

A PROJECT REPORT ON
COLORECTAL CANCER DETECTION BY USING DEEP LEARNING

Submitted in partial fulfillment of the requirements for the award of the degree

of

BACHELOR OF TECHNOLOGY

In

COMPUTER SCIENCE AND ENGINEERING

Under the guidance of

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**SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT
STUDIES (Autonomous)**

(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)
Chittoor, A.P-517127.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(2023 - 24)



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CERTIFICATE

This is to certify that the project work entitled **“COLORECTAL CANCER DETECTION BY
USING DEEP LEARNING”** is a genuine work of

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Submitted for University Examination (Viva-Voce) held on

INTERNAL EXAMINER

EXTERNAL EXAMINER



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- Ignite the students to acquire self-reliance in the latest technologies.
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PEO3: Enhance knowledge by updating advanced technological concepts for facing the rapidly changing world and contribute to society through innovation and creativity **(Continuing Education and Contribution to Society).**

PROGRAM SPECIFIC OUTCOMES (PSO's):

PSO1: Have Ability to understand, analyses and develop computer programs in the areas like algorithms, system software, web design, big data analytics, and networking.

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PO3 - Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

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PO5 - Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 - The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 - Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 - Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 - Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 - Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 - Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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Course Out Comes for Project Work

On completion of project work the student will be able to

- CO1.** Demonstrate in-depth knowledge on the **project topic**.
- CO2.** Identify, analyze and formulate complex problem chosen for **project work** to attain substantiated conclusions.
- CO3.** Design solutions to the **chosen project problem**.
- CO4.** Undertake investigation of **project problem** to provide valid conclusions.
- CO5.** Use the **appropriate techniques, resources and modern engineering tools** necessary for **project work**.
- CO6.** Apply **project results** for sustainable development of the society.
- CO7.** Understand the impact **of project results** in the context of environmental sustainability.
- CO8.** Understand professional and ethical responsibilities while executing the **project work**.
- CO9.** Function effectively as individual and a member in the project team.
- CO10.** Develop communication skills, both oral and written for preparing and presenting project report.
- CO11.** Demonstrate knowledge and understanding of cost and time analysis required for carrying out the project.
- CO12.** Engage in lifelong learning to improve knowledge and competence in the chosen area of the project.



CO – PO MAPPING

[illegible]



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Evaluation Rubrics for Project Work

Rubric (CO)	Excellent (wt = 3)	Good (wt = 2)	Fair (wt =1)
<i>Selection of Topic (CO1)</i>	Selected a latest topic through complete knowledge of facts and Concepts	Selected a topic through partial knowledge off acts and concepts	Selected at opicthrough improper knowledge of facts and concepts
<i>Analysis and Synthesis (CO2)</i>	Thorough comprehension through analysis/ synthesis	Reasonable comprehension through analysis/ synthesis	Improper comprehension through analysis/ synthesis
<i>Problem Solving (CO3)</i>	Thorough comprehension about what is proposed in the literature papers	Reasonable comprehension about what is proposed in the literature papers	Improper comprehension about what is proposed in the literature
<i>Literature Survey (CO4)</i>	Extensive literature survey with standard References	Considerable literature survey with standard References	Incomplete literature survey with substandard References
<i>Usage of Techniques &Tools (CO5)</i>	Clearly identified and has complete knowledge of techniques & tools used in the project work	Identified and has sufficient knowledge of techniques & tools used in the project work	Identified and has inadequate knowledge of techniques & tools used in project work
<i>Project work impact on Society (CO6)</i>	Conclusion of project work has strong impact on society	Conclusion of project work has considerable impact on society	Conclusion of project work has feeble impact on society
<i>Project work impact on Environment (CO7)</i>	Conclusion of project work has strong impact on Environment	Conclusion of project work has considerable impact on environment	Conclusion of project work has feeble impact on environment
<i>Ethical attitude (CO8)</i>	Clearly understands ethical and social practices.	Moderate understanding of ethical and social practices.	Insufficient understanding of ethical and social practices.
<i>Independent Learning (CO9)</i>	Did literature survey and selected topic with little Guidance	Did literature survey and selected topic with considerable guidance	Selected a topic as suggested by the Supervisor
<i>Oral Presentation (CO10)</i>	Presentation in logical sequence with key points, clear conclusion and excellent language	Presentation with key points, conclusion and good language	Presentation with insufficient key points and improper Conclusion
<i>Report Writing (CO10)</i>	Status report with clear and logical sequence of chapters using excellent language	Status report with logical sequence of chapters using understandable language	Status report not properly organized
<i>Time and Cost Analysis (CO11)</i>	Comprehensive time and cost analysis	Moderate time and cost analysis	Reasonable time and cost analysis
<i>Continuous learning (CO12)</i>	Highly enthusiastic towards continuous	Interested in continuous learning	Inadequate interest in continuous learning

ACKNOWLEDGEMENT

A Project of this magnitude would have not been possible without the guidance and coordination of many people. I am fortune in having top quality people to help, support and guide us in every step towards our goal.

Our team is very much grateful to the Chairman **Sri K. RANGANADHAM** Garu for his encouragement and stalwart support. We are also extremely indebted to the Secretary **Sri D.K. BADRI NARAYANA** Garu for his constant support.

We express our sincere thanks to our Academic Advisor **Dr. K.L. NARAYANA, M. Tech., Ph.D.**, further, we would like to express our profound gratitude to our principal **Dr. N. VENKATACHALAPATHI, M. Tech, Ph.D** for providing all possible facilities throughout the completion of our project work.

We express our sincere thanks to our Dean (Academics), **Dr. M. SARAVANAN, M.E., Ph.D.**, further we express our sincere thanks to our Head of the Department **Mr. M.E. PALANIVEL** for his co-operation and valuable suggestions towards the completion of project work.

We express our sincere thanks to our guide **Mr E.PURUSHOTHAM** for offeringus the opportunity to do this work under his guidance.

We express our sincere salutation to all other teaching and non-teaching staff of our department for their direct and indirect support given during our project work. Last but not the least, we dedicate this work to our parents and the Almighty who have been with us throughout and helped us to overcome the hard times.

BY

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DECLARATION

I certify that

- The work contained in this report is original and has been done by me under the Guidance of my supervisor.
- The work has not been submitted to any other Institute for any degree or diploma.
- I have followed the guidelines provided by the Institute in preparing the report.
- I have conformed to the norms and guidelines given in the Ethical Code of Conduct of the Institute.
- Whenever I have used materials (data, theoretical analysis, figures, and text) from other sources, I have given due credit to them by citing them in the text of the report and giving their details in the references. Further, I have taken permission from the copyright owners of the sources, whenever necessary.

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ABSTRACT

Colorectal cancer is a significant global health concern, accounting for a substantial portion of cancer-related deaths worldwide. Early detection and timely intervention are pivotal in improving patient outcomes. This paper presents an innovative approach for the early detection of colorectal cancer through the application of deep learning techniques.

We leverage a large dataset of medical images, including colonoscopy and histopathology slides, to develop a robust and accurate deep learning model for colorectal cancer detection. Convolutional Neural Networks (CNNs) and MobileNet architectures are employed to automatically extract meaningful features from these images, enabling the discrimination between cancerous and non-cancerous tissues.

Keywords: colorectal dataset, deep learning algorithms etc...

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LIST OF ABBREVIATIONS

CNN	CONVOLUTIONAL NEURAL NETWORK
CT	COMPUTED TOMOGRAPHY
RELU	RECTIFIED LINEAR UNIT

CHAPTER 1

INTRODUCTION

1.1 OBJECTIVE

The objective of this project is to develop a Convolutional Neural Network (CNN) and MobileNet based deep learning model for accurate and early detection of colorectal cancer from medical images, enhancing diagnostic precision, and potentially improving patient outcomes through timely intervention.

1.2 PROBLEM IDENTIFICATION

The problem at hand is to develop a Convolutional Neural Network (CNN) ,MobileNet based deep learning model for the early detection of colorectal cancer from medical imaging data. This model aims to analyse and classify colorectal tissue samples accurately, providing a valuable tool for clinicians to identify potential cancerous lesions in a non-invasive and timely manner, ultimately improving patient outcomes and reducing healthcare burdens.

1.3 LITERATURE SURVEY

1. Veta, M., Pluim, J.P., van Diest, P.J., et al. (2015). "Breast cancer histopathology image analysis: A review." IEEE Transactions on Biomedical Engineering, 61(5), 1400-1411. The paper "Breast Cancer Histopathology Image Analysis: A Review" authored by Veta et al. in 2015 provides a comprehensive exploration of the pivotal role of image analysis in the domain of breast cancer histopathology. Breast cancer diagnosis is traditionally reliant on the visual examination of tissue samples under a microscope, a process that can be time-consuming, labor-intensive, and subject to inter observer variability. This review paper addresses these limitations and underscores the critical need for automated, computer-assisted techniques in breast cancer diagnosis.

The authors highlight the challenges inherent in manual histopathology image analysis and discuss the potential pitfalls associated with human interpretation. They delve into a wide array of image analysis methodologies, encompassing feature extraction, segmentation, and classification techniques. Furthermore, the paper elucidates how machine learning and deep learning algorithms have emerged as powerful tools to automate the interpretation of breast cancer histopathology images, leading to enhanced accuracy and efficiency.

The significance of this review lies in its ability to serve as a guiding light for researchers and clinicians keen on harnessing the potential of computational approaches in breast cancer diagnostics. It underscores the evolving landscape of digital pathology and its transformative impact on patient care. By amalgamating historical insights and contemporary advancements, this paper provides a comprehensive understanding of the state-of-the-art in breast cancer histopathology image analysis, thus facilitating further research and innovation in this critical field.

2. Janowczyk, A., & Madabhushi, A. (2016). "Deep learning for digital pathology image analysis: A comprehensive tutorial with selected use cases." *Journal of Pathology Informatics*, 7, 29.

The paper titled "Deep Learning for Digital Pathology Image Analysis: A Comprehensive Tutorial with Selected Use Cases" by Janowczyk and Madabhushi, published in the *Journal of Pathology Informatics* in 2016, is a highly informative resource that provides a detailed tutorial on the application of deep learning techniques in the field of digital pathology. In this paper, the authors begin by emphasizing the growing importance of digital pathology, which involves the digitization of pathology slides and enables computer-based analysis. They highlight the potential of deep learning, a subset of machine learning, to revolutionize the analysis of digital pathology images.

The paper breaks down complex concepts associated with deep learning into more understandable components. It covers the basics of deep neural networks, with a focus on convolutional neural networks (CNNs), which are particularly well-suited for image analysis tasks. The authors explain how CNNs work, including their architecture and layers, making it accessible to readers with varying levels of expertise. One of the paper's strengths is the inclusion of selected use cases, where the authors illustrate how deep learning can be applied to real-world pathology scenarios. These case studies demonstrate the practical applications of deep learning, such as identifying cancerous regions in pathology slides or segmenting specific tissues.

3. Kather, J.N., Weis, C.A., Bianconi, F., et al. (2019). "Multi-class texture analysis in colorectal cancer histology." *Scientific Reports*, 9, 1-13.

In this study, the authors focus on the challenges associated with distinguishing various tissue textures within colorectal cancer histopathology images. Texture analysis is a valuable method for quantifying the spatial arrangement of pixel intensities, which can provide insights into tissue composition and help in the diagnosis and prognosis of colorectal cancer. The paper outlines a

methodology that involves the extraction of texture features from histopathology images using advanced computational techniques. These features are then used to classify different tissue classes within the images. The multi-class approach is important because it allows for the discrimination of not just cancerous and non-cancerous tissue but also different subtypes and grades of cancer. This research contributes to the development of more accurate and refined tools for diagnosing and characterizing colorectal cancer, potentially assisting pathologists in their decision-making process. By utilizing texture analysis and advanced computational methods, this paper highlights the potential for improving the understanding and classification of colorectal cancer histology, ultimately benefiting patient care and treatment strategies.

4. Chen, Y., Wang, Z., Peng, Y., Zhang, Z., Yu, G., & Sun, J. (2018). CADNet: A context-aware detection network for objects in remote sensing imagery. *IEEE Transactions on Geoscience and Remote Sensing*, 57(2), 1005-1018.

This research addresses a critical challenge in breast cancer diagnosis: accurately determining the extent of tumour invasion within tissue samples. Traditionally, pathologists perform this task manually, which can be time-consuming and subject to inter observer variability. The authors propose a novel deep learning approach to automate this process. They train a deep neural network to analyse whole-slide images and identify the boundaries of invasive breast cancer lesions. The deep learning model demonstrates accuracy and reproducibility in quantifying tumour extent, providing a more objective and consistent assessment compared to manual methods.

By leveraging deep learning, this study show cases the potential for improving breast cancer diagnosis and reducing the subjectivity associated with traditional pathology practices. The automated quantification of tumour extent contributes to more precise treatment planning and prognosis assessment, ultimately enhancing patient care and outcomes in breast cancer management. This paper serves as a milestone in the application of deep learning in pathology and highlights its transformative potential in the field of medical image analysis.

CHAPTER 2

SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

Colorectal cancer detection using CNN based deep learning utilizes the its architecture to analyze medical images, This system automates diagnosis, aiding healthcare professionals in early cancer detection and improving patient outcomes

2.1.1 Demerits:

Low Accuracy

High complexity.

Highly inefficient.

Requires skilled persons

2.2 PROPOSED SYSTEM

The proposed system for colorectal cancer detection utilizes Convolutional Neural Networks (CNNs) , MobileNet architecture in deep learning to analyse medical images, identifying cancerous regions with high accuracy. This automated approach streamlines diagnosis, potentially improving early detection and treatment outcomes.

2.2.1 Merits :

Accuracy is good.

Low complexity.

Highly efficient.

No need of skilled persons.

2.3 FEASIBILITY STUDY

The feasibility of the project is analysed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are

- ◆ Economical feasibility
- ◆ Technical feasibility
- ◆ Social feasibility

2.3.1 Economical Feasibility

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus, the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased

2.3.2 Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

2.3.2 Social Feasibility

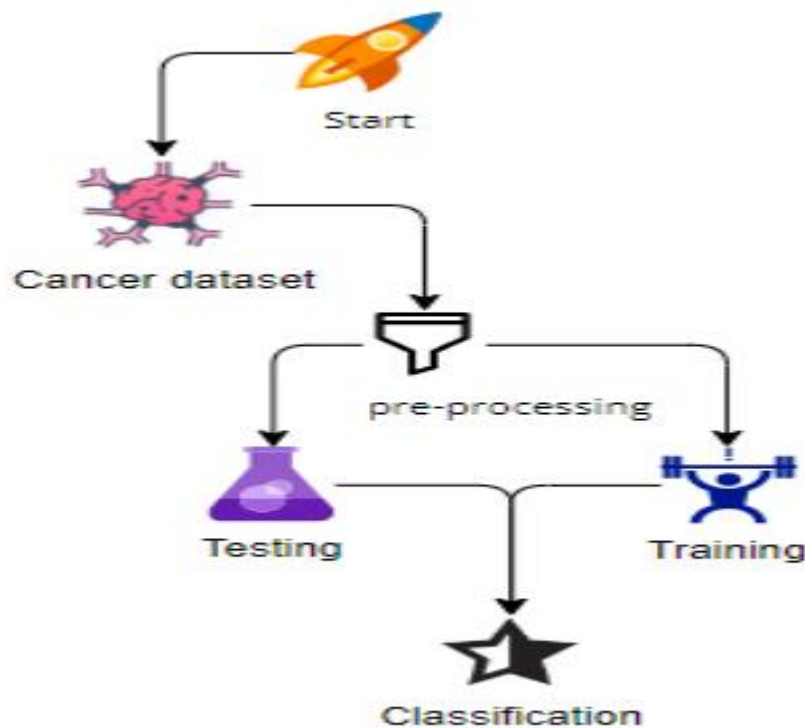
The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

CHAPTER-3

SYSTEM DEVELOPMENT MODEL

The system development model for colorectal cancer detection using deep learning with CNN cancer detection using deep learning with CNN and MobileNet in a step-by-step format:

- Define problem and gather data.
- Preprocess data: normalize, resize, augment.
- Choose CNN and MobileNet.
- Train models with transfer learning.
- Evaluate using metrics and cross-validation.
- Tune hyperparameters.
- Deploy optimized model.



CHAPTER 4

SYSTEM DESCRIPTION

4.1 PROBLEM DEFINITION

The primary objective of the project is to develop a Convolutional Neural Network (CNN) based deep learning model for accurate and early detection of colorectal cancer from medical images, enhancing diagnostic precision, and potentially improving patient outcomes through timely intervention.

4.2 OVERVIEW OF THE SYSTEM

Colorectal cancer often referred to as bowel or colon cancer is a prevalent and life-threatening disease that affects the colon or rectum, both crucial components of the digestive system. It ranks among the most common cancers globally and is a leading cause of cancer-related mortality. The early detection and accurate diagnosis of colorectal cancer are pivotal in improving patient outcomes and reducing mortality rates. Traditionally, the diagnosis of colorectal cancer has relied heavily on invasive procedures such as colonoscopy and biopsy. While these methods remain highly effective, they come with inherent discomfort, cost, and potential risks for patients. Moreover, they often require skilled medical professionals to interpret the results, leading to variability in diagnoses.

In recent years, the field of medical imaging and artificial intelligence has seen remarkable advancements, opening new avenues for improving the early detection and diagnosis of various diseases, including colorectal cancer. Deep learning, a subset of artificial intelligence, has emerged as a powerful tool in medical image analysis. Convolutional Neural Networks (CNNs) have been particularly successful in automating the process of identifying abnormalities and diseases in medical images, offering both accuracy and efficiency. This research paper aims to explore the application of CNNs in the early detection of colorectal cancer. By harnessing the potential of deep learning techniques, we seek to develop a robust and automated system that can assist healthcare professionals in identifying suspicious lesions and abnormalities in colonoscopy and other relevant imaging modalities. This system could ultimately enhance the accuracy and speed of diagnosis, reduce the burden on medical practitioners, and potentially improve patient outcomes.

4.3 SYSTEM ARCHITECTURE DIAGRAM

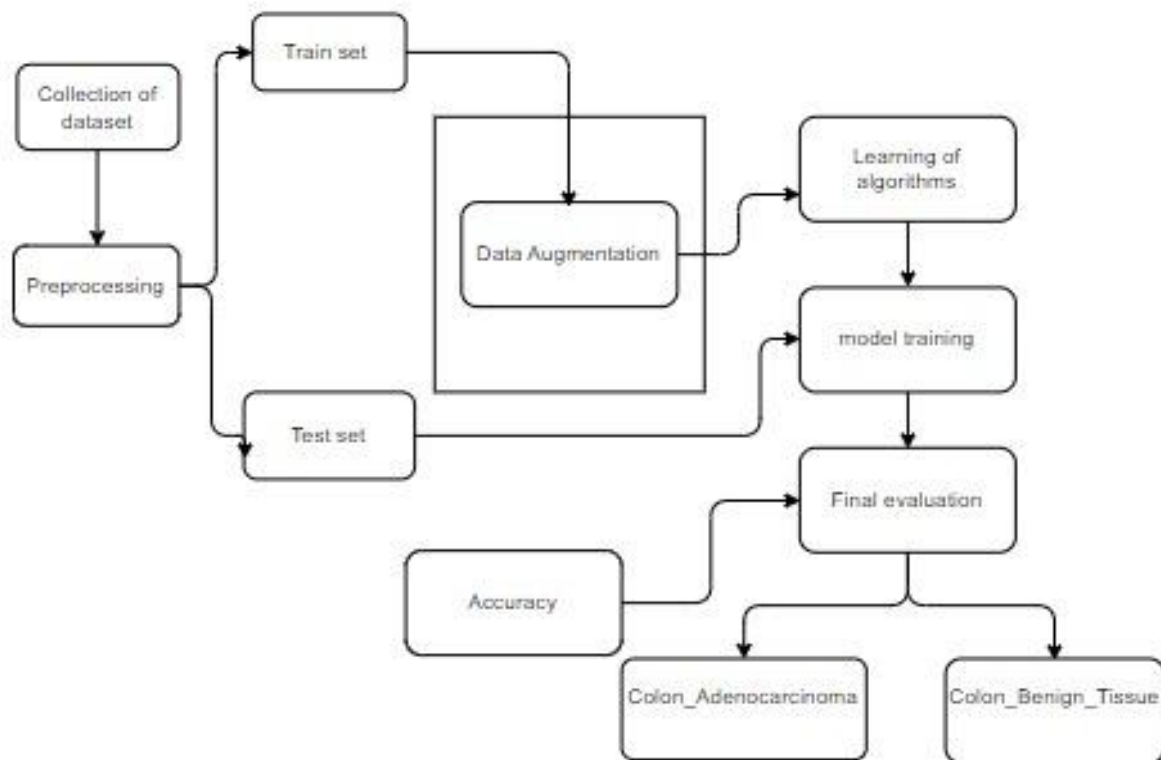


Fig. Architecture diagram

CHAPTER 5

SYSTEM DESIGN

MODULE DESCRIPTION

1. System:

1.1 Create Dataset:

The dataset containing images of disease prediction are to be classified is split into training and testing dataset with the test size of 30-20%.

1.2 Pre-processing:

Resizing and reshaping the images into appropriate format to train our model.

1.3 Training:

Use the pre-processed training dataset is used to train our model.

1.4 Classification:

The results of our model is display of images are with either disease or normal.

2. User:

2.1 Upload Image

The user has to upload an image, which needs to be classified.

2.2 View Results

User views the classified image results.

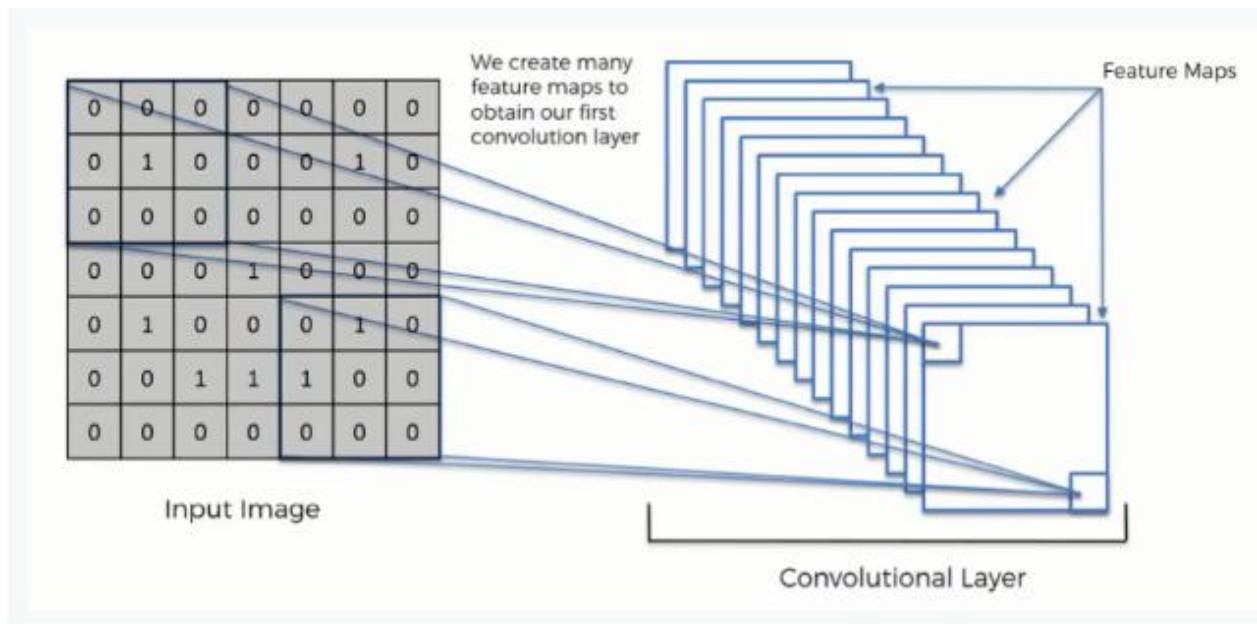
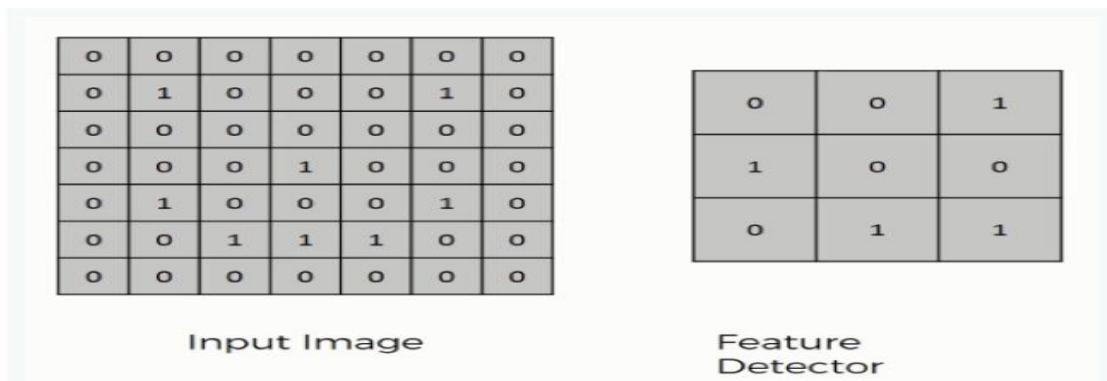
5.1 ALGORITHM

1. Convolutional Neural Network

Step1: convolutional operation

The first building block in our plan of attack is convolution operation. In this step, we will touch on feature detectors, which basically serve as the neural network's filters. We will also discuss feature maps, learning the parameters of such maps, how patterns are detected, the layers of detection, and how the findings are mapped out.

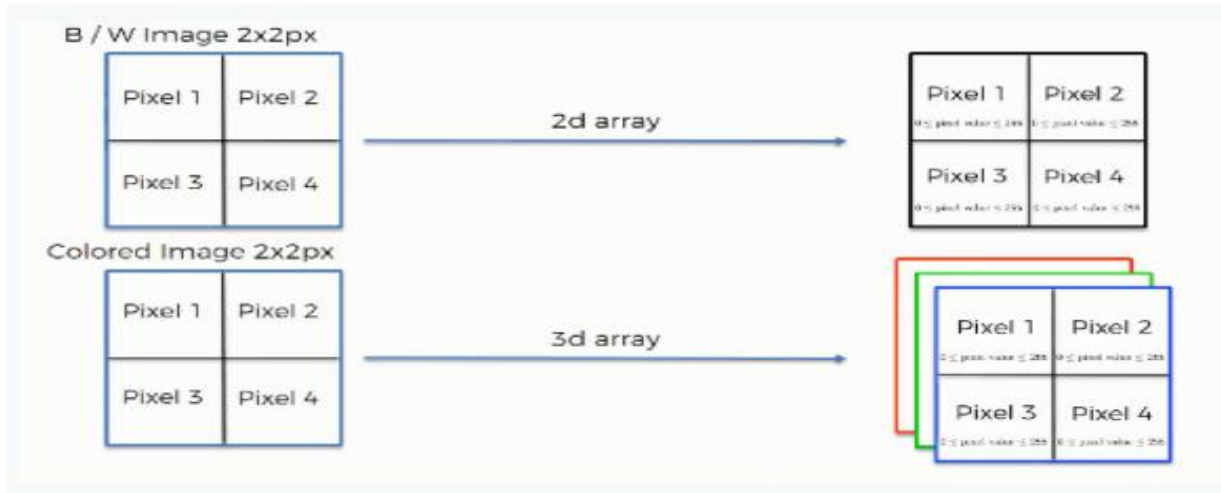
The Convolution Operation



Step (1b): Relu Layer

The second part of this step will involve the Rectified Linear Unit or ReLU. We will cover ReLU layers and explore how linearity functions in the context of Convolutional Neural Networks. The reason why the rectifier function is typically used as the activation function in a convolutional neural network is to increase the nonlinearity of the data set.

Convolutional Neural Networks Scan Images



Step 2: Pooling Layer

Pooling in convolutional neural networks (CNNs) is a fundamental technique used to reduce the spatial dimensions of feature maps while retaining important information from the input image. In general, we use pooling layers when we want to detect an object in an image, regardless of its location within the image. In this part, we will get to understand exactly how it generally works. Our focus here, however, will be a specific type of pooling; max pooling. We'll cover various approaches, though, including mean (or sum) pooling.

Step 3: Flattening

The flatten layer typically appears after the convolutional and pooling layers in convolutional neural network (CNN) architectures. It acts as a bridge between the convolutional/pooling layers, which extract spatial features, and the fully connected layers, which perform classification or regression tasks.

Step 4: Full Connection

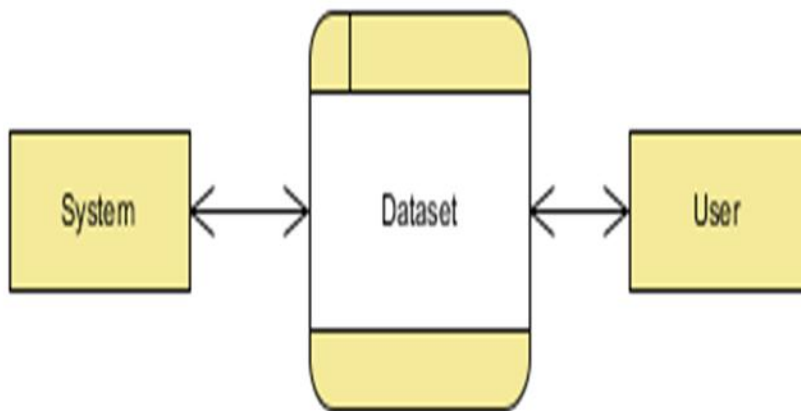
The purpose of the fully connected layer in a convolutional neural network is to detect certain features in an image. More specifically, each neuron in the fully connected layer corresponds to a specific feature that might be present in an image.

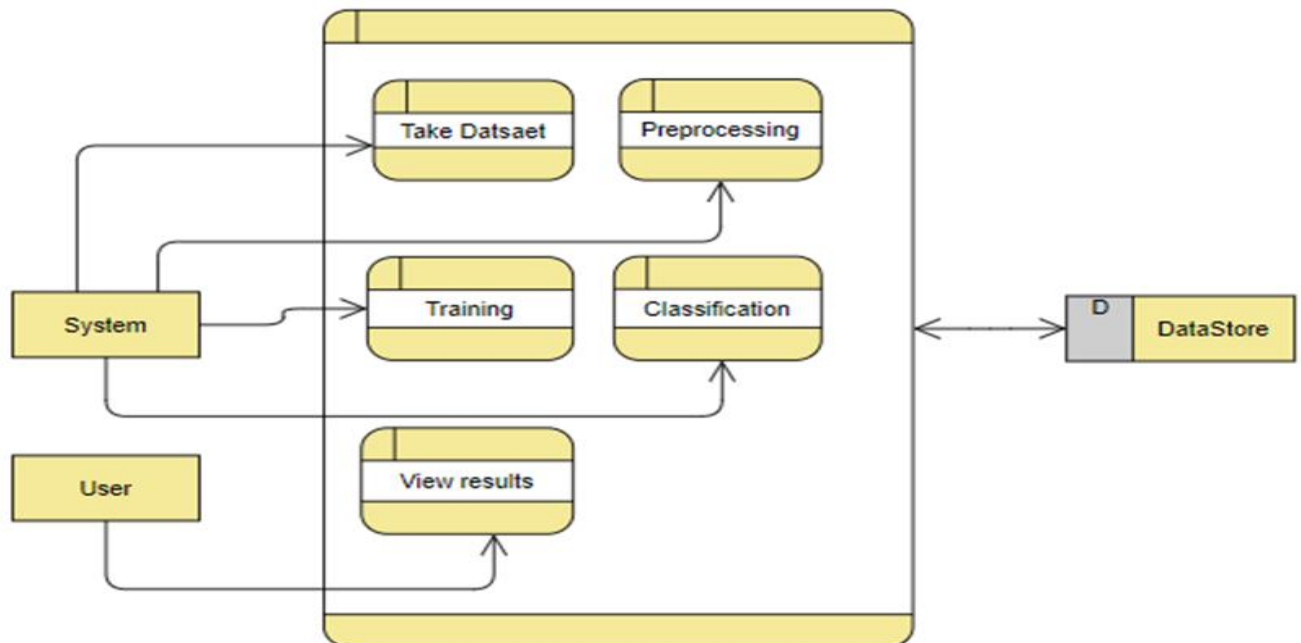
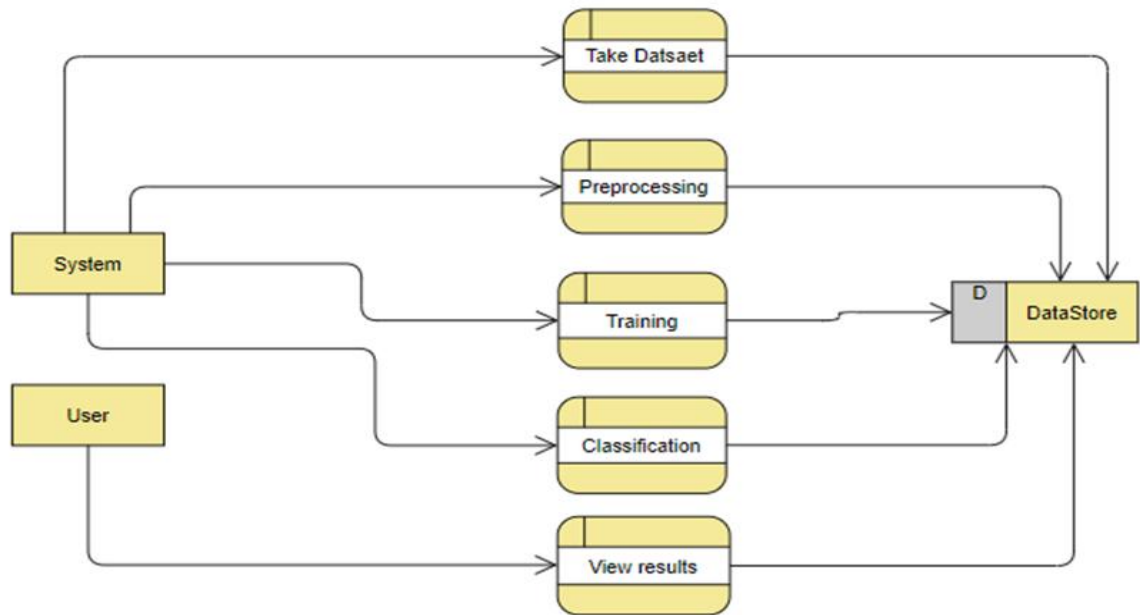
5.2 DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) is a traditional way to visualize the information flows within a system. A neat and clear DFD can depict a good amount of the system requirements graphically. It can be manual, automated, or a combination of both. It shows how information enters and leaves the system, what changes the information and where information is stored. The purpose of a DFD

is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system.

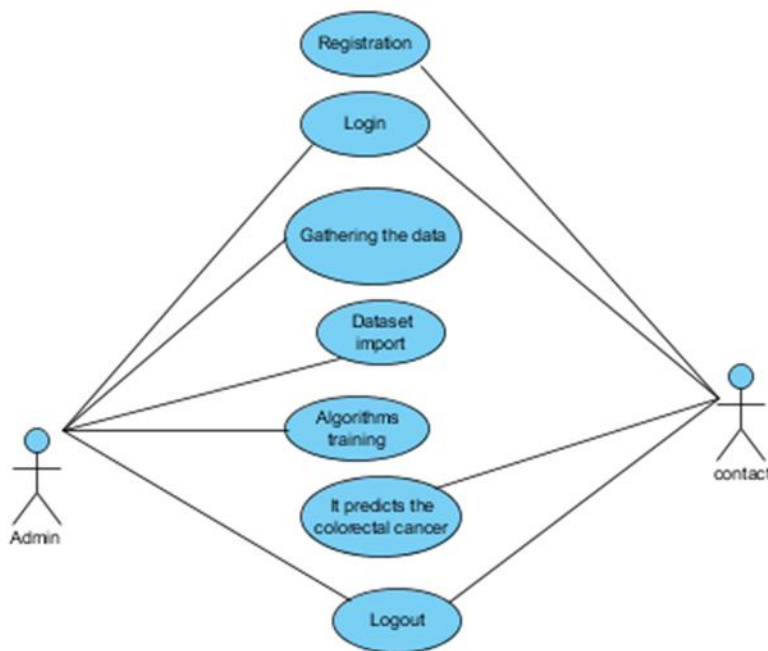
Context Diagram:





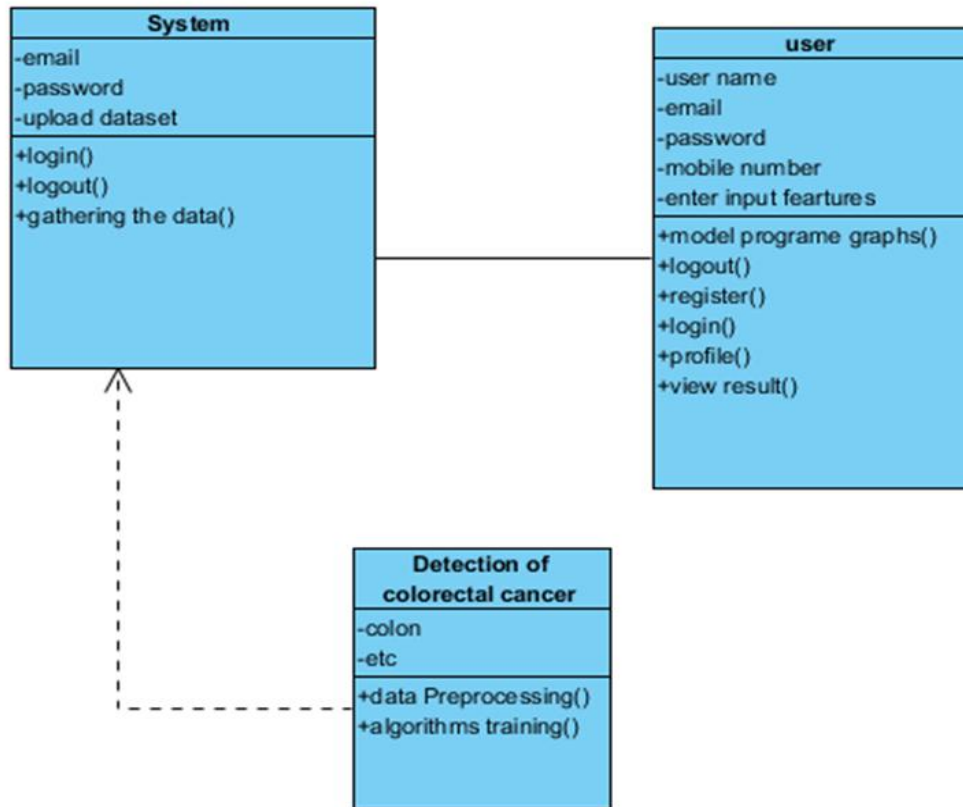
5.2.1 Use Case Diagram:

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.



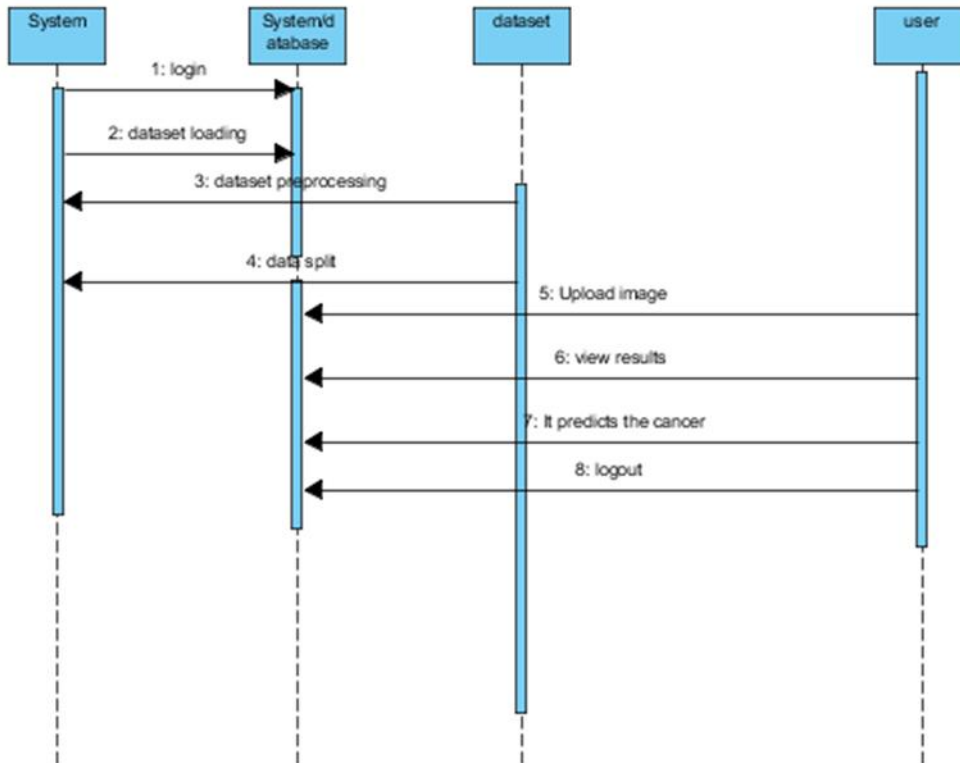
5.2.2 Class Diagram:

In software engineering, a class diagram in the Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the classes. It explains which class contains information.



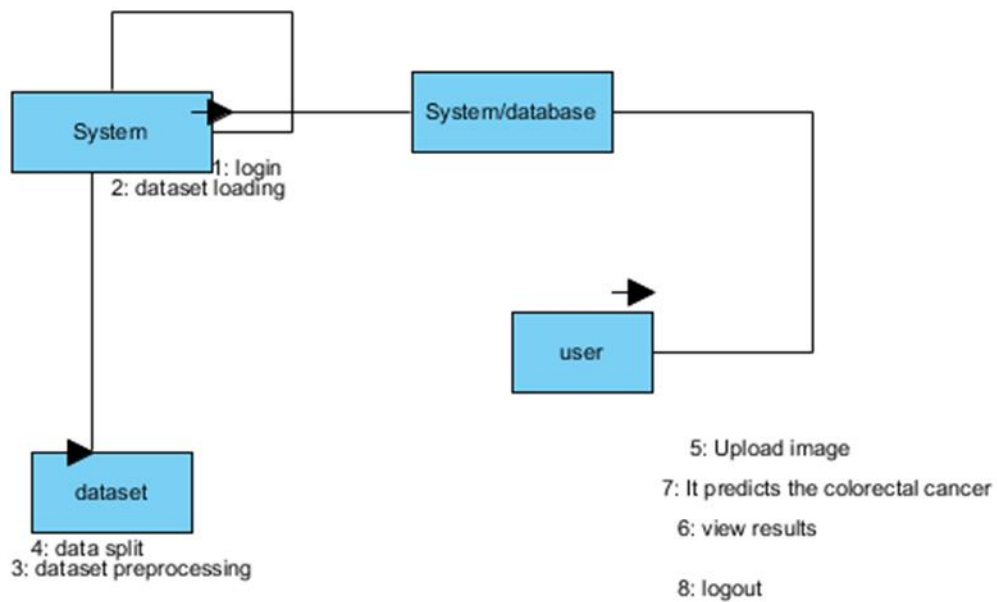
5.2.3 Sequence Diagram:

A sequence diagram in Unified Modelling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.



5.2.4 Collaboration Diagram:

In collaboration diagram the method call sequence is indicated by some numbering technique as shown below. The number indicates how the methods are called one after another. We have taken the same order management system to describe the collaboration diagram. The method calls are similar to that of a sequence diagram. But the difference is that the sequence diagram does not describe the object organization whereas the collaboration diagram shows the object organization.



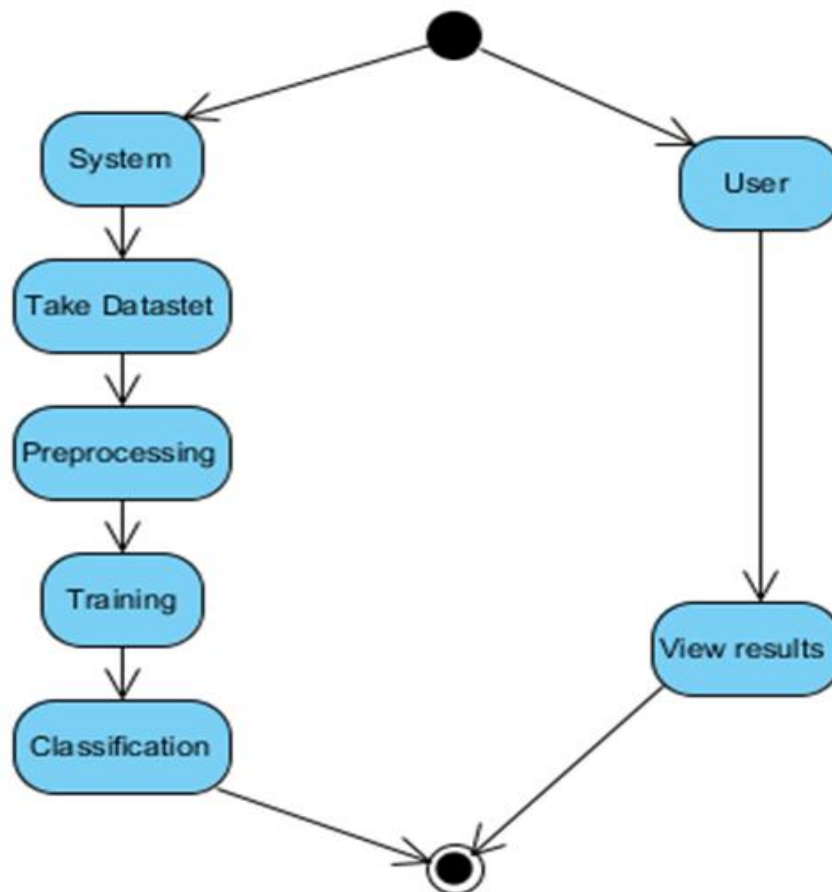
5.2.5 Deployment Diagram

Deployment diagram represents the deployment view of a system. It is related to the component diagram. Because the components are deployed using the deployment diagrams. A deployment diagram consists of nodes. Nodes are nothing but physical hardware's used to deploy the application



5.2.6 Activity Diagram:

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modelling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.



5.2.7 Component Diagram:

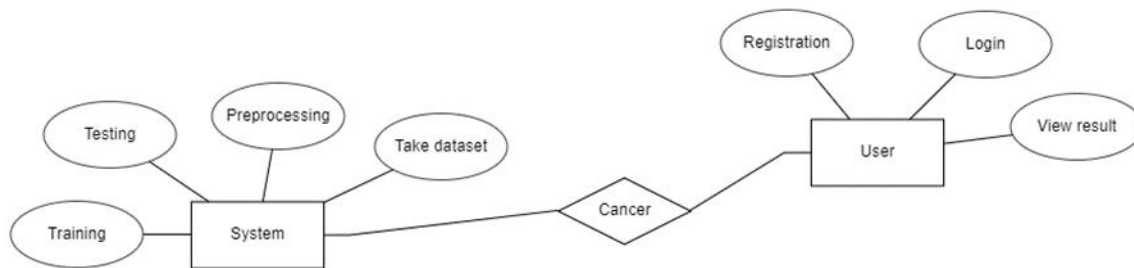
A component diagram, also known as a UML component diagram, describes the organization and wiring of the physical components in a system. Component diagrams are often drawn to help model implementation details and double-check that every aspect of the system's required functions is covered by planned development.



5.2.8 ER Diagram

An Entity–relationship model (ER model) describes the structure of a database with the help of a diagram, which is known as Entity Relationship Diagram (ER Diagram). An ER model is a design or blueprint of a database that can later be implemented as a database. The main components of E-R model are: entity set and relationship set.

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database. Let's have a look at a simple ER diagram to understand this concept.



5.3 INPUT DESIGN

Introduction of Input Design:

In an information system, input is the raw data that is processed to produce output. During the input design, the developers must consider the input devices such as PC, MICR, OMR, etc.

Therefore, the quality of system input determines the quality of system output. Well-designed input forms and screens have following properties –

It should serve specific purpose effectively such as storing, recording, and retrieving the information.

It ensures proper completion with accuracy.

It should be easy to fill and straightforward.

It should focus on user's attention, consistency, and simplicity.

All these objectives are obtained using the knowledge of basic design principles regarding –

- What are the inputs needed for the system?
- How end users respond to different elements of forms and screens.

Objectives for Input Design:

The objectives of input design are –

To design data entry and input procedures

To reduce input volume

To design source documents for data capture or devise other data capture methods

To design input data records, data entry screens, user interface screens, etc.

To use validation checks and develop effective input controls.

5.4 OUTPUT DESIGN

The design of output is the most important task of any system. During output design, developers identify the type of outputs needed, and consider the necessary output controls and prototype report layouts.

Objectives of Output Design:

The objectives of input design are:

- To develop output design that serves the intended purpose and eliminates the production of unwanted output.
- To develop the output design that meets the end user's requirements.
- To deliver the appropriate quantity of output.
- To form the output in appropriate format and direct it to the right person.
- To make the output available on time for making good decisions.

CHAPTER 6

SYSTEM SPECIFICATION

6.1 SOFTWARE REQUIREMENTS

Operating System	: Windows 7/8/10
Server side Script	: HTML, CSS, Bootstrap & JS
Programming Language	: Python
Libraries	: Flask, Pandas, Mysql.connector, Os, Smtplib, Numpy
IDE/Workbench	: PyCharm
Technology	: Python 3.6+
Server Deployment	: Xampp Server

6.1.1 ABOUT SOFTWARE

1.Operating System: Windows 7/8/10

- Description: The system will run on Windows operating systems, providing a familiar and user-friendly environment for both development and deployment.

2.Server Side Script: HTML, CSS, Bootstrap, JavaScript

- HTML: Used to create the structure and content of the web pages.
- CSS: Applied for styling the HTML elements to enhance the visual presentation.
- Bootstrap: A framework for building responsive and mobile-first websites. It simplifies the design process with pre-defined styles and components.
- JavaScript: Adds interactivity to web pages. Essential for client-side validation and dynamic content updates.

3.Programming Language: Python

- Description: Python is a high-level, versatile programming language known for its readability and extensive libraries. It will be used for the backend logic of the Secure e-Finger scheme.

4.Libraries:

- Flask: A micro web framework for Python, used to create the web application. It provides tools, libraries, and technologies to build a web application.
- Pandas: A data manipulation and analysis library. It will handle data operations like reading

from and writing to databases.

- Mysql. connector: A library to connect Python applications with MySQL databases, facilitating database operations.
- Os: A standard library to interact with the operating system, useful for file and directory operations.
- Smtplib: A library for sending emails using the Simple Mail Transfer Protocol (SMTP). It can be used for notification services.
- Numpy: A library for numerical computations. It supports large, multi-dimensional arrays and matrices, along with a collection of mathematical functions to operate on these arrays.

5. IDE/Workbench: PyCharm

- Description: PyCharm is an integrated development environment (IDE) for Python. It provides a suite of tools and features such as code analysis, graphical debugging, integrated unit testing, and version control integration.

6. Technology: Python 3.6+

- Description: The system will be developed using Python version 3.6 or higher. This ensures access to the latest features, libraries, and security improvements in Python.

7. Server Deployment : Xampp

- Description: XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience

6.2 HARDWARE REQUIREMENTS

Processor	- I3/Intel Processor
RAM	- 8GB (min)
Hard Disk	- 128GB
Key Board	- Standard Windows Keyboard
Mouse	- Two or Three Button Mouse
Monitor	- Any

CHAPTER 7

SYSTEM TESTING

7. DEFINITION

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the

Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

7.1 LEVELS OF TESTING

7.1.1 Unit testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application. It is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

7.1.2 Integration testing

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfactory, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level – interact without error.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

7.1.3 Functional testing

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must be exercised.

Systems/Procedures: interfacing systems or procedures must be invoked.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before

functional testing is complete, additional tests are identified and the effective value of current tests is determined.

7.1.4 White Box Testing

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

7.1.5 Black Box Testing

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot “see” into it. The test provides inputs and responds to outputs without considering how the software works.

Test objectives

- All field entries must work properly.
- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.

Features to be tested

- Verify that the entries are of the correct format
- No duplicate entries should be allowed
- All links should take the user to the correct page.

7.1.6 TEST CASES:

Input	Output	Result
Input image	Detection of colorectal cancer	Success

- **Test cases Model building:**

S.NO	Test cases	I/O	Expected O/T	Actual O/T	P/F
1	Read the dataset.	Dataset path.	Dataset need to read successfully.	Dataset fetched successfully.	P
2	Performing pre-processing on the dataset	Pre-processing part takes place	Pre-processing should be performed on dataset	Pre-processing successfully completed.	P
3	Model Building	Model Building for the clean data	Need to create model using required algorithms	Model Created Successfully.	P
4	Classification	Input image provided.	Output Detection of colorectal cancer	Model classified successfully	P

CHAPTER 8

SYSTEM IMPLEMENTATION

1. System:

1.1 Create Dataset:

The dataset containing images of disease prediction are to be classified is split into training and testing dataset with the test size of 30-20%.

1.2 Pre-processing:

Resizing and reshaping the images into appropriate format to train our model.

1.3 Training:

Use the pre-processed training dataset is used to train our model.

1.4 Classification:

The results of our model is display of images are with either disease or normal.

2. User:

2.1 Upload Image

The user has to upload an image, which needs to be classified.

2.2 View Results

User views the classified image results.

CONCLUSION AND FUTURE ENHANCEMENT

CONCLUSION

In conclusion, the application of Convolutional Neural Networks (CNNs) in colorectal cancer detection using deep learning holds immense promise. With their ability to analyze complex histopathological images, CNNs offer improved accuracy and efficiency in early cancer detection. This technology has the potential to revolutionize colorectal cancer diagnosis and treatment, ultimately leading to better patient outcomes.

FUTURE ENHANCEMENT

In future research on colorectal cancer detection using CNN-based deep learning methods, several key directions can be explored. First, there is potential for integrating multi-modal data, such as combining histopathological images with genomics data and clinical information, to create more comprehensive diagnostic models. Additionally, further work can focus on addressing the detection of rare colorectal cancer subtypes, enhancing the models' ability to identify less common variants for improved diagnostic accuracy.

Moreover, researchers can investigate the development of real-time applications for colorectal cancer detection. This could involve creating CNN-based tools that can be used intraoperatively or during endoscopic procedures to assist surgeons in real-time decision-making.

Lastly, large-scale clinical validation studies are essential for assessing the practical impact of CNN models in real-world healthcare settings. These studies can help determine the models' effectiveness in improving diagnostic accuracy and patient outcomes, ultimately advancing the field of colorectal cancer detection and treatment.

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APPENDIX

SOURCE CODE

Views.py

```
from django.shortcuts import render,redirect
from django.contrib.auth.models import User
from tensorflow.keras.models import *
from tensorflow.keras.layers import *
from django.contrib.auth import authenticate,login,logout
from .models import *
from tensorflow.keras.preprocessing import image
import os
import pandas as pd
import numpy as np

# Create your views here.
index="index.html"
About="about.html"
registerpage="register.html"
loginpage="login.html"
Userhome = 'userhome.html'
uploadpage = 'upload.html'
resultpage = "result.html"

def index(request):
    return render(request,"index.html")

def about(request):
    return render(request,"about.html")

def register(request):
    if request.method == 'POST':
        name = request.POST['name']
        email = request.POST['email']
        password = request.POST['password']
        conpassword = request.POST['conpassword']
        age = request.POST['Age']
        contact = request.POST['contact']
        if password == conpassword:
            register = Register(name=name, email=email, password=password,
                                age=age,contact=contact)
            register.save()
            print(register)

            msg = f"You've signed up successfully {name}"
            return render(request, loginpage)
        # else:
        #     msg = "Registration failed. Please try again."
        #     return render(request, registerpage, {"msg": msg})
        return render(request,'register.html')

def login(request):
    if request.method == 'POST':
```



```
lemail = request.POST['email']
lpassword = request.POST['password']
```

```
d = Register.objects.filter(email=lemail, password=lpassword).exists()
print(d)
if d:
    return redirect(userhome)
```

```
else:
    msg = 'Login failed'
    return render(request, login, {'msg': msg})
return render(request, 'login.html')
```

```
def userhome(request):
    return render(request, Userhome)
```

```
def upload(request):
    pathss = os.listdir(r"C:\Users\0618\Documents\projects\SEPTEMBER\business\TK120714 - CANCER_DEEP LEARNING\SOURCE
CODE-YMTS-0618\CODE\DATA")
    classes = []
    for i in pathss:
        classes.append(i)
    if request.method == "POST":
        file = request.FILES['file']
        s = Ccrack(image=file)
        s.save()
        path1 = os.path.join('home/static/save/' + s.filename())

        model = load_model(r'C:\Users\0618\Documents\projects\SEPTEMBER\business\TK120714 - CANCER_DEEP LEARNING\SOURCE
CODE-YMTS-0618\CODE\webapp\home\model\CNN.h5')
        x1 = image.load_img(path1, target_size=(224, 224))
        x1 = image.img_to_array(x1)
        x1 = np.expand_dims(x1, axis=0)
        x1 /= 255

        result = model.predict(x1)
        b1 = np.argmax(result)
        prediction = classes[b1]
```

```
return render(request, 'result.html', {"result": prediction, "path1": 'static/save/' + s.filename()})
```

```
return render(request, 'upload.html')
```

Admin.py

```
from django.contrib import admin

# Register your models here.
```

Apps.py

```
from django.apps import AppConfig
```

```
class HomeConfig(AppConfig):
    default_auto_field = 'django.db.models.BigAutoField'
    name = 'home'
```

Manage.py

```
#!/usr/bin/env python
"""Django's command-line utility for administrative tasks."""
import os
import sys

def main():
    """Run administrative tasks."""
    os.environ.setdefault('DJANGO_SETTINGS_MODULE', 'webapp.settings')
    try:
        from django.core.management import execute_from_command_line
    except ImportError as exc:
        raise ImportError(
            "Couldn't import Django. Are you sure it's installed and "
            "available on your PYTHONPATH environment variable? Did you "
            "forget to activate a virtual environment?"
        ) from exc
    execute_from_command_line(sys.argv)
```

```
if __name__ == '__main__':
    main()
```

Tests.py

```
from django.test import TestCase

# Create your tests here.
```

Models.py

```
from django.db import models
import os

# Create your models here.
class Register(models.Model):
    name=models.CharField(max_length=50)
    email=models.EmailField(max_length=50)
    password=models.CharField(max_length=50)
    age=models.CharField(max_length=50)
    contact=models.CharField(max_length=50)
```

```
class Ccrack(models.Model):
    image = models.ImageField(upload_to="home/static/save")
```

```
def filename(self):
    return os.path.basename(self.image.name)
```

Urls.py

```
from django.urls import path
```

```

from . import views

urlpatterns = [
    path('', views.index, name='home'),
    path('about', views.about, name='about'),
    path('register', views.register, name='register'),
    path('login', views.login, name='login'),
    path('userhome', views.userhome, name='userhome'),
    path('upload', views.upload, name='upload'),

```

CNN

IMPORTING LIBRARIES

```

import pandas as pd
import numpy as np
import os
from keras.preprocessing.image import ImageDataGenerator
import tensorflow as tf
from keras.models import Model, Sequential, load_model
from keras.layers import Dense, Dropout, Flatten, Conv2D, MaxPool2D, BatchNormalization,
GlobalAveragePooling2D, Activation, Input
from tensorflow.keras.optimizers import Adam
import matplotlib.pyplot as plt
! pip install seaborn
import seaborn as sns
import cv2

```

DATA LOADING

```

data_dir=r"DATA"
cancer=[]
for file in os.listdir(data_dir):
    cancer+= [file]
print(cancer)
print(len(cancer))

```

PREPROCESSING

```

# Define your image dimensions and batch size
img_height = 224
img_width = 224
batch_size = 32

# Create separate data generators for training and testing
train_datagen = ImageDataGenerator(
    rescale=1./224,
    validation_split=0.2
)

```

```

# Training data generator
train_generator = train_datagen.flow_from_directory(
    data_dir,
    target_size=(img_height, img_width),
    batch_size=batch_size,

```

```

        class_mode='categorical',
        subset='training'
    )

```

```

# Testing data generator
test_generator = train_datagen.flow_from_directory(
    data_dir,
    target_size=(img_height, img_width),
    batch_size=batch_size,
    class_mode='categorical',
    subset='validation'
)

```

APPLYING CNN ALGORITHM

```

# Create a Sequential model, which is a linear stack of layers
model = Sequential()

# Add a 2D convolutional layer with 32 filters, a 3x3 kernel, 'Same' padding, ReLU activation,
# and input shape (img_height, img_width, 3) for RGB images
model.add(Conv2D(filters=32, kernel_size=(3,3), padding='same', activation='relu', input_shape=(img_height,img_width,
3)))

```

```

# Add a MaxPooling layer with a 2x2 pool size
model.add(MaxPool2D(pool_size=(2,2)))

```

```

# Add another 2D convolutional layer with 64 filters and similar settings
model.add(Conv2D(filters=64, kernel_size=(3,3), padding='same', activation='relu'))
model.add(MaxPool2D(pool_size=(2,2), strides=(2,2)))
model.add(Conv2D(filters=96, kernel_size=(3,3), padding='same', activation='relu'))
model.add(MaxPool2D(pool_size=(2,2), strides=(2,2)))
model.add(Conv2D(filters=96, kernel_size=(3,3), padding='same', activation='relu'))
model.add(MaxPool2D(pool_size=(2,2), strides=(2,2)))
model.add(Flatten())

```

```

# Add a fully connected (dense) layer with 512 units and ReLU activation
model.add(Dense(512))
model.add(Activation('relu'))

```

```

# Add the final output layer with 5 units (assuming you have 5 classes) and softmax activation
model.add(Dense(2, activation="softmax"))

```

```

# Print a summary of the model architecture
model.summary()

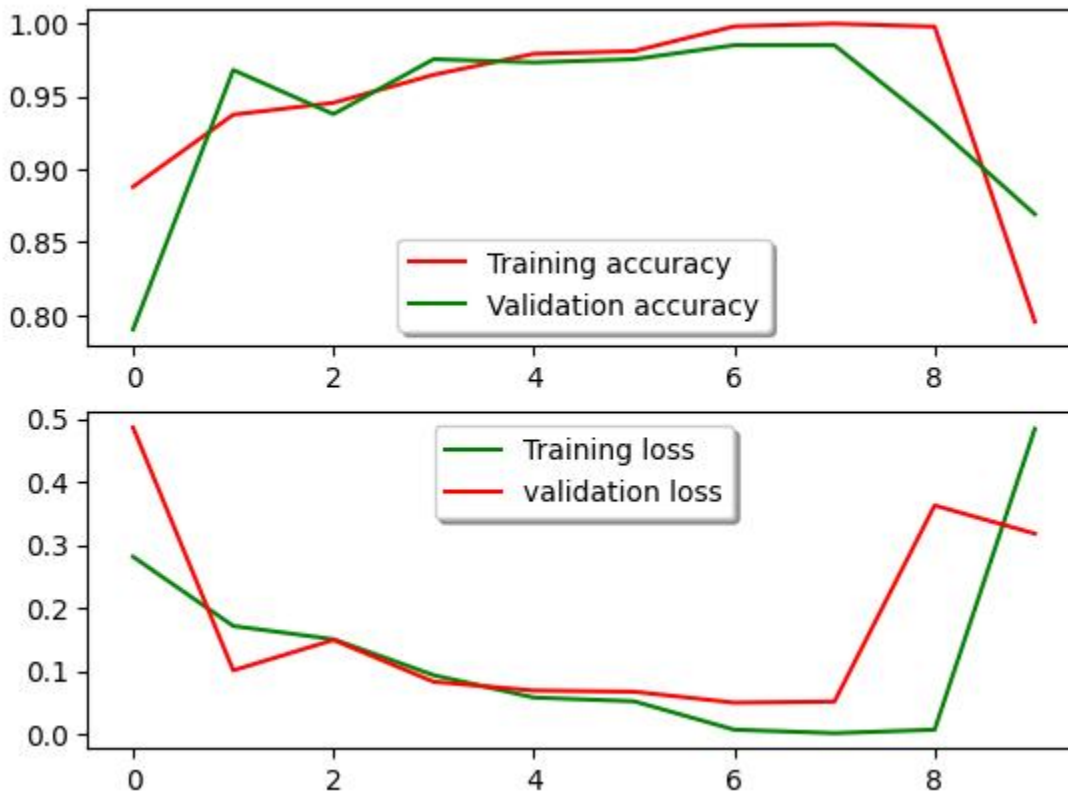
```

```

model.compile(optimizer='Adam',loss="categorical_crossentropy",metrics=["accuracy"])
hist=model.fit(train_generator,epochs=10,validation_data=test_generator,verbose=1)

```

GRAPH



```
fig, ax = plt.subplots(2,1)
ax[0].plot(hist.history['accuracy'], color='r', label="Training accuracy")
ax[0].plot(hist.history['val_accuracy'], color='g',label="Validation accuracy")
legend = ax[0].legend(loc='best', shadow=True)

ax[1].plot(hist.history['loss'], color='g', label="Training loss")
ax[1].plot(hist.history['val_loss'], color='r', label="validation loss",axes =ax[1])
legend = ax[1].legend(loc='best', shadow=True)
model.evaluate(test_generator)
model.save("CNN.h5")
```

MOBILENET

IMPORTING LIBRARIES

```
import pandas as pd
import numpy as np
import os
from keras.preprocessing.image import ImageDataGenerator
import tensorflow as tf
from keras.models import Model, Sequential, load_model
from keras.layers import Dense, Dropout, Flatten, Conv2D, MaxPool2D, BatchNormalization,
GlobalAveragePooling2D,Activation,Input
from tensorflow.keras.optimizers import Adam
```

```
import matplotlib.pyplot as plt
! pip install seaborn
import seaborn as sns
import cv2
```

DATA LOADING

```
data_dir=r"DATA"
cancer=[]
for file in os.listdir(data_dir):
    cancer+=[file]
print(cancer)
print(len(cancer))
```

PREPROCESSING

```
img_height,img_width=224,224
batch_size=20
```

```
train_datagen = ImageDataGenerator(rescale=1./255,validation_split=0.2)
train_generator = train_datagen.flow_from_directory(data_dir,
                                                    target_size=(img_height,img_width),
                                                    batch_size=batch_size,
                                                    class_mode='categorical',
                                                    subset='training')
test_generator = train_datagen.flow_from_directory(data_dir,
                                                    target_size=(img_height,img_width),
                                                    batch_size=batch_size,
                                                    class_mode='categorical',
                                                    subset='validation')
```

APPLYING MOBILENET ALGORITHM:

```
base_model = tf.keras.applications.MobileNet(input_shape=(img_height,img_width, 3), include_top=False,
                                              weights='imagenet')
model1 = Sequential()
model1.add(base_model)
model1.add(GlobalAveragePooling2D())
model1.add(Dense(64, activation='relu'))
model1.add(BatchNormalization())
model1.add(Dropout(0.2))
model1.add(Dense(2, activation='sigmoid'))
model1.summary()
```

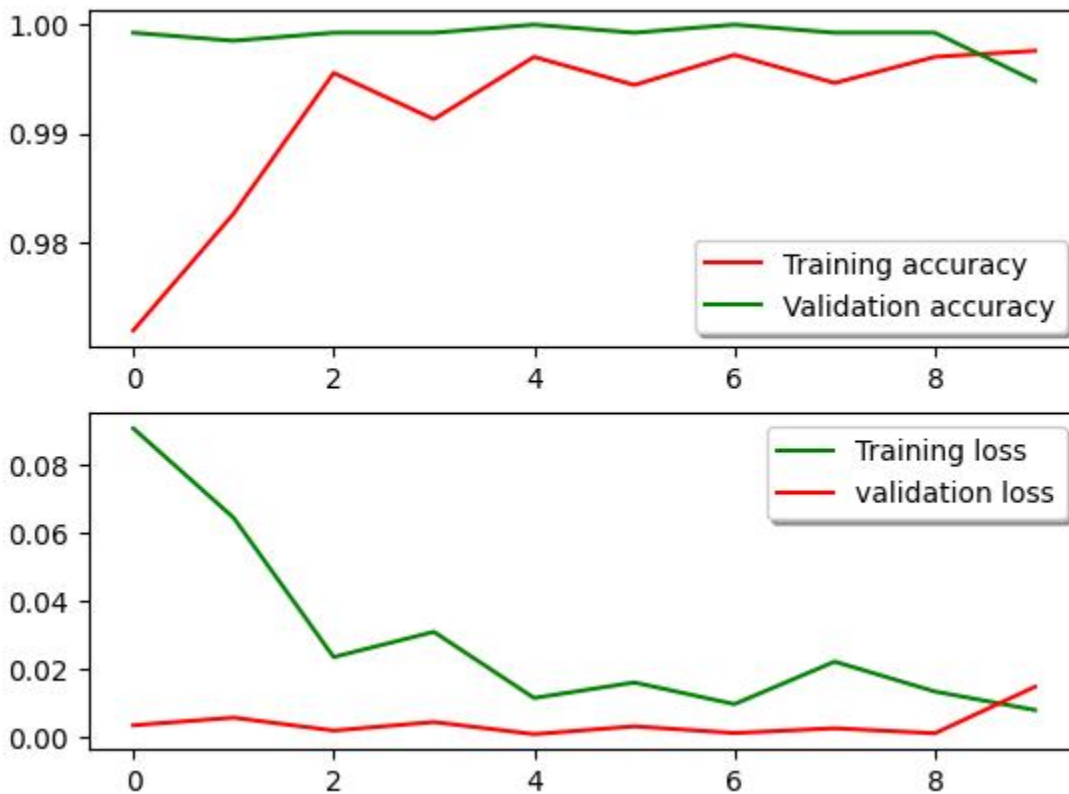
```
model1.compile(optimizer='Adam',loss="categorical_crossentropy",metrics=["accuracy"])
hist2=model1.fit_generator(train_generator,epochs=10,validation_data=test_generator,verbose=1)
```

GRAPH:

```
fig, ax = plt.subplots(2,1)
ax[0].plot(hist2.history['accuracy'], color='r', label="Training accuracy")
ax[0].plot(hist2.history['val_accuracy'], color='g',label="Validation accuracy")
legend = ax[0].legend(loc='best', shadow=True)

ax[1].plot(hist2.history['loss'], color='g', label="Training loss")
ax[1].plot(hist2.history['val_loss'], color='r', label="validation loss",axes =ax[1])
```

```
legend = ax[1].legend(loc='best', shadow=True)
```



```
model1.evaluate(test_generator)
model1.save("mobilenet.h5")
```

About.html

```
<!DOCTYPE html>
<html>

<head>
  <!-- Basic -->
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />
  <!-- Mobile Metas -->
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
  <!-- Site Metas -->
  <meta name="keywords" content="" />
  <meta name="description" content="" />
  <meta name="author" content="" />

  <title>Cancer</title>

  <!-- slider stylesheet -->
  <!-- slider stylesheet -->
  <link rel="stylesheet" type="text/css"
    href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />
```

```
<!-- bootstrap core css -->
<link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />
```

```
<!-- fonts style -->
<link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
<!-- Custom styles for this template -->
<link href="/static/css/style.css" rel="stylesheet" />
<!-- responsive style -->
<link href="/static/css/responsive.css" rel="stylesheet" />
</head>
```

```
<body class="sub_page">
  <div class="hero_area">
    <!-- header section strats -->
    <header class="header_section">
      <div class="container-fluid">
        <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
          <a class="navbar-brand" href="index.html">
            <span>
              Cancer
            </span>
          </a>
          <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
            aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
          </button>
```

```

      <div class="collapse navbar-collapse" id="navbarSupportedContent">
        <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
          <ul class="navbar-nav">
            <li class="nav-item active">
              <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="about"> ABOUT </a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="register">REGISTRATION</a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="login"> LOGIN </a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="userhome">USERHOME</a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="upload">UPLOAD</a>
            </li>
          </ul>
          <div class="user_option">
            <a href="">
              
            </a>
            <form class="form-inline my-2 my-lg-0 ml-0 ml-lg-4 mb-3 mb-lg-0">
              <button class="btn my-2 my-sm-0 nav_search-btn" type="submit"></button>
            </form>
          </div>
        </div>
      </div>
    </header>
  </div>
```



```

        </div>
    </div>
</nav>
</div>
</header>
<!-- end header section -->
</div>

```

```

<!-- who section -->

```

```

<section class="who_section layout_padding">
  <div class="container">
    <div class="row">
      <div class="col-md-5">
        <div class="img-box">
          
        </div>
      </div>
      <div class="col-md-7">
        <div class="detail-box">
          <div class="heading_container">
            <h2>
              COLORECTAL CANCER
            </h2>
          </div>
          <p>
            Colorectal cancer (CRC) is a significant global health concern, ranking among the leading causes of cancer-related morbidity and mortality worldwide. Early detection of CRC is crucial for effective treatment and improved patient outcomes. Conventional screening methods, such as colonoscopy and fecal occult blood tests, have limitations in terms of cost, invasiveness, and patient compliance. In recent years, deep learning algorithms have emerged as a promising tool for enhancing CRC detection and diagnosis through the analysis of medical imaging data.
          </p>

```

```

<!-- end info_section -->

```

```

<!-- footer section -->
<section class="container-fluid footer_section">
  <p>
    &copy; 2023 All Rights Reserved By YOUNG MINDS PRIVATE LIMITED
    <!-- <a href="https://html.design/">Free Html Templates</a> -->
  </p>
</section>
<!-- footer section -->

```

```

<script type="text/javascript" src="/static/js/jquery-3.4.1.min.js"></script>
<script type="text/javascript" src="/static/js/bootstrap.js"></script>
<script type="text/javascript"
  src="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/owl.carousel.min.js">
</script>
<!-- owl carousel script
-->
<script type="text/javascript">
  $(".owl-carousel").owlCarousel({
    loop: true,

```

```

        margin: 0,
        navText: [],
        center: true,
        autoplay: true,
        autoplayHoverPause: true,
        responsive: {
          0: {
            items: 1
          },
          1000: {
            items: 3
          }
        }
      });
    </script>
    <!-- end owl carousel script -->

```

```
</body>
```

```
</html>
```

Index.html

```

<!DOCTYPE html>
<html>

```

```
<head>
```

```

  <!-- Basic -->
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />
  <!-- Mobile Metas -->
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
  <!-- Site Metas -->
  <meta name="keywords" content="" />
  <meta name="description" content="" />
  <meta name="author" content="" />

```

```
<title>Cancer</title>
```

```

  <!-- slider stylesheet -->
  <!-- slider stylesheet -->
  <link rel="stylesheet" type="text/css"
    href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />

```

```

  <!-- bootstrap core css -->
  <link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />

```

```

  <!-- fonts style -->
  <link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
  <!-- Custom styles for this template -->
  <link href="/static/css/style.css" rel="stylesheet" />
  <!-- responsive style -->
  <link href="/static/css/responsive.css" rel="stylesheet" />
</head>

```

```
<body>
```

```

  <div class="hero_area">
    <!-- header section strats -->

```

```

<header class="header_section">
  <div class="container-fluid">
    <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
      <a class="navbar-brand" href="index.html">
        <span>
          Cancer
        </span>
      </a>
      <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
        aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
        <span class="navbar-toggler-icon"></span>
      </button>

```

```

    <div class="collapse navbar-collapse" id="navbarSupportedContent">
      <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
        <ul class="navbar-nav">
          <li class="nav-item active">
            <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="about"> ABOUT </a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="register">REGISTRATION</a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="login"> LOGIN </a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="userhome">USERHOME</a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="upload">UPLOAD</a>
          </li>
        </ul>
        <div class="user_option">
          <a href="">
            
          </a>
          <form class="form-inline my-2 my-lg-0 ml-0 ml-lg-4 mb-3 mb-lg-0">
            <button class="btn my-2 my-sm-0 nav_search-btn" type="submit"></button>
          </form>
        </div>
      </div>
    </div>
  </nav>
</div>
</header>
<!-- end header section -->
<!-- slider section -->
<section class="slider_section position-relative">
  <div class="container">
    <div id="carouselExampleIndicators" class="carousel slide" data-ride="carousel">
      <ol class="carousel-indicators">
        <li data-target="#carouselExampleIndicators" data-slide-to="0" class="active"></li>
        <li data-target="#carouselExampleIndicators" data-slide-to="1"></li>
        <li data-target="#carouselExampleIndicators" data-slide-to="2"></li>
      </ol>

```

```

<div class="carousel-inner">
  <div class="carousel-item active">
    <div class="row">
      <div class="col">
        <div class="detail-box">
          <div>
            <h2>
              welcome to

```

```

            </h2>
            <h1>
              Deep Learning
            </h1>
            <p>
              Detection of colorectal cancer
            </p>

```

```

<!-- end work section -->

```

```

<!-- client section -->

```

```

-->
</script>
<!-- owl carousel script

<script type="text/javascript">
  $(".owl-carousel").owlCarousel({
    loop: true,
    margin: 0,
    navText: [],
    center: true,
    autoplay: true,
    autoplayHoverPause: true,
    responsive: {
      0: {
        items: 1
      },
      1000: {
        items: 3
      }
    }
  });
</script>
<!-- end owl carousel script -->

```

```

</body>

```

```

</html>

```

Login.html

```

<!DOCTYPE html>
<html>
<head>
  <!-- Basic -->
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />

```

```

<!-- Mobile Metas -->
<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
<!-- Site Metas -->
<meta name="keywords" content="" />
<meta name="description" content="" />
<meta name="author" content="" />

```

```

<title>Cancer</title>

```

```

<!-- slider stylesheet -->
<!-- slider stylesheet -->
<link rel="stylesheet" type="text/css"
      href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />

```

```

<!-- bootstrap core css -->
<link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />

```

```

<!-- fonts style -->
<link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
<!-- Custom styles for this template -->
<link href="/static/css/style.css" rel="stylesheet" />
<!-- responsive style -->
<link href="/static/css/responsive.css" rel="stylesheet" />
</head>

```

```

<body>
  <div class="hero_area">
    <!-- header section strats -->
    <header class="header_section">
      <div class="container-fluid">
        <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
          <a class="navbar-brand" href="index.html">
            <span>
              Cancer
            </span>
          </a>
          <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
            aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
          </button>

```

```

        <div class="collapse navbar-collapse" id="navbarSupportedContent">
          <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
            <ul class="navbar-nav">
              <li class="nav-item active">
                <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="about"> ABOUT </a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="register">REGISTRATION</a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="login"> LOGIN </a>
              </li>
              <li class="nav-item">

```



```

    </script>
    <!-- owl carousel script

-->

    <script type="text/javascript">
        $$(".owl-carousel").owlCarousel({
            loop: true,
            margin: 0,
            navText: [],
            center: true,
            autoplay: true,
            autoplayHoverPause: true,
            responsive: {
                0: {
                    items: 1
                },
                1000: {
                    items: 3
                }
            }
        });
    </script>
    <!-- end owl carousel script -->

```

```
</body>
```

```
</html>
```

Register.html

```

<!DOCTYPE html>
<html>

<head>
    <!-- Basic -->
    <meta charset="utf-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <!-- Mobile Metas -->
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
    <!-- Site Metas -->
    <meta name="keywords" content="" />
    <meta name="description" content="" />
    <meta name="author" content="" />

```

```
<title>Cancer</title>
```

```

<!-- slider stylesheet -->
<!-- slider stylesheet -->
<link rel="stylesheet" type="text/css"
      href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />

```

```

<!-- bootstrap core css -->
<link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />

```

```

<!-- fonts style -->
<link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
<!-- Custom styles for this template -->

```

```

<link href="/static/css/style.css" rel="stylesheet" />
<!-- responsive style -->
<link href="/static/css/responsive.css" rel="stylesheet" />
</head>

```

```

<body class="sub_page">
  <div class="hero_area">
    <!-- header section strats -->
    <header class="header_section">
      <div class="container-fluid">
        <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
          <a class="navbar-brand" href="index.html">
            <span>
              Cancer
            </span>
          </a>
          <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
            aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
          </button>

```

```

        <div class="collapse navbar-collapse" id="navbarSupportedContent">
          <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
            <ul class="navbar-nav">
              <li class="nav-item active">
                <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="about"> ABOUT </a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="register">REGISTRATION</a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="login"> LOGIN </a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="userhome">USERHOME</a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="upload">UPLOAD</a>
              </li>
            </ul>
            <div class="user_option">
              <a href="">
                
              </a>
              <form class="form-inline my-2 my-lg-0 ml-0 ml-lg-4 mb-3 mb-lg-0">
                <button class="btn my-2 my-sm-0 nav_search-btn" type="submit"></button>
              </form>
            </div>
          </div>
        </nav>
      </div>
    </header>
    <!-- end header section -->

```



```
</div>
```

```
<!-- who section -->
```

```
<section class="who_section layout_padding">
  <!-- <div class="container">
    <div class="row">
      <div class="col-md-5">
        <div class="img-box">
          
        </div>
      </div>
      <div class="col-md-7">
        <div class="detail-box">
          <div class="heading_container"> -->
<form class="row g-3" action="/register" method="post">
  {% csrf_token %}
  <!-- <center>
    <p style="color: white(0, 0, 0);">{{msg}}</p>
  </center> -->
```

```
<div class="col-md-6">
  <div class="form-outline mb-4">
    <label class="form-label" for="form3Example1cg" style="color: white;">Your
      Name</label>
    <input type="text" name="name" id="form3Example1cg" class="form-control" placeholder="Your Name" />
  </div>
```

```
<div class="form-outline mb-4">
  <label class="form-label" for="form3Example3cg" style="color: white;">Your
    Email</label>
  <input type="email" name="email" id="form3Example3cg" class="form-control" placeholder="Your Email" />
</div>
```

```
<div class="form-outline mb-4">
  <label class="form-label" for="form3Example4cg" style="color: white;">Password</label>
  <input type="password" name="password" id="form3Example4cg" class="form-control" placeholder="Password" />
</div>
</div>
```

```
<div class="col-md-6">
  <div class="form-outline mb-4">
    <label class="form-label" for="form3Example4cdg" style="color: white;">Repeat your password</label>
    <input type="password" name="conpassword" id="form3Example4cdg" class="form-control"
      placeholder="Repeat your Password" />
  </div>
```

```
<div class="form-outline mb-4">
  <label class="form-label" for="form3Example4cdg" style="color: white;">Age</label>
  <input type="number" name="Age" id="form3Example4cdg" class="form-control" placeholder="Age" />
</div>
```

```
<div class="form-outline mb-4">
  <label class="form-label" for="form3Example4cdg" style="color: white;">contact</label>
  <input type="number" name="contact" pattern="[0-9]{10}" id="form3Example4cdg" class="form-control"
    placeholder="contact" required />
```

```
</div>
</div>
```

```
<div class="d-flex justify-content-center">
  <center> <button type="submit" class="btn btn-success">Register</button></center>
</div>
<h1>{{msg}}</h1>
</form>
```

```
<!-- end info_section -->
```

```
<!-- footer_section -->
<section class="container-fluid footer_section">
  <p>
    &copy; 2023 All Rights Reserved By YOUNG MINDS PRIVATE LIMITED
    <!-- <a href="https://html.design/">Free Html Templates</a> -->
  </p>
</section>
<!-- footer_section -->
```

```
<script type="text/javascript" src="/static/js/jquery-3.4.1.min.js"></script>
<script type="text/javascript" src="/static/js/bootstrap.js"></script>
<script type="text/javascript" src="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/owl.carousel.min.js">
</script>
<!-- owl carousel script
-->
<script type="text/javascript">
  $(".owl-carousel").owlCarousel({
    loop: true,
    margin: 0,
    navText: [],
    center: true,
    autoplay: true,
    autoplayHoverPause: true,
    responsive: {
      0: {
        items: 1
      },
      1000: {
        items: 3
      }
    }
  });
</script>
<!-- end owl carousel script -->
```

```
</body>
```

```
</html>
```

Result.html

```
<!DOCTYPE html>
<html>
<head>
```

```

<!-- Basic -->
<meta charset="utf-8" />
<meta http-equiv="X-UA-Compatible" content="IE=edge" />
<!-- Mobile Metas -->
<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
<!-- Site Metas -->
<meta name="keywords" content="" />
<meta name="description" content="" />
<meta name="author" content="" />

```

```

<title>Cancer</title>

```

```

<!-- slider stylesheet -->
<!-- slider stylesheet -->
<link rel="stylesheet" type="text/css"
      href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />

```

```

<!-- bootstrap core css -->
<link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />

```

```

<!-- fonts style -->
<link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
<!-- Custom styles for this template -->
<link href="/static/css/style.css" rel="stylesheet" />
<!-- responsive style -->
<link href="/static/css/responsive.css" rel="stylesheet" />
</head>

```

```

<body>
  <div class="hero_area">
    <!-- header section strats -->
    <header class="header_section">
      <div class="container-fluid">
        <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
          <a class="navbar-brand" href="index.html">
            <span>
              Cancer
            </span>
          </a>
          <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
            aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
          </button>

```

```

        <div class="collapse navbar-collapse" id="navbarSupportedContent">
          <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
            <ul class="navbar-nav">
              <li class="nav-item active">
                <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="about"> ABOUT </a>
              </li>
              <li class="nav-item">
                <a class="nav-link" href="register">REGISTRATION</a>
              </li>
              <li class="nav-item">

```



```

    {% endfor %}
  </ul>
</div>

```

```

<style>
  .button {
    border: none;
    color: black(255, 255, 255);
    padding: 10px 30px;
    text-align: center;
    text-decoration: none;
    display: inline-block;
    font-size: 16px;
    margin: 4px 2px;
    cursor: pointer;
  }

```

```

  .button1 {
    background-color: #4CAF50;
  }

```

```

  /* Green */
  .button2 {
    background-color: #008CBA;
  }

```

```

  /* Blue */
</style>
</head>

```

```

<body>

```

```

  <button class="button button1"><a href="/upload">Predict again</a></button>

```

```

</center>

```

```

<!-- end work section -->

```

```

<!-- client section -->

```

```

</script>
<!-- owl carousel script
-->

<script type="text/javascript">
  $(".owl-carousel").owlCarousel({
    loop: true,
    margin: 0,
    navText: [],
    center: true,
    autoplay: true,
    autoplayHoverPause: true,
    responsive: {
      0: {
        items: 1
      },

```

```

        1000: {
            items: 3
        }
    }
    });
</script>
<!-- end owl carousel script -->

```

```
</body>
```

```
</html>
```

Upload.html

```

<!DOCTYPE html>
<html>

<head>
  <!-- Basic -->
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />
  <!-- Mobile Metas -->
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
  <!-- Site Metas -->
  <meta name="keywords" content="" />
  <meta name="description" content="" />
  <meta name="author" content="" />

```

```
<title>Cancer</title>
```

```

<!-- slider stylesheet -->
<!-- slider stylesheet -->
<link rel="stylesheet" type="text/css"
  href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />

```

```

<!-- bootstrap core css -->
<link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />

```

```

<!-- fonts style -->
<link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
<!-- Custom styles for this template -->
<link href="/static/css/style.css" rel="stylesheet" />
<!-- responsive style -->
<link href="/static/css/responsive.css" rel="stylesheet" />
</head>

```

```

<body>
  <div class="hero_area">
    <!-- header section strats -->
    <header class="header_section">
      <div class="container-fluid">
        <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
          <a class="navbar-brand" href="index.html">
            <span>
              Cancer

```

```

    </span>
  </a>
  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
    aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
    <span class="navbar-toggler-icon"></span>
  </button>

```

```

<div class="collapse navbar-collapse" id="navbarSupportedContent">
  <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
    <ul class="navbar-nav">
      <li class="nav-item active">
        <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="about"> ABOUT </a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="register">REGISTRATION</a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="login"> LOGIN </a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="userhome">USERHOME</a>
      </li>
    </ul>
    <div class="user_option">
      <a href="">
        
      </a>
      <form class="form-inline my-2 my-lg-0 ml-0 ml-lg-4 mb-3 mb-lg-0">
        <button class="btn my-2 my-sm-0 nav_search-btn" type="submit"></button>
      </form>
    </div>
  </div>
</div>
</nav>
</div>
</header>
<!-- end header section -->
<!-- slider section -->
<section class="slider_section position-relative">
  <div class="container">
    <div id="carouselExampleIndicators" class="carousel slide" data-ride="carousel">
      <ol class="carousel-indicators">
        <li data-target="#carouselExampleIndicators" data-slide-to="0" class="active"></li>
        <li data-target="#carouselExampleIndicators" data-slide-to="1"></li>
        <li data-target="#carouselExampleIndicators" data-slide-to="2"></li>
      </ol>
      <div class="carousel-inner">
        <div class="carousel-item active">
          <div class="row">
            <div class="col">
              <div class="detail-box">
                <div>
                  <div class="row">
                    <div class="col-md-12">
                      <div class="titlepage text_align_center">

```

```

        <h2>UPLOAD THE IMAGE</h2>
    </div>
</div>
<div class=" col-md-10 offset-md-1">

```

```

    {% csrf_token %}
    <!-- <center>
        <p style="color: white(0, 0, 0);">{{msg}}</p>
    </center> -->

```

```

<center>
    <form action="{% url 'upload' %}" method="post" enctype="multipart/form-data"
        style="width: 500px;">
        {% csrf_token %}
        <input class="btn btn-primary btn-block btn-large form-control" type="file" name="file"
            accept="image/*" />
        <br>

```

```

        <div class="div">
            <input type="submit" value="submit">
        </div>
        <!-- </div> -->
    </form>
</center>
<!-- end work section -->

```

```

<!-- client section -->

```

```

-->
</script>
<!-- owl carousel script

<script type="text/javascript">
    $(".owl-carousel").owlCarousel({
        loop: true,
        margin: 0,
        navText: [],
        center: true,
        autoplay: true,
        autoplayHoverPause: true,
        responsive: {
            0: {
                items: 1
            },
            1000: {
                items: 3
            }
        }
    });
</script>
<!-- end owl carousel script -->

```

```

</body>

```

```

</html>

```


Userhome.html

```
<!DOCTYPE html>
<html>

<head>
  <!-- Basic -->
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />
  <!-- Mobile Metas -->
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
  <!-- Site Metas -->
  <meta name="keywords" content="" />
  <meta name="description" content="" />
  <meta name="author" content="" />

  <title>Cancer</title>

  <!-- slider stylesheet -->
  <!-- slider stylesheet -->
  <link rel="stylesheet" type="text/css"
    href="https://cdnjs.cloudflare.com/ajax/libs/OwlCarousel2/2.3.4/assets/owl.carousel.min.css" />

  <!-- bootstrap core css -->
  <link rel="stylesheet" type="text/css" href="/static/css/bootstrap.css" />

  <!-- fonts style -->
  <link href="https://fonts.googleapis.com/css?family=Open+Sans:400,700|Poppins:400,700&display=swap" rel="stylesheet">
  <!-- Custom styles for this template -->
  <link href="/static/css/style.css" rel="stylesheet" />
  <!-- responsive style -->
  <link href="/static/css/responsive.css" rel="stylesheet" />
</head>

<body>
  <div class="hero_area">
    <!-- header section strats -->
    <header class="header_section">
      <div class="container-fluid">
        <nav class="navbar navbar-expand-lg custom_nav-container pt-3">
          <a class="navbar-brand" href="index.html">
            <span>
              Cancer
            </span>
          </a>
          <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"
            aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
          </button>

          <div class="collapse navbar-collapse" id="navbarSupportedContent">
            <div class="d-flex ml-auto flex-column flex-lg-row align-items-center">
              <ul class="navbar-nav">
                <li class="nav-item active">
                  <a class="nav-link" href="index">HOME <span class="sr-only">(current)</span></a>
                </li>
                <li class="nav-item">
                  <a class="nav-link" href="about"> ABOUT </a>
                </li>
              </ul>
            </div>
          </div>
        </nav>
      </div>
    </header>
  </div>
</body>
</html>
```

```

        </li>
        <li class="nav-item">
            <a class="nav-link" href="register">REGISTRATION</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="login"> LOGIN </a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="userhome">USERHOME</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="upload">UPLOAD</a>
        </li>
    </ul>
    <div class="user_option">
        <a href="">
            
        </a>
        <form class="form-inline my-2 my-lg-0 ml-0 ml-lg-4 mb-3 mb-lg-0">
            <button class="btn my-2 my-sm-0 nav_search-btn" type="submit"></button>
        </form>
    </div>
</div>
</div>
</div>
</nav>
</div>
</header>
<!-- end header section -->
<!-- slider section -->
<section class="slider_section position-relative">
    <div class="container">
        <div id="carouselExampleIndicators" class="carousel slide" data-ride="carousel">
            <ol class="carousel-indicators">
                <li data-target="#carouselExampleIndicators" data-slide-to="0" class="active"></li>
                <li data-target="#carouselExampleIndicators" data-slide-to="1"></li>
                <li data-target="#carouselExampleIndicators" data-slide-to="2"></li>
            </ol>
            <div class="carousel-inner">
                <div class="carousel-item active">
                    <div class="row">
                        <div class="col">
                            <div class="detail-box">
                                <div>
                                    <h1> <strong>DETECTION COLORECTAL CANCER</strong></h1>
                                    <p>BY USING DEEP LEARNING</p>
                                <!-- end work section -->

```

```

<!-- client section -->

```

```

</script>
<!-- owl carousel script
-->
<script type="text/javascript">
    $($.owl-carousel).owlCarousel({
        loop: true,
        margin: 0,

```

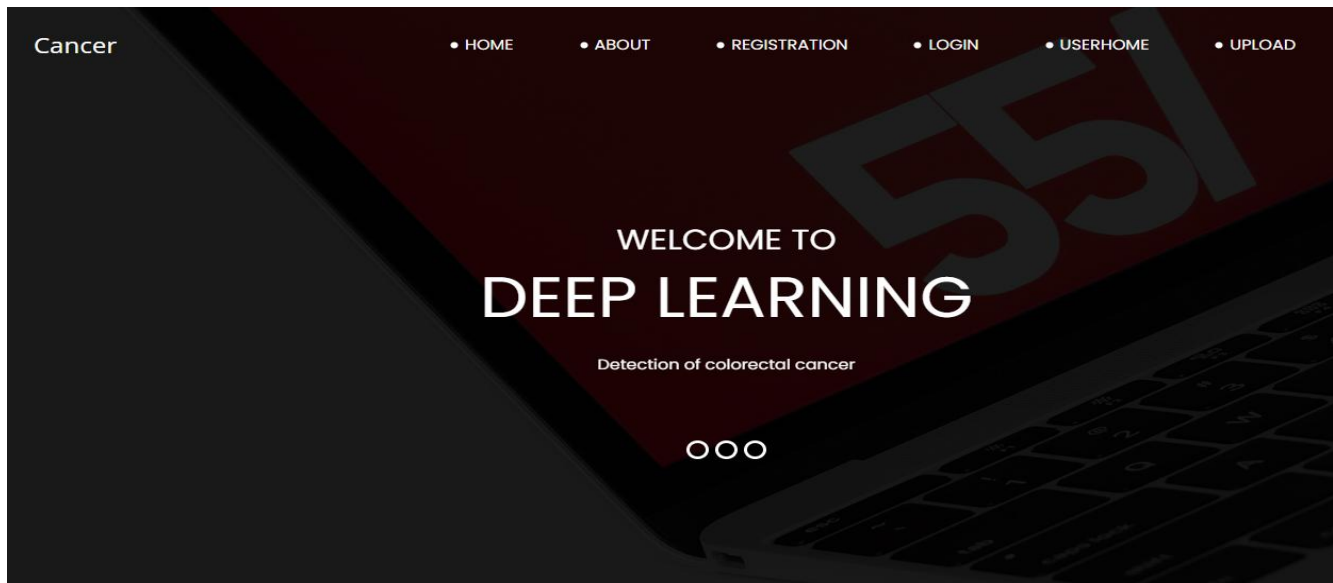
```
        navText: [],
        center: true,
        autoplay: true,
        autoplayHoverPause: true,
        responsive: {
          0: {
            items: 1
          },
          1000: {
            items: 3
          }
        }
      });
    </script>
    <!-- end owl carousel script -->
```

```
</body>
```

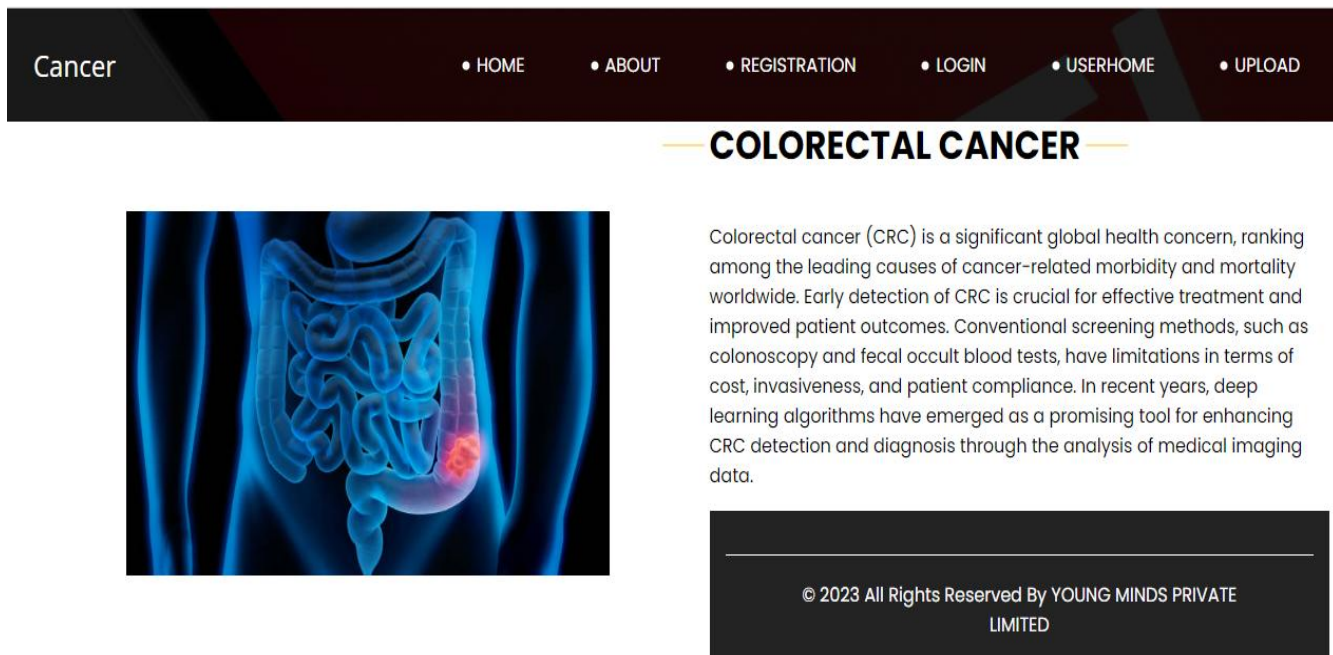
```
</html>
```

B . SCREEN SHOTS

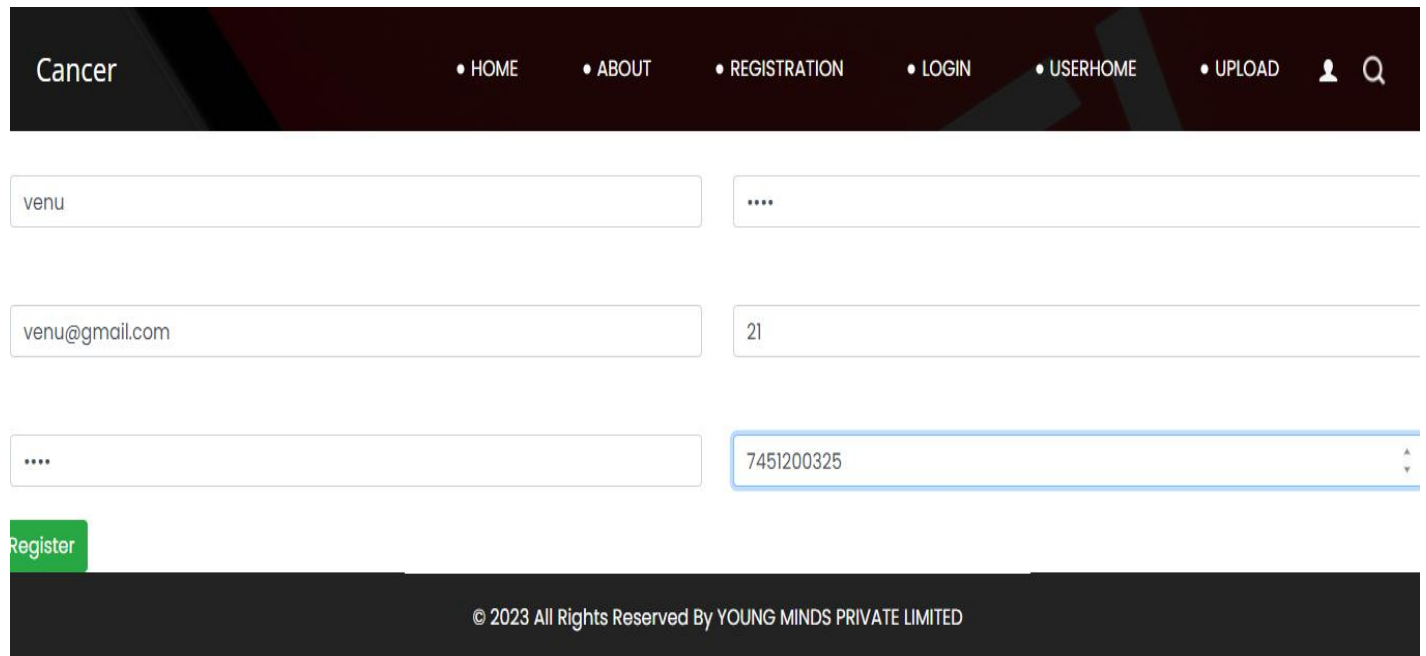
HOME PAGE



ABOUT PAGE



REGISTRATION PAGE:



The registration page features a dark header with the 'Cancer' logo and navigation links: HOME, ABOUT, REGISTRATION, LOGIN, USERHOME, and UPLOAD. Below the header, there are input fields for username (containing 'venu'), password (masked with '****'), email (containing 'venu@gmail.com'), age (containing '21'), another password (masked with '****'), and a CAPTCHA (containing '7451200325'). A green 'Register' button is positioned below the CAPTCHA field. The footer contains the copyright notice: '© 2023 All Rights Reserved By YOUNG MINDS PRIVATE LIMITED'.

Cancer

- HOME
- ABOUT
- REGISTRATION
- LOGIN
- USERHOME
- UPLOAD

venu

venu@gmail.com

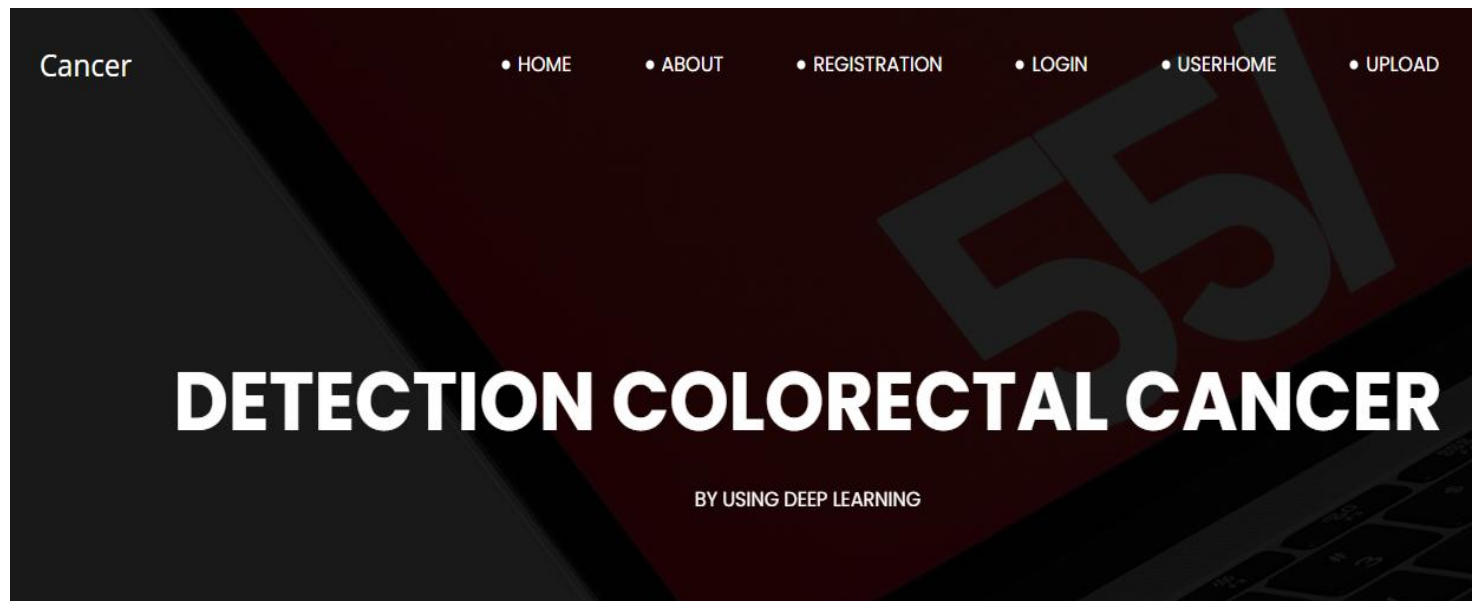
21

7451200325

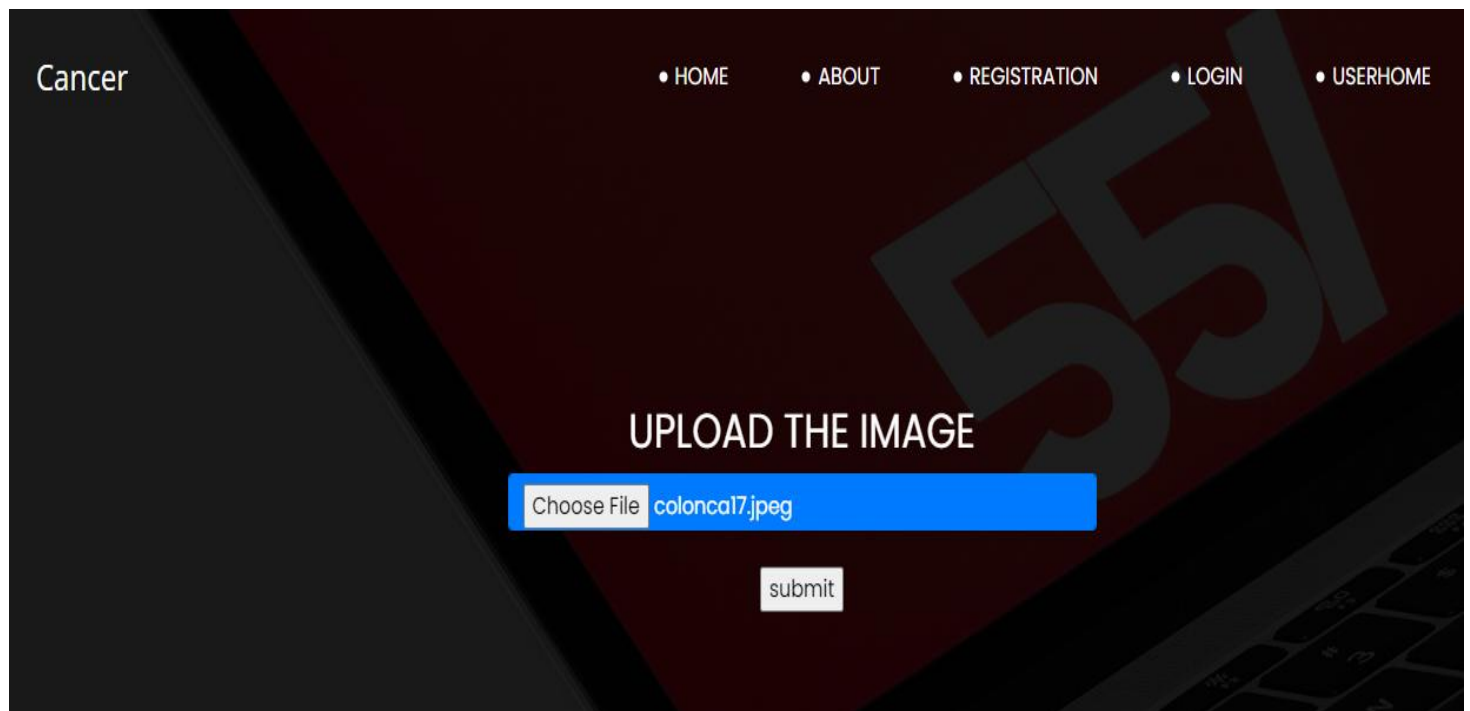
Register

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USER HOME PAGE:



UPLOAD PAGE:



The screenshot shows the 'Upload Page' of a web application. The background is dark with a large, faint '551' watermark. The page has a navigation bar at the top with the following links: HOME, ABOUT, REGISTRATION, LOGIN, and USERHOME. On the left side, there is a 'Cancer' label. The main content area features the text 'UPLOAD THE IMAGE' in white. Below this text is a file upload interface with a blue bar containing the text 'Choose File' and 'coloncal7.jpeg'. A 'submit' button is located below the file bar.

Cancer

• HOME • ABOUT • REGISTRATION • LOGIN • USERHOME

UPLOAD THE IMAGE

Choose File coloncal7.jpeg

submit

RESULT PAGE:



The screenshot shows the 'Result Page' of the web application. The background is dark with a large, faint '551' watermark. The page has a navigation bar at the top with the following links: HOME, ABOUT, REGISTRATION, LOGIN, USERHOME, and UPLOAD. On the left side, there is a 'Cancer' label. The main content area features the text 'RESULT' in white. Below this text is a square image of a histological section of colon adenocarcinoma. Below the image is the text 'COLON_ADENOCARCINOMA' in white. At the bottom, there is a green button with the text 'Predict again'.

Cancer

• HOME • ABOUT • REGISTRATION • LOGIN • USERHOME • UPLOAD

RESULT

COLON_ADENOCARCINOMA

Predict again