

Machine Learning ARIMA Time-Series Forecast COVID-19 Projection for New York, Surge Prediction

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Abstract: AI machine-learning can predict COVID-19 case and its recovery across time.

Methods: Johns Hopkins University of Medicine Coronavirus Database used to perform analysis

ARIMA model for prediction: ARIMA stands for Auto-Regressive Integrated Moving Average. It combines the auto regression model and moving average model to project new time series data. Since mainland China has several days of data, therefore mainland China is ideal for time series analysis and prediction.

Conclusion: Dynamic Capacity Analysis, Matching, and Management, machine learning may assist hospitals with resource utilization. Base on the ARIMA machine learning model, the best case scenario for NY: 21000 affected in next 3-4 weeks. Worst case scenario for NY: Over 32000 affected in next 3-4 weeks.

Afterward, it is expected to plateau just like Hubei/China. Consider these projections subjectively, limitations exist, no prediction model perfectly forecasts.

Social distancing/containment has started in the United States. This will slow down the COVID-19 curve. Containment has to be strictly enforced in New York, California, and Seattle. 50% of the total US cases are in NY. As temperature increases, the forecast trends will shift, time will tell. Artificial Intelligence machine learning time-series forecasting can assist physicians with making healthcare staff, hospital-capacity utilization decisions.

References:

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2. <https://machinelearningmastery.com/time-series-forecasting-methods-in-python-cheat-sheet/>

Biography

Dr. Benson Babu, MD is a Internal Medicine Specialist in New Hyde Park, NY. He is affiliated with medical facilities such as NewYork-Presbyterian/Weill Cornell Medical Center and Plainview Hospital. He published many abstracts in this research field.

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