

reliability and effectiveness of our model in disease classification, emphasizing its potential for real-world applications.

D. Practical Implications:

One of the key strengths of our model lay in its practical applicability, especially in community-based testing and routine health check-ups. The ability to accurately detect COVID-19 cases in such settings was crucial for effective disease management and containment. The practicality of our model positioned it as a valuable tool in the ongoing efforts to combat the COVID-19 pandemic at both local and global levels.

In conclusion, this study significantly advanced the field of predictive modeling for disease detection, specifically in identifying influenza-like illness and COVID-19. The robustness and practical applicability of our model made it a promising asset in the fight against the COVID-19 pandemic, offering a reliable and efficient means of detecting the virus in various healthcare and community settings. Further research and application of this model will hold great potential for improved public health outcomes and pandemic response strategies.

Declaration of interests

The authors declare that they have no had competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] Davide Brinati, Andrea Campagner¹, Davide Ferrari, Massimo Locatelli, Giuseppe Banfi, Federico Cabitza (2020). *Detection of COVID-19 Infection from Routine Blood Exams with Machine Learning: A Feasibility Study*. Journal of Medical Systems. Springer.
- [2] Wei Tse Li, Jiayan Ma, Neil Shende, Grant Castaneda, Jaideep Chakladar, Joseph C. Tsai, Lauren Apostol, Christine O. Honda, Jingyue Xu, Lindsay M. Wong, Tianyi Zhang, Abby Lee, Aditi Gnanasekar, Thomas K. Honda, Selena Z. Kuo, Michael Andrew Yu⁴, Eric Y. Chang, Mahadevan, Rajasekaran and Weg M. Ongkeko (2020). *Using machine learning of clinical data to diagnose COVID-19: a systematic review and meta-analysis*. BMC Medical Informatics and Decision Making, BCM.
- [3] Pablo Sieber, Domenica Flury, Sabine Güsewell, Werner C. Albrich, Katia Boggian, Céline Gardiol, Matthias Schlegel¹, Robert Sieber, Pietro Vernazza¹ and Philipp Kohler (2021). *Characteristics of patients with Coronavirus Disease 2019 (COVID-19) and seasonal influenza at time of hospital admission: a single center comparative study*. BMC Infectious Diseases, BCM.
- [4] Xueyan Mei et al. (2020). *Artificial intelligence-enabled rapid diagnosis of patients with COVID-19*. Nat Med, BCM.
- [5] BMC Infectious Diseases (2020). Dataset. <https://doi.org/10.1186/s12879-020-05551-1>. BMC Infectious Diseases.
- [6] Tianqi Chen, Tong He Michael Benesty, Vadim Khotilovich, Yuan Tang (2017). *Extreme Gradient Boosting*. CRAN.
- [7] Leo Breiman (2001). *Random Forests*. Statistics Department University of California Berkeley, CA 94720, 2001.
- [8] Brett Lantz (2015). *Machine Learning with R*. page 331, Packt.