

Title: Predicting Pancreatic Cancer Survival and Staging: A Machine Learning Approach

Author: Md Umaid Hasan; Faria Nishat Khan; Hasnur Jahan; Zahura Zaman; Md Mizanur Rahman

Abstract: Pancreatic cancer, it is known as one of the most aggressive one among cancers due to its sudden progression and hard to treat manner. The insidious characteristic of pancreatic cancer is known to be the main reason behind its being the 3rd among fatal cancers. The most common symptoms of this disease are jaundice, weight loss, abdominal pain and loss of appetite. In spite of having such prominent symptoms, this disease normally does not show any of them until an advanced stage of cancer for almost 90% of patients thus making it harder to treat. The treatment targeting cure can be applied or even made faster depending on the shape and site of the eruption whether it is spread out to the whole abdomen or other part of the body or not. Focusing this issue, we implemented our work towards detection of the disease and stage specification. Our algorithm can be used to detect the place and shape of the eruption. In particular, we are to find out the stage and survivability of this disease. Keeping that in mind, we are applying various tree-based algorithms to mark the best one. The algorithms that we have put into practice are the Gaussian NB, Random Forest, Decision Tree, AdaBoost, Bagging, Extra Trees, MLP, and Quadratic Discriminant Analysis classifiers. In our study, the decision tree performs the best among these tree-based algorithms with a 92.1% accuracy in the test dataset for survivability.

Keywords: Pancreas cancer , Stage , Servaivality , Early Detection , Machine learning , Dataset , Random Forest Classifier , Decision Tree Classifier , AdaBoost Classifier , Gaussian NB

DOI: <https://doi.org/10.1109/COMPAS60761.2024.10797176>

<https://ieeexplore.ieee.org/document/10797176>