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SKIN CANCER DETECTION USING DIP

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***ABSTRACT*-Detection of skin cancer in the earlier stage is very Important and critical. In recent days, skin cancer is seen as one of the most Hazardous form of the Cancers found in Humans. Skin cancer is found in various types such as Melanoma, Basal and Squamous cell Carcinoma among which Melanoma is the most unpredictable. The detection of Melanoma cancer in early stage can be helpful to cure it. Computer vision can play important role in Medical Image Diagnosis and it has been proved by many existing systems. In this paper, we present a computer aided method for the detection of Melanoma Skin Cancer using Image processing tools. The input to the system is the skin lesion image and then by applying novel image processing techniques, it analyses it to conclude about the presence of skin cancer. The Lesion Image analysis tools checks for the various Melanoma parameters Like Asymmetry, Border, Color, Diameter, (ABCD) etc. by texture, size and shape analysis for image segmentation and feature stages.**

I. INTRODUCTION

The normal life cycle of cells in the human body follows a systematic order. Its creation, functional time, and death should follow the order to make the body function properly. When the order gets disturbed it results in the production of various kinds of diseases one of the diseases is known as cancer. Cancer can take birth anywhere in the human anatomy, which may consist of trillions of cellules. In cancer, some parts of the body cells start the division process without blocking and these cells diffuse into surrounding tissues. Typically, in human beings cells expands in number and divide too, to produce new cells as per body requirements. During the process cells grows, get older or become defiled, consequently, the cell dies, and are replaced by new and fresh cells. The systematic precise cell breaking process gets destructed once cancer develops. As a result, the threshold of cell abnormality and damage develops drastically. Cell survival exists only when the old cells die, and new cells are only produced

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when they are required. If the cells are not required, then these unnecessary cells split without stopping and may cause the growth of a tumor.

Two types of tumors are triggered by cancer i.e. benign and malignant. Mostly, the tumors which consist of cancerous cells are malignant. Malignancy means that the cells spread or attack tissues near the tumor. Malignant tumors split and a few cancerous cells move to distant parts in the body over the lymph system or blood resulting in the fabrication of new tumors distant from the mother tumor. In contrast to malignant tumors, benign tumors, the second type doesn't split in the body, or capture tissues. It is notified that benign tumors are usually larger. But once benign tumors are removed, they cannot grow up back, while malignant tumors after surgery may sometimes do. Many benign tumors in the body elsewhere are mostly not dangerous, but the benign tumor in the brain is a vital threat to life [2]. The dermoscopy image samples for benign and malignant are shown in Fig. 1, Fig. 2, respectively. The skin has the ability to protect the human body against, sunlight, heat, injury, and viral or bacterial infections. The skin helps the body in maintaining body temperature and also hoards fat and water. Skin Cancer is a very common kind of cancer and is marked as the most major public health issue. Skin cancer can start at any place on the body's skin, but it is normally initiated in the skin exhibit to sunlight. There are assorted layers of skin. But usually, skin cancer initiates in the outer layers known as the epidermis layer. [4] proposed a method in which the minimization is per-formed in a sequential manner by the fusion move algorithm that uses the QPBO min-cut algorithm. Multi-shape GCs are proven to be more beneficial than single-shape GCs. Hence, the segmentation methods are validated by calculating statistical measures. The false positive (FP) is reduced and sensitivity and specificity improved by multiple MTANN. [6] proposed a system, this system has concentrated on finding a fast and interactive segmentation method for liver and tumor segmentation. In the pre-processing stage, Mean shift filter is applied to CT image process and statistical thresholding method is applied for reducing processing area with improving detections rate. In the Second stage, the liver region has been segmented using the algorithm of the proposed method. Next, the tumor region has been segmented using Geodesic Graph cut method. Results show that the proposed method is less prone to shortcutting than typical graph cut methods while being less sensitive to seed placement and better at edge localization than geodesic methods. This leads to increased segmentation accuracy and reduced effort on the part of the user. Finally Segmented Liver and Tumor Regions were shown from the abdominal Computed Tomographic image.

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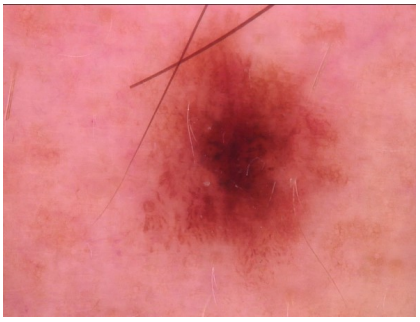
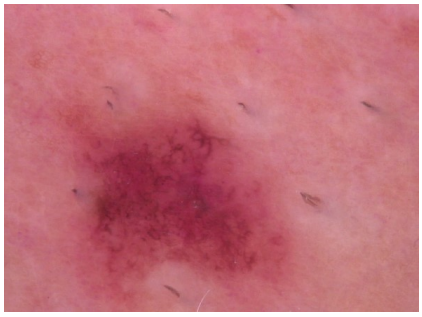
MELANAMO





NON MELANAMO

II. PROJECT DESCRIPTION

A. EXISTING SYSTEM

Four classes of image pre-processing strategies according to the dimensions of the pixel neighborhood that's used for the calculation of a new pixel brightness pixel brightness transformations, geometric transformations, pre-processing strategies that use an area neighborhood of the processed pixel, and image restoration that needs data regarding the whole image. Other classifications of image pre-processing strategies exist. Image pre-processing methods use the considerable redundancy in images.

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1) DISADVANTAGE

- The melanoma detection requires various stages like preprocessing, segmentation, feature extraction and classification.
- This survey focuses on different strategies like Genetic Algorithm, SVM, CNN, ABCD rule etc.
- As per the review, each algorithm is found to have its and disadvantages

B. PROPOSED SYSTEM

The method of detecting the presence of malignant and non-malignant cells in a picture is referred to as skin cancer detection using SVM. The GLCM and Help Vector Machine are used to detect skin cancer (SVM). The Gray Level Co-occurrence Matrix (GLCM) is a technique for extracting image features that can be used for classification. SVM is a type of machine learning technique that is primarily used for classification and regression analysis.

1) ADVANTAGE

- A main advantage of SVM is that it can be used for both classification and regression problems.
- Though SVM is mainly known for classification, the SVR (Support Vector Regressor) is used for regression problems.
- SVM can be used for classifying non-linear data by using the kernel trick.
- The kernel trick means transforming data into another dimension that has a clear dividing margin between classes of data.
- After which you can easily draw a hyper plane between the various classes of data

III. DATA FLOW DIAGRAM

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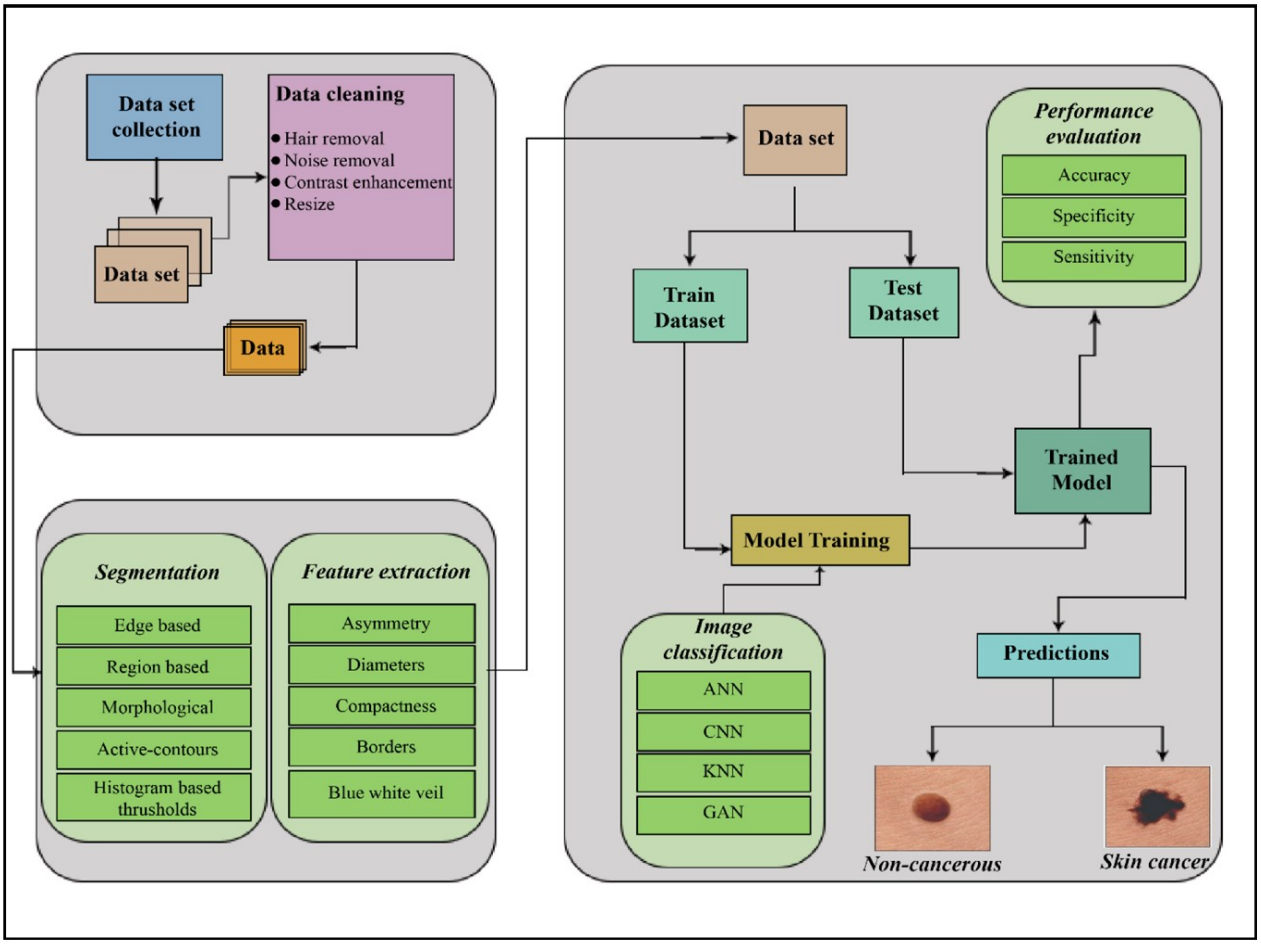

IV. SOFTWARE DESCRIPTION

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

The Python interpreter and the extensive standard library are freely available in source or binary form for all major platforms from the Python web and may be freely distributed. The same site also contains distributions of and pointers to many free third party Python modules, programs and tools, and additional documentation.

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The Python interpreter is easily extended with new functions and data types implemented in C or C++ (or other languages callable from C). Python is also suitable as an extension language for customizable applications.

This tutorial introduces the reader informally to the basic concepts and features of the Python language and system. It helps to have a Python interpreter handy for hands-on experience, but all examples are self-contained, so the tutorial can be read off-line as well.

For a description of standard objects and modules, see The Python Standard Library. The Python Language Reference gives a more formal definition of the language. To write extensions in C or C++, read Extending and Embedding the Python Interpreter and Python/C API Reference Manual. There are also several books covering Python in depth.

V. SOFTWARE REQUIREMENTS

A. HARDWARE REQUIREMENTS

- System : Core I3 11th Gen
- Hard Disk : 500 GB
- Monitor : 15 Inch Color.
- Ram : 4GB.
- WiFi ll webcam
- 2GB Intel HD Graphic
- Windows 11

B. SOFTWARE REQUIREMENTS

- Operating System : Windows XP/7.
- Coding Language : spyder-3,python

VI. CONCLUSION

In this study, we have examined various noninvasive techniques for skin cancer classification and detection. The melanoma detection requires various stages like preprocessing, segmentation, feature extraction and classification. This survey focuses on different strategies like Genetic Algorithm, SVM, CNN, ABCD rule etc. As per the review, each algorithmis found to have its advantages and disadvantages. However, amongst the analysed algorithm, the SVM algorithm has the least amount of

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disadvantages and thus, out weighs other algorithms like K-mean clustering and Back propogation neural networks.

VII. REFFERENCE

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