DAMAGE DETECTION & CLASSIFICATION OF FRUITS USING MACHINE LEARNING TECHNIQUE

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A Thesis Report submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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CERTIFICATE

This Thesis titled **"Damage Detection & Classification of Fruits Using Machine Learning Technique**", submitted by **Md. Emran Hasan** and **Saiful Islam Sajon** to the Department of Computer Science and Engineering, City University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation was held on November, 2019.

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DECLARATION

We hereby declare that, this research has been done by us under the supervision of **Sadia Jahan, Lecturer, Department of CSE** City University. We also declare that neither this project nor any part of this research has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

The food processing industry has been working with different kinds of fruits. Most of the industries who are classifying is a challenging task as it was costly and time-consuming. So, in this research work, we have proposed a method with a machine learning technique that will able to classify various kinds of fruits and detect damage automatically. We have used seven machine learning algorithms for validating our proposed method and k-mean and graph-cut segmentation technique to detect damage of fruits on fruit surface from fruit images.

Keywords: Fruit Classification, Damage Detection, Feature Extraction, Image Segmentation, K-means Clustering.

LIST OF ABBREVIATIONS

LR	Logistic Regression
LDA	Linear Discriminant Analysis
KNN	K-nearest neighbor
CART	Decision Tree Classifier
RF	Random Forest Classifier
NB	Gaussian Naive Bayes
SVM	Support Vector Machine
MLT	Machine Learning Technique

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