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High-accuracy Detection of Airway Obstruction in Asthma Using Machine Learning Algorithms and Forced Oscillation Measurements

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Highlights

- Our aim was to develop automatic classifiers to simplify the clinical use and to increase the accuracy of the forced oscillation technique (FOT) in the diagnosis of airway obstruction in asthma.
- We used different techniques, including k-nearest neighbour (KNN), random forest (RF), AdaBoost with decision trees (ADAB) and feature-based dissimilarity space classifier (FDSC).
- Our findings revealed that all classifiers improved the diagnostic accuracy; ADAB and KNN were very close to achieving high accuracy.
- The best performance was observed using the cross products of the FOT parameters associated with KNN, which was able to reach a high diagnostic accuracy.
- Our study and findings will contribute to assist clinicians in airway obstruction identification and guiding therapy in asthma.

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