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Maintaining proper health records improves machine learning predictions for novel 2019-NCOV

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An ongoing outbreak of novel coronavirus (2019-nCoV) pneumonia continues to affect the whole world including major countries such as China, USA, Italy, France and the United Kingdom. We present outcome ('recovered', 'isolated' or 'death') risk estimates of 2019-nCoV over 'early' datasets. A major consideration is the likelihood of death for patients with 2019-nCoV.

Method: Accounting for the impact of the variations in the reporting rate of 2019-nCoV, we used machine learning techniques (AdaBoost, bagging, extra-trees, decision trees and k-nearest Neighbour classifiers) on two 2019-nCoV datasets obtained from Kaggle on March 30, 2020. We used 'country', 'age' and 'gender' as features to predict outcome for both datasets. We included the patient's 'disease' history (only present in the second dataset) to predict the outcome for the second dataset.

Results: The use of a patient's 'disease' history improves the prediction of 'death' by more than 7-fold. The models ignoring a patent's 'disease' history performed poorly in test predictions.

Conclusion: Our findings indicate the potential of using a patient's 'disease' history as part of the feature set in machine learning techniques to improve 2019-nCoV predictions. This development can have a positive effect on predictive patient treatment and can result in easing currently overburdened healthcare systems worldwide, especially with the increasing prevalence of second and third wave re-infections in some countries.

Biography

Koffka Khan received the B.Sc., M.Sc., M.Phil., and D.Phil degrees from the University of the West Indies (UWI). He is currently a Lecturer at UWI and has up-to-date, published numerous papers in journals & proceedings of international repute. His research areas are computational intelligence, communication systems, information security and machine learning.

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