

▶ Using predictive models to help forecast daily cases

▶ Using these forecast numbers, we can help governments and hospitals plan.

2

Slide 3

	Total case
Temperature on the day	−0.483
Temperature 3 days ago	−0.383
Temperature 7 days ago	−0.350
Temperature 14 days ago	−0.317
Dew point on the day	−0.400
Dew point 3 days ago	−0.400
Dew point 7 days ago	−0.300
Dew point 14 days ago	−0.300
Humidity on the day	−0.317
Humidity 3 days ago	−0.133
Humidity 7 days ago	0.017
Humidity 14 days ago	−0.033
Wind speed on the day	−0.217
Wind speed 3 days ago	0.267
Wind speed 7 days ago	0.450
Wind speed 14 days ago	0.550
Population	0.683

Table 1: This shows the Spearman's Correlation Coefficients for each factor that was tested by Mehmet Sahin and co

Why is it worth studying?

- ▶ A lot of predictive models uses only confirmed cases and confirmed deaths
- ▶ Many papers does not consider any outside factors
- ▶ Population density and wind speed explains 95% of the transmission rate
- ▶ Adding in these factors to improve the accuracy of the predictive models

3

Slide 4

Method	Accuracy
LSTM without factors	41.38%
GRU without factors	58.62%
LSTM with factors	69.34%
LSTM with factors	69.34%

What did you achieve?

- ▶ Using the encoder decoder method of LSTM and GRU models
- ▶ Without the two factors, LSTM achieved an accuracy of 41.38% and GRU achieved an accuracy of 58.62%
- ▶ With the two factors, LSTM achieved an accuracy of 69.34% and GRU also achieved an accuracy of 69.34%

4

Example of the artefact

Designing the model

Evaluation

Preprocessing
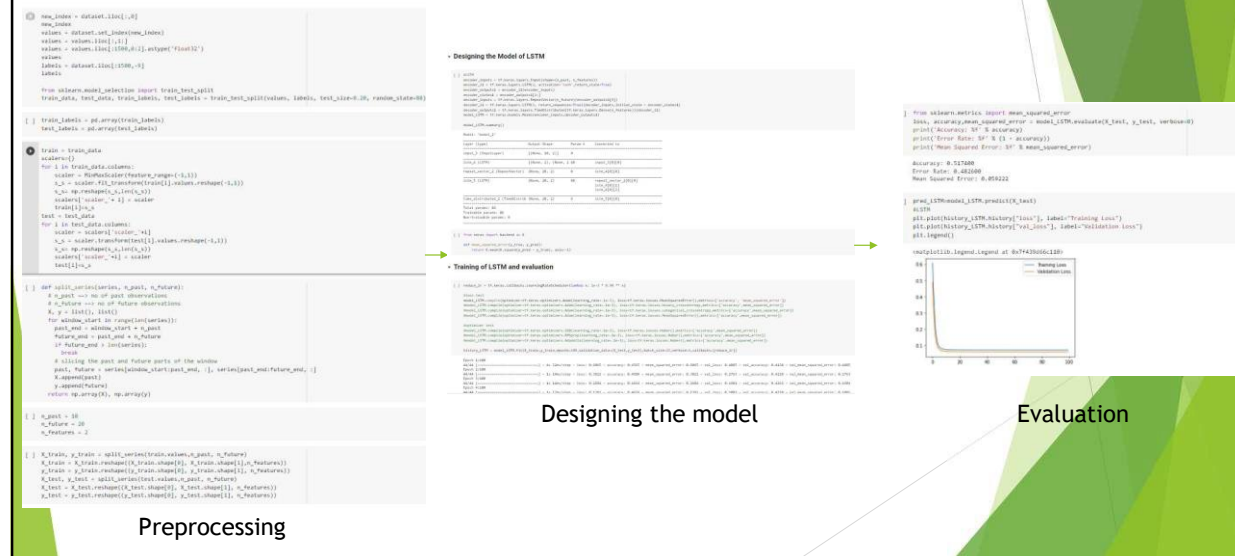
5

How you can or plan to take it further

▶ To tweak the hyperparameters in the model so that I can run at it's best

▶ To include any factors in the future that is known to influence the transmission rate of the virus

6

Thank you very much

7

Youtube link: https://youtu.be/uyqZ9DSVPpY