

Predictive Model for COVID – 19 Pandemic using Machine Learning

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Problem Statement

As on September 2020, COVID-19 is reported to have infected more than 30 million worldwide across 210 countries, with deaths topping as cases continue to rise across the globe. There are already 1 million deaths reported across the world. In this poster, a solution is proposed to tackle the pandemic by doing outbreak prediction and avoid the further damage to the human lives.

Solution

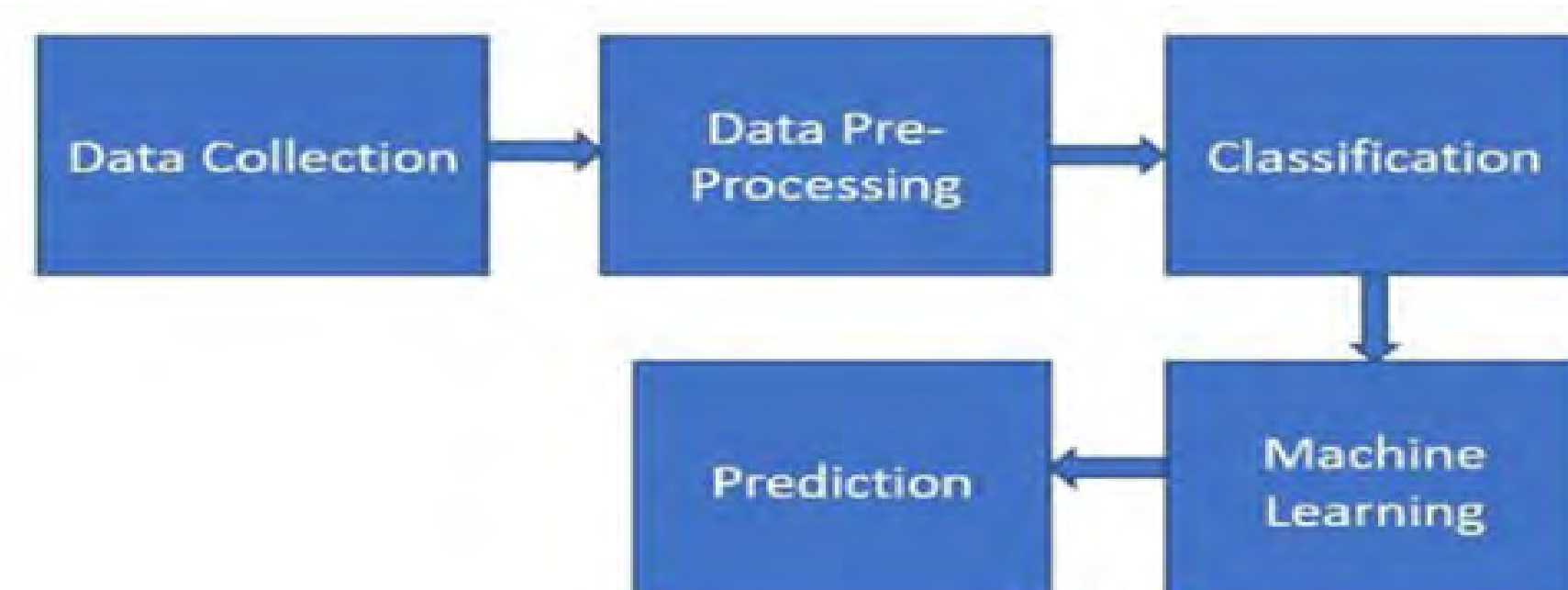


Fig 1: Block Diagram of Predictive Model

Analysis

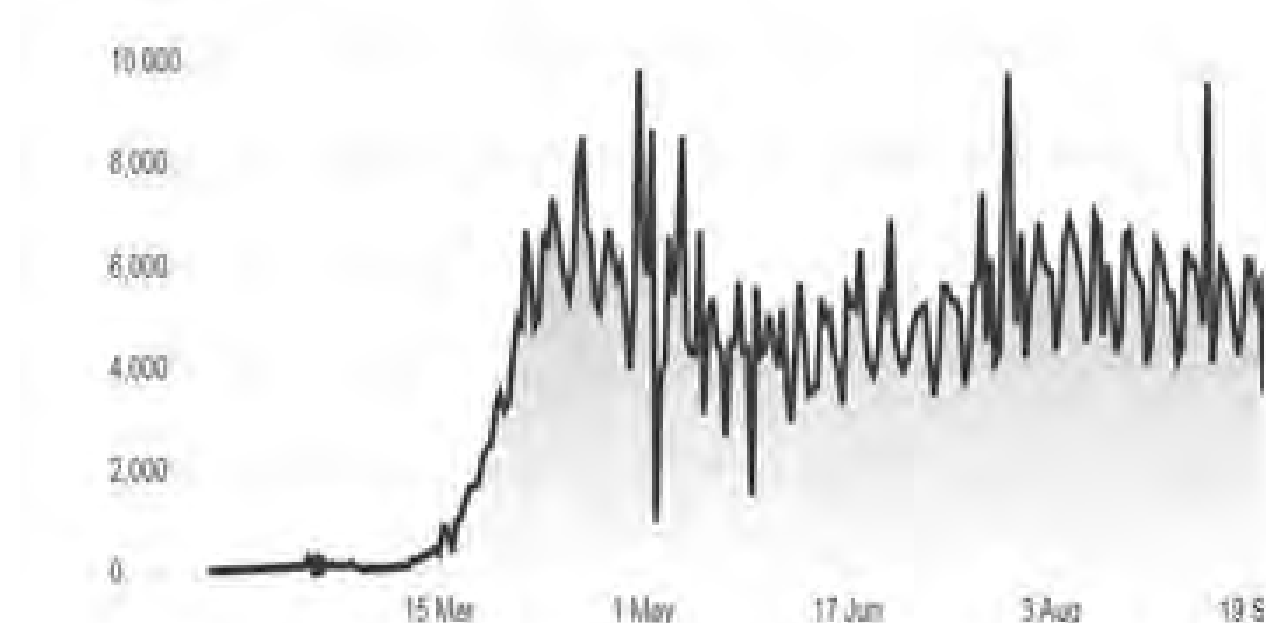


Fig 2 : Total Confirmed Cases on Daily Basis



Fig 3: Total Deaths on Daily Basis

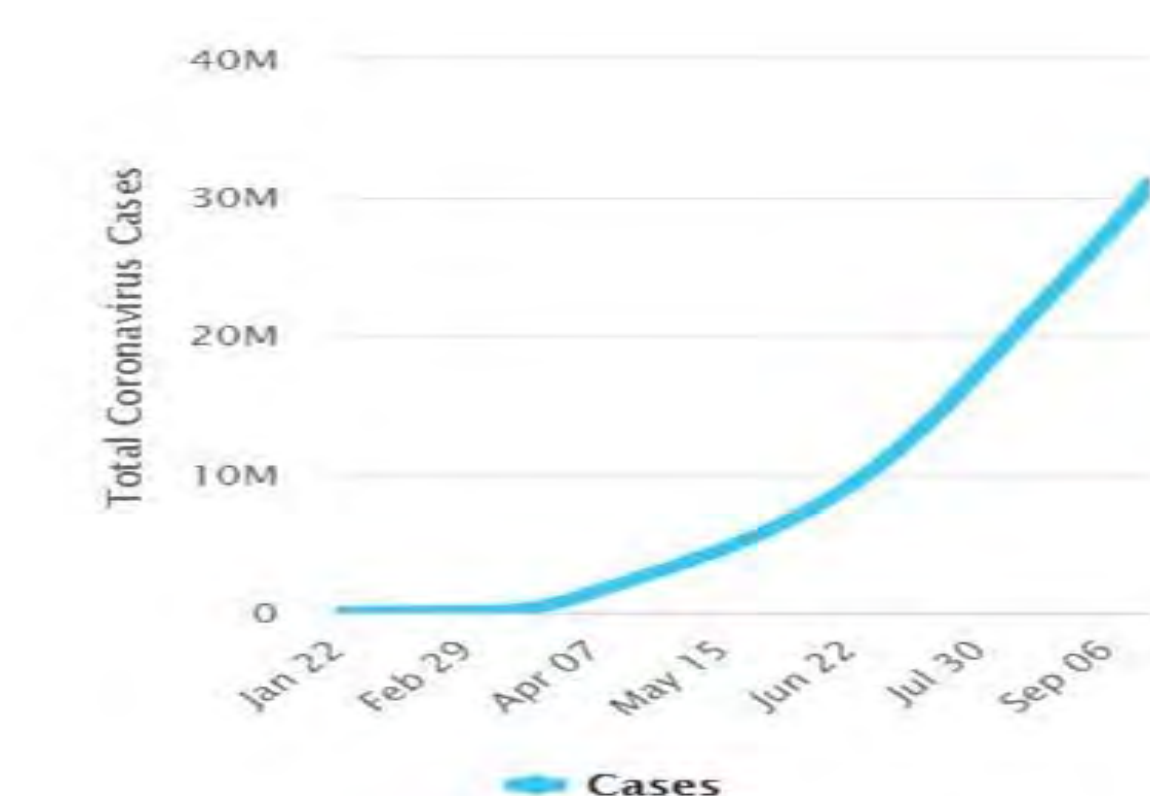


Fig 4: Total Confirmed Cases

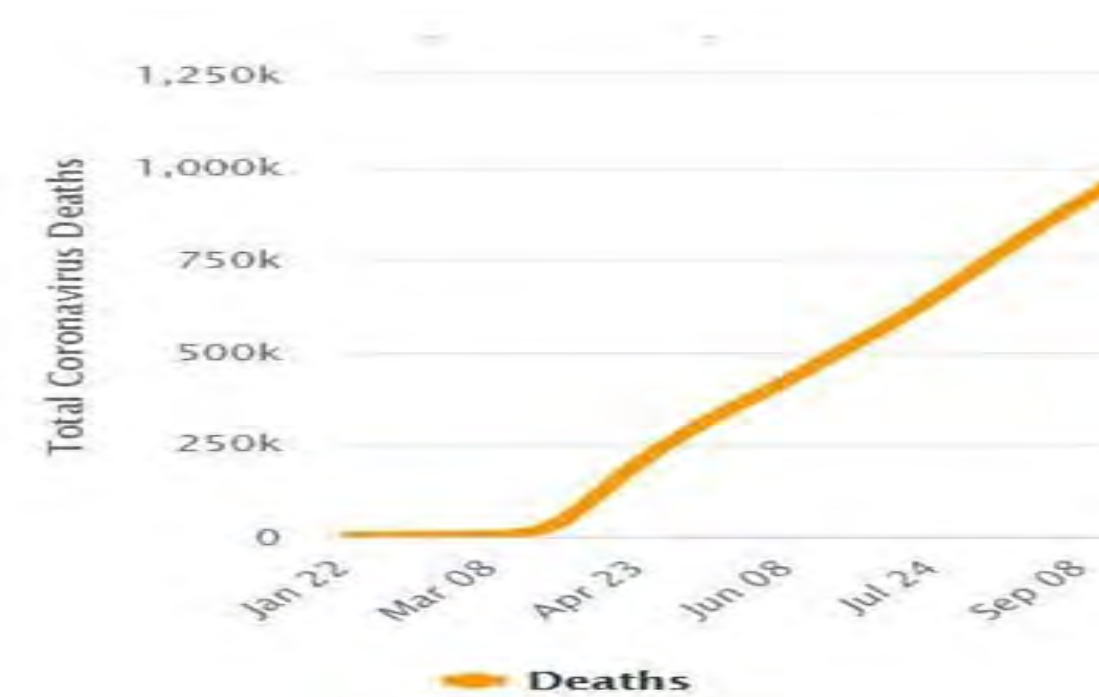


Fig 5: Total Deaths

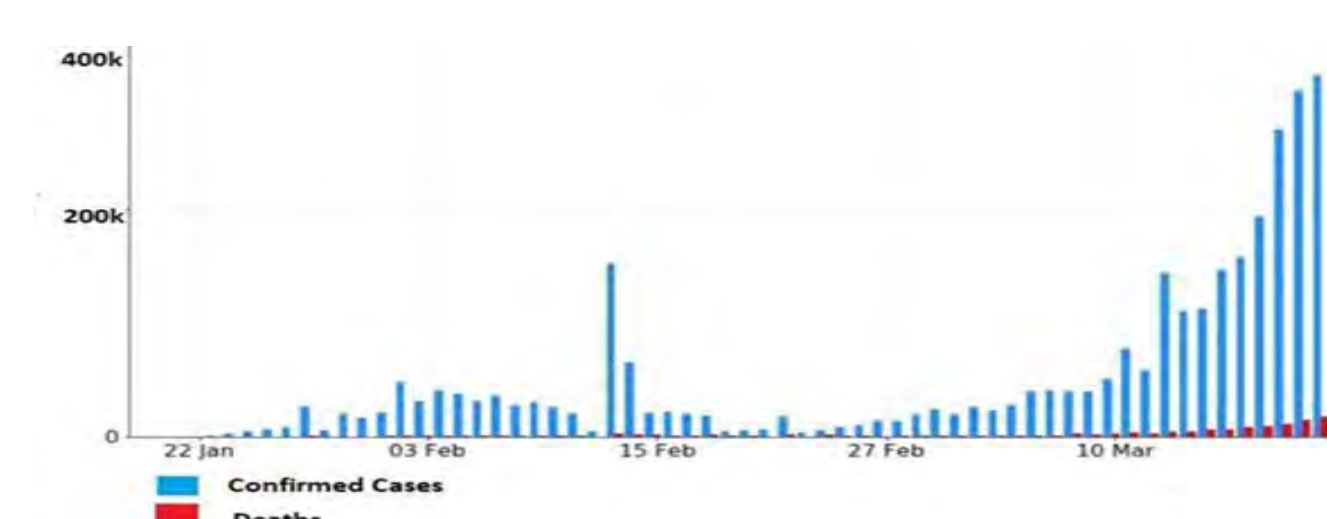


Fig 6: Total Confirmed Cases vs Deaths

Results

A predefined training dataset is defined for SVM. Model is evaluated against testing dataset. 70% of the datapoints is used as training dataset and remaining 30% is considered as testing dataset. Regression algorithms discover relations between features and use these relations to predict future value. As an instance, if X and Y are the features, a regression algorithm uses training dataset such as $\{(x_1, y_1), (x_2, y_2), \dots, (x_i, y_i)\}$ to extract relations between samples of X and Y. Accuracy of the results can be evaluated with Mean Absolute Percentage Error.

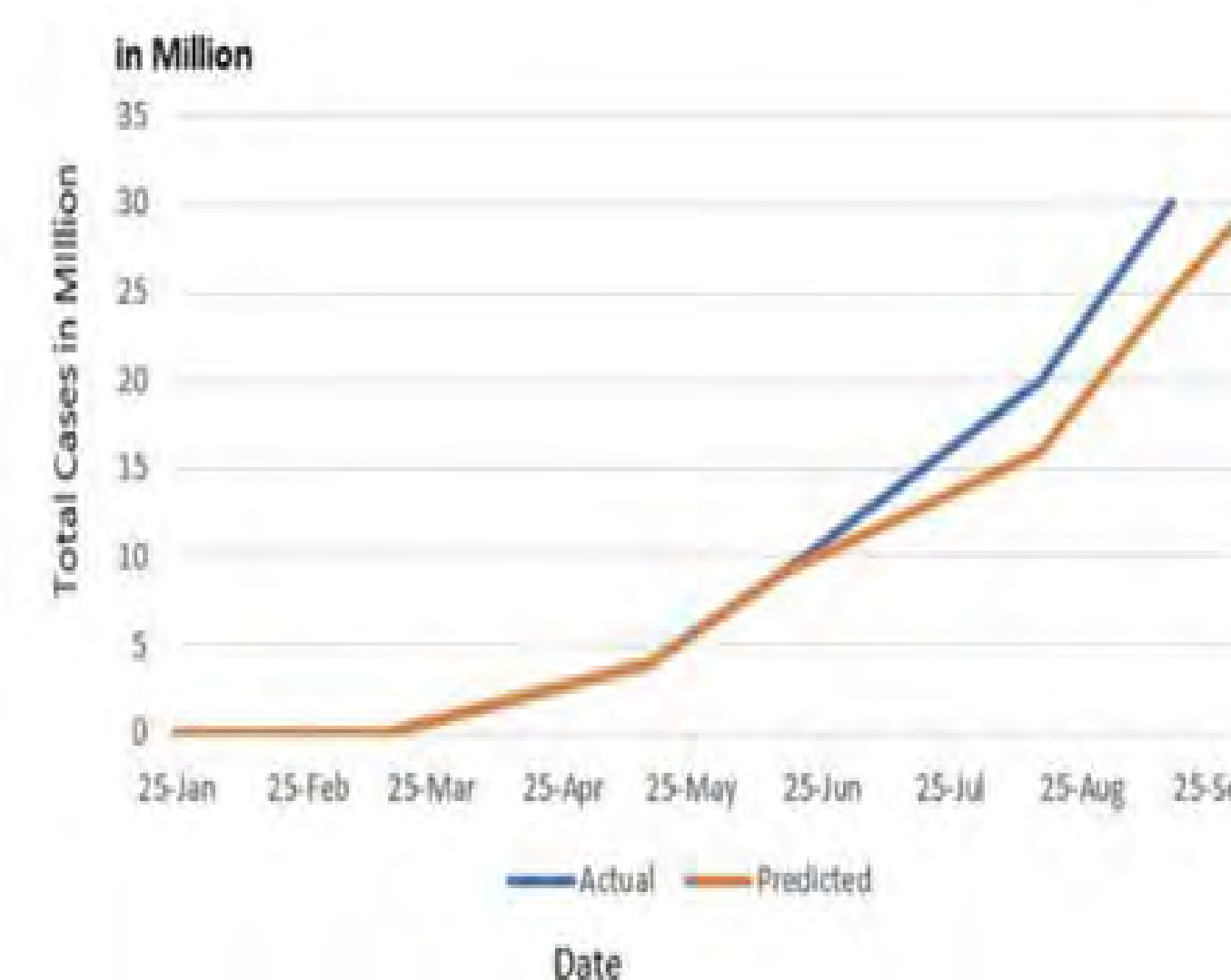


Fig 7: Actual vs Predicted Data of Confirmed Cases

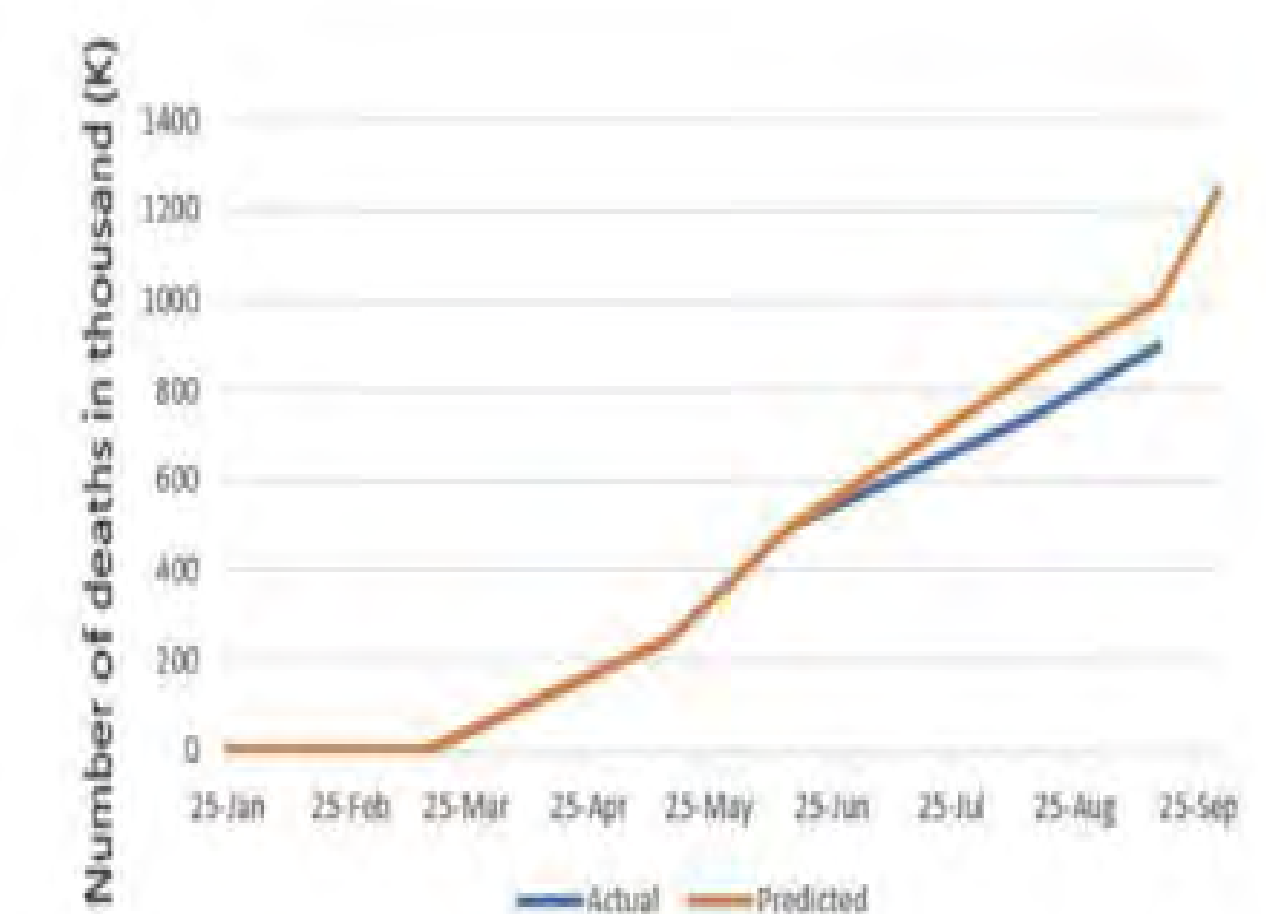


Fig 8: Actual vs Predicted Data of Deaths

Conclusion

World is struggling with the COVID-19 virus. Global economy has been affected. The SVM algorithm provides an average of 94.7% of accuracy in predicting such cases. Forecasting the pandemic infection and spread early can surely act as a life-saver hack in controlling this deadly disease and thereby decreasing the rate of spread of this disease. The projected method outperformed when likened to previously obtainable practical models on the bases of prediction precision.

References

Support Vector Machines

<http://www.statsoft.com/textbook/support-vector-machines>