The novelty of this study is developing a system of diagnosis to classify PD and healthy People. The system used the FS algorithm L1-Norm support vector machine, classifier, cross-validation technique, and performance measuring metrics for PD diagnosis. As we think that decision support system development through machine learning approach it will be better for prediction of PD. Furthermore, we know that irrelevant features also degrade the performance of the diagnosis system and computation time increase. Hence, another innovative part of proposed study to used features selection algorithm to select a relevant subset of features that improve the classification performance diagnosis system. The performance of the proposed system is excellent and achieved 99% classification as compared to the classification performances of other proposed studies.