

# **Multi-Modality and Feature Fusion-Based COVID-19 Detection Through Long Short-Term Memory**

## **ABSTRACT**

The Coronavirus Disease 2019 (COVID-19) pandemic poses the worldwide challenges surpassing the boundaries of country, religion, race, and economy. The current benchmark method for the detection of COVID-19 is the reverse transcription polymerase chain reaction (RT-PCR) testing. Nevertheless, this testing method is accurate enough for the diagnosis of COVID19. However, it is time-consuming, expensive, expert-dependent, and violates social distancing. In this paper, this research proposed an effective multimodality-based and feature fusion-based (MMFF) COVID-19 detection technique through deep neural networks. In multi-modality, we have utilized the cough samples, breathe samples and sound samples of healthy as well as COVID-19 patients from publicly available COSWARA dataset. Extensive set of experimental analyses were performed to evaluate the performance of our proposed approach. Several useful features were extracted from the aforementioned modalities that were then fed as an input to long short-term memory recurrent neural network algorithms for the classification purpose. Extensive set of experimental analyses were performed to evaluate the performance of our proposed approach. The experimental results showed that our proposed approach outperformed compared to four baseline approaches published recently. We believe that our proposed technique will assists potential users to diagnose the COVID-19 without the intervention of any expert in minimum amount of time.