

Menstruation Blood Classifier

A Major Project Report

Submitted To



**Chhattisgarh Swami Vivekanand Technical University
Bhilai, India**

For

The Award of Degree

of

Bachelor of Technology

in

Computer Science & Engineering

by

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Session: 2021 – 2022

DECLARATION BY THE CANDIDATE

We solemnly declare that the Major Project (Phase-I) report entitled “**Menstruation Blood Classifier**”, is based on my own work carried out during the course of my study under the supervision of **Mr. Devbrat Sahu**.

We assert that the statements made, and conclusions drawn are an outcome of the project work. We further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/deemed University of India or any other country.

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- ii. Has duly been completed
- iii. Fulfills the partial requirement of the ordinance relating to the B.Tech. degree of the University
- iv. Is up to the desired standard both in respect of contents and language for being referred to the examiner

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ACKNOWLEDGEMENT

It is our privilege to express our sincerest regards to our project guide **Mr. Devbrat Sahu** and project coordinator **Mr. Anand Tamrakar** for their valuable inputs, able guidance, encouragement, whole-hearted cooperation and constructive criticism throughout the duration of our project. We deeply express our sincere thanks to our Head of Department **Dr Prof. J.P Patra** for encouraging and allowing us to present the project on the topic **“Menstruation Blood Classifier”** at our department premises for the partial fulfillment of the requirements leading to the award of B-Tech degree. We are deeply thankful to **AICTE IDEA LAB** for their guidance and progressive support. We take this opportunity to thank all our lecturers who have directly or indirectly helped our project. We pay our respects and love to our parents and all other family members and friends for their love and encouragement throughout our career. Last but not the least we express our thanks to our friends for their cooperation and support.

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ACKNOWLEDGEMENT –AICTE IDEA Lab

We have taken efforts in this project. However, it would not have been possible without the kind support and help of AICTE-IDEA Lab at SSIPMT, Raipur. We would like to extend our sincere thanks to all the gurus, mentors and support staff of Idea lab.

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ABSTRACT

The color of a period blood reveals numerous vital information about the health of the person. While a woman is in her period, the body sheds tissues and blood from the uterus through vagina. The blood discharged from the body can be of different colors and through that color we can identify if the blood discharge is good or bad, and can take necessary palladium before it gets increased to another position. i.e., vaginal infection and others. These different colors are due to different hormonal changes and health conditions, so a proper discovery is demanded. With the use of Artificial Intelligence, we can develop a mobile operation which will take a sample picture of blood as input and as a result it'll classify if the blood is healthy or not, with some health suggestions. Attention to women's and girl's menstrual requirements is critical for global health and gender equivalency. Support for this neglected experience should be empowered. We should dedicate a stage for supporting health and wellness, empowering, educating and serving to further scientific grounded health results and perfecting social participation by breaking taboos and homogenizing periods. The ideal of this classifier is to design a platform which configures women's health via color discovery and analysis of period blood through AI and decry underpinning health conditions or symptoms, if any.

Keywords— Menstruation, Health, Color Detection, Symptoms detection, Color analysis, Artificial Intelligence

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CHAPTER-1

INTRODUCTION

1.1 OVERVIEW

The menstrual cycle is the hormonal process a woman's body goes through each month to prepare for a possible pregnancy. Regular menstrual periods in the years between puberty and menopause are usually a sign that your body is working normally. Irregular or heavy, painful periods are not normal. Many women also get premenstrual syndrome (PMS) symptoms. You can take steps at home and talk to your doctor or nurse about ways to treat your period problems and PMS. Your menstrual cycle can tell you a lot about your health. Regular periods between puberty and menopause mean your body is working normally. Period problems like irregular or painful periods may be a sign of a serious health problem. Period problems may also lead to other health problems, including problems getting pregnant. As your body transitions to older age and menopause, your changing hormone levels may increase or decrease your risk for chronic diseases. The impact of menstruation on women's health manifests itself on different levels. The sociocultural dimension shows the influence of societal and cultural norms, which regulate the way of dealing with menstruating women. These rules are at first glance in most cultures characterized by rather expulsion, rejection and submission of women. At a closer look many tradition however reflect the fascination and the power which is associated with the "blood of women", which means that throughout history menstruation is conceived in an ambivalent manner. This ambivalence is still present in the subjective experience of modern women, who experience the biological process of menstruation but finally attribute emotional and cognitive meaning to it. This means that women finally decide when menstruation becomes a "disease" for them. Many empirical studies show that although a majority of women declare menstruation as something negative and disturbing, only a much smaller percentage would want to get rid of it, because menstruation seems to be associated with feelings of connectedness with nature and with other women. The biomedical view on menstruation is historically new and quite different: uterine bleeding can either be a sign of disease (uterus, ovaries) or it can lead to anemia, pain, anxiety, frustration in women consulting. Menstrual disorders are in fact one of the most frequent reasons for consultation. Modern medicine has developed a large range of interventions which modify or abolish menstruation. From a medical standpoint menstruation is not necessary and may be obsolete. The transition from "healthy menstruation" to "menstruation related diminution of quality of life", to "Menstrual Disease" is continuous and has to be elaborated in the physician patient interaction, the patient being expert for her values, aims and health objectives and the physician being the expert for knowledge and information. The patient has to use this to come to a personal and individual solution of her menstruation problem.

1.2 APPLICATION

The color of a period blood reveals many vital information about the health of the person. While a female is in her menstruation, body sheds tissue and blood from uterus through vagina. The blood, tissue discharged from the body are of different colors and through that color we can identify if the blood discharge is good or bad, and can take necessary precaution before it gets increased to another level.i.e. vaginal infection and others. These different colors are due to different hormonal changes and health conditions, so a proper detection is needed. With the use of Artificial Intelligence, we will develop a mobile application which will take pictures of blood from the user and as a result it will classify if the blood is good or bad, with some health suggestions.

CHAPTER-2

LITERATURE REVIEW

2.1 LITERATURE SURVEY

Throughout history, people have revealed, designed, and spread information using technology and information in different forms on a diurnal basis. Information about visual design plays a greater role in the development status of the design the more common it is. A visual communication design is basically influenced by color and image. There is no doubt that these two attributes contribute in achieving public attention. This composition is grounded on AI technology which further aids in the development of color detection and analysis operation in design for visual media and communication. Its aim is to propose design for visual media and communication in such a way that it breaks through the conventional mechanism of color detection and image processing, so that this field of color analysis gains new bars in research and exploration. This composition details the origins, key components, and influencing variables of visual communication design as well as how AI technology works. It also develops a paradigm for visual media design that is based on AI automations.

A woman's menstrual cycle is the hormonal process she goes through each month to prepare for a possible pregnancy. Regular menstrual ages in the times between puberty and menopause are generally a sign that your body is working typically. Irregular or heavy, painful ages aren't normal. Numerous women also get premenstrual pattern (PMS) symptoms. Your menstrual cycle can tell you a lot about your health. Period problems like irregular or painful ages may be a sign of a serious health problem. The impact of period on women's health manifests itself in different situations. The sociocultural dimension shows the influence of societal norms regulating the way of dealing with menstruating women. Menstrual diseases are in fact one of the most frequent reasons for discussion. Menstrual Disease needs to be elaborated in the physician-patient interaction. The patient has to use this platform to come to a personal and individual solution of her menstruation problem.

2.2 MENSTRUATION BLOOD CLASSIFIER

Attention to women's and girl's menstrual needs is critical for global health and gender equality. Support for this neglected experience should be empowered. We stand for supporting- physical health by spreading awareness, mental health by giving a means to avoid distress, empowering education and availing more scientific based health solutions and improving social participation by breaking taboos and normalizing menstruation.

Our objective is to design a platform which configures women's health via color analysis of menstruation blood through AI and detect underlying health conditions or symptoms, if any.

2.3 SYSTEM REQUIREMENT ANALYSIS

Project requirement on developer's end:-

- Hardware Required
CPU- Intel Core i3 10th Generation, RAM- 8 GB, Operating System- Windows 10
- Software Required
Python Version: 3.6 X, Visual Studio Code, Adobe XD.

Project requirement on user's end.

- Hardware Required

Display Resolution- 480x800 px or above, diagonal display area 4 inches or above, must be a touch display, Wi-fi or Mobile cellular data capable

- Software Required

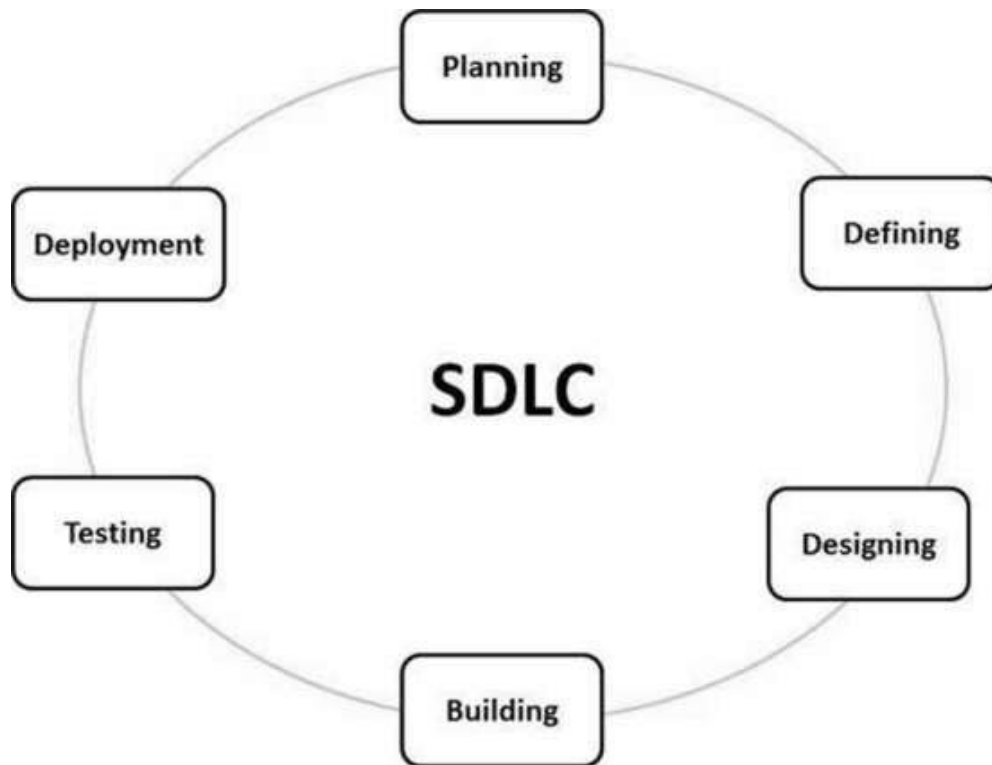
OS- Android devices with Android 7+, Rear facing camera

2.4 TYPE OF SDLC MODEL

Software Development life cycle (SDLC) is a spiritual model used in project management that defines the stages included in an information system development project, from an initial feasibility study to the maintenance of the completed application.

SDLC is a process followed for a software project, within a software organization. It consists of a detailed plan describing how to develop, maintain, replace and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process.

The following figure is a graphical representation of the various stages of a typical SDLC.



2.1 SDLC Cycle

A typical Software Development Life Cycle consists of the following stages –

Stage 1: Planning and Requirement Analysis

Requirement analysis is the most important and fundamental stage in SDLC. It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts in the industry. This information is then used to plan the basic project approach and to conduct product feasibility study in the economical, operational and technical areas.

Planning for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage. The outcome of the technical feasibility study is to define the various technical approaches that can be followed to implement the project successfully with minimum risks.

Stage 2: Defining Requirements

Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts. This is done through an **SRS (Software Requirement Specification)** document which consists of all the product requirements to be designed and developed during the project life cycle.

Stage 3: Designing the Product Architecture

SRS is the reference for product architects to come out with the best architecture for the product to be developed. Based on the requirements specified in SRS, usually more than one design approach for the product architecture is proposed and documented in a DDS - Design Document Specification.

This DDS is reviewed by all the important stakeholders and based on various parameters as risk assessment, product robustness, design modularity, budget and time constraints, the best design approach is selected for the product.

A design approach clearly defines all the architectural modules of the product along with its communication and data flow representation with the external and third party modules (if any). The internal design of all the modules of the proposed architecture should be clearly defined with the minutest of the details in DDS.

Stage 4: Building or Developing the Product

In this stage of SDLC the actual development starts and the product is built. The programming code is generated as per DDS during this stage. If the design is performed in a detailed and organized manner, code generation can be accomplished without much hassle.

Developers must follow the coding guidelines defined by their organization and programming tools like compilers, interpreters, debuggers, etc. are used to generate the code. Different high-level programming languages such as C, C++, Pascal, Java and PHP are used for coding. The programming language is chosen with respect to the type of software being developed.

Stage 5: Testing the Product

This stage is usually a subset of all the stages as in the modern SDLC models, the testing activities are mostly involved in all the stages of SDLC. However, this stage refers to the testing only stage of the product where product defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS.

Stage 6: Deployment in the Market and Maintenance

Once the product is tested and ready to be deployed it is released formally in the appropriate market. Sometimes product deployment happens in stages as per the business strategy of that organization. The product may first be released in a limited segment and tested in the real business environment (UAT- User acceptance testing).

Then based on the feedback, the product may be released as it is or with suggested enhancements in the targeting market segment. After the product is released in the market, its maintenance is done for the existing customer base.

There are different software development life cycle models specified and designed, which are followed during the software development phase. These models are also called "**Software Development Process Models**." Each process model follows a series of phases unique to its type to ensure success in the step of software development.

2.5 SDLC Models

There are various software development life cycle models defined and designed which are followed during the software development process. These models are also referred as Software Development Process Models". Each process model follows a Series of steps unique to its type to ensure success in the process of software development.

Following are the most important and popular SDLC models followed in the industry –

- Waterfall Model
- Iterative Model
- Spiral Model
- V-Model
- Big Bang Model

Other related methodologies are Agile Model, RAD Model, Rapid Application Development and Prototyping Models.

SDLC- Waterfall Model

Waterfall approach was first SDLC Model to be used widely in Software Engineering to ensure success of the project. In "The Waterfall" approach, the whole process of software development is divided into separate phases. In this Waterfall model, typically, the outcome of one phase acts as the input for the next phase sequentially.

Waterfall Model - Application

Every software developed is different and requires a suitable SDLC approach to be followed based on the internal and external factors. Some situations where the use of Waterfall model is most appropriate are –

- Requirements are very well documented, clear and fixed.
- Product definition is stable.
- Technology is understood and is not dynamic.

- There are no ambiguous requirements.
- Ample resources with required expertise are available to support the product.
- The project is short.

Waterfall Model - Advantages

The advantages of waterfall development are that it allows for departmentalization and control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process model phases one by one.

Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order.

Some of the major advantages of the Waterfall Model are as follows –

- Simple and easy to understand and use
- Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.
- Phases are processed and completed one at a time.
- Works well for smaller projects where requirements are very well understood.
- Clearly defined stages.
- Well understood milestones.
- Easy to arrange tasks.
- Process and results are well documented.

Waterfall Model - Disadvantages

The disadvantage of waterfall development is that it does not allow much reflection or revision. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-documented or thought upon in the concept stage.

The major disadvantages of the Waterfall Model are as follows –

- No working software is produced until late during the life cycle.
- High amounts of risk and uncertainty.
- Not a good model for complex and object-oriented projects.
- Poor model for long and ongoing projects.
- Not suitable for the projects where requirements are at a moderate to high risk of changing. So, risk and uncertainty is high with this process model.
- It is difficult to measure progress within stages.
- Cannot accommodate changing requirements.
- Adjusting scope during the life cycle can end a project.
- Integration is done as a "big-bang" at the very end, which doesn't allow identifying any technological or business bottleneck or challenges early.

SDLC - Iterative Model

In the Iterative model, iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed.

An iterative life cycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which is then reviewed to identify further requirements. This process is then repeated, producing a new version of the software at the end of each iteration of the model.

Iterative Model - Application

Like other SDLC models, Iterative and incremental development has some specific applications in the software industry. This model is most often used in the following scenarios –

- Requirements of the complete system are clearly defined and understood.
- Major requirements must be defined; however, some functionalities or requested enhancements may evolve with time.
- There is a time to the market constraint.
- A new technology is being used and is being learnt by the development team while working on the project.
- Resources with needed skill sets are not available and are planned to be used on contract basis for specific iterations.
- There are some high-risk features and goals which may change in the future.

Iterative Model – Advantages

- Some working functionality can be developed quickly and early in the life cycle.
- Results are obtained early and periodically.
- Parallel development can be planned.
- Progress can be measured.
- Less costly to change the scope/requirements.
- Testing and debugging during smaller iteration is easy.
- Risks are identified and resolved during iteration; and each iteration is an easily managed milestone.

Iterative Model – Disadvantages

- More resources may be required.
- Although cost of change is lesser, but it is not very suitable for changing requirements.
- More management attention is required.
- System architecture or design issues may arise because not all requirements are gathered in the beginning of the entire life cycle.
- Defining increments may require definition of the complete system.
- Not suitable for smaller projects.
- Management complexity is more.

Spiral Model - Design

The spiral model has four phases. A software project repeatedly passes through these phases in iterations called Spirals.

Construct or Build

The Construct phase refers to production of the actual software product at every spiral. In the baseline spiral, when the product is just thought of and the design is being developed a POC (Proof of Concept) is developed in this phase to get customer feedback.

Then in the subsequent spirals with higher clarity on requirements and design details a working model of the software called build is produced with a version number. These builds are sent to the customer for feedback.

Spiral Model Application

The Spiral Model is widely used in the software industry as it is in sync with the natural development process of any product, i.e. learning with maturity which involves minimum risk for the customer as well as the development firms.

The following pointers explain the typical uses of a Spiral Model –

- When there is a budget constraint and risk evaluation is important.
- For medium to high-risk projects.
- Long-term project commitment because of potential changes to economic priorities as the requirements change with time.
- Customer is not sure of their requirements which is usually the case.
- Requirements are complex and need evaluation to get clarity.

Spiral Model - Advantages

- Changing requirements can be accommodated.
- Allows extensive use of prototypes.
- Requirements can be captured more accurately.
- Users see the system early.
- Development can be divided into smaller parts and the risky parts can be developed earlier which helps in better risk management.

Spiral Model - Disadvantages

- Management is more complex.
- End of the project may not be known early.
- Not suitable for small or low risk projects and could be expensive for small projects.
- Process is complex
- Spiral may go on indefinitely.

SDLC - V-Model

The V-model is an SDLC model where execution of processes happens in a sequential manner in a V-shape. It is also known as **Verification and Validation model**.

The V-Model is an extension of the waterfall model and is based on the association of a testing phase for each corresponding development stage. This means that for every single phase in the development cycle, there is a directly associated testing phase. This is a highly-disciplined model and the next phase starts only after completion of the previous phase.

V- Model — Application

V- Model application is almost the same as the waterfall model, as both the models are of sequential type. Requirements have to be very clear before the project starts, because it is usually expensive to go back and make changes. This model is used in the medical development field, as it is strictly a disciplined domain.

The following pointers are some of the most suitable scenarios to use the V-Model application.

- Requirements are well defined, clearly documented and fixed.
- Product definition is stable.
- Technology is not dynamic and is well understood by the project team.
- There are no ambiguous or undefined requirements.
- The project is short.

V- Model — Advantages

- This is a highly-disciplined model and Phases are completed one at a time.
- Works well for smaller projects where requirements are very well understood.
- Simple and easy to understand and use.
- Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.

V- Model — Disadvantages

- High risk and uncertainty.
- Not a good model for complex and object-oriented projects.
- Poor model for long and ongoing projects.
- Not suitable for the projects where requirements are at a moderate to high risk of changing.
- Once an application is in the testing stage, it is difficult to go back and change a functionality.
- No working software is produced until late during the life cycle.

INCREMENTAL MODEL

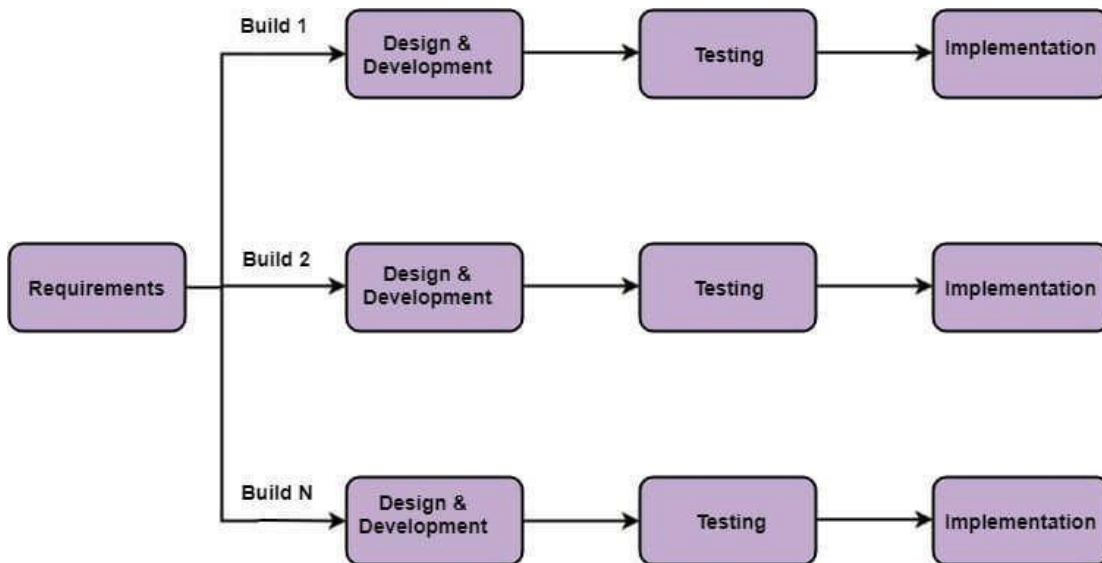


Fig 2.2 SDLC Incremental Model

It is a series of waterfall cycles. The requirements are divided into groups at the start of the project. The SDLC process is repeated, with each release adding more functionality until all requirements are met. Modification to the incremental model allows development cycles to overlap. After that subsequent cycle may begin before the previous cycle is complete.

2.5 DATA FLOW DIAGRAM

The DFD is a network representation of the system. They are excellent mechanisms for communicating with customers during requirement analysis. A DFD, also known as bubble chart, which clarifies system requirements identifying major transformations. It is the starting point in the system design and decomposes the requirement specification down to the lowest level. A DFD represents data flow between individual statements and blocks of statement in a routine, data flow between sequential routines, data flow between concurrent processes or a distributed computing system where each node represents a geographically remote processing unit. DFD are quite valuable for establishing naming conventions and names of systems, files, and data links. It describes what flows rather than how they are proposed, so it doesn't depend on hardware, software and data structures or file organizations.

NOTATIONS USED:

The logic data flow diagram can be drawn using four simple notations i.e., special symbols or icons and the notations that associate them with a specific system. The notations are specified below:

ELEMENT REFERENCES SYMBOLS:



Data flow process



Source or Sink



Process



Data storage

DESCRIPTION:

Process: Describes how input data is converted into output data.

Data Store: Describes the repositories of data in system.

Data Flow: Describes the data flowing between process, stores and external entities.

Sources: An external entity causing the origin of data.

Sink: An external entity, which consumes the data.

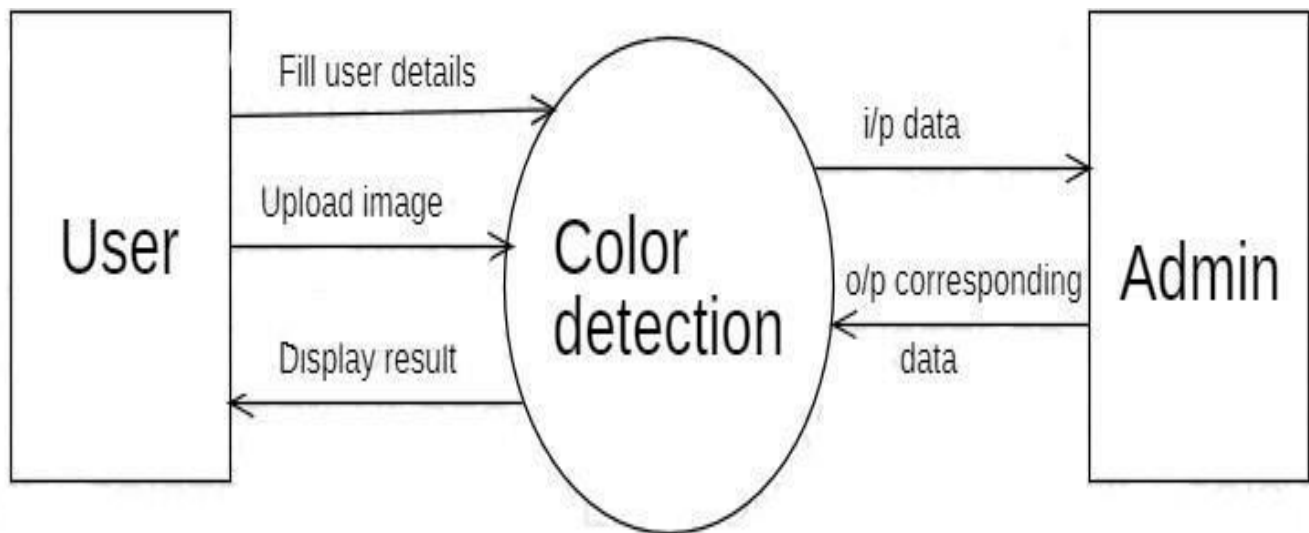


Fig 2.3 DFD Level-0

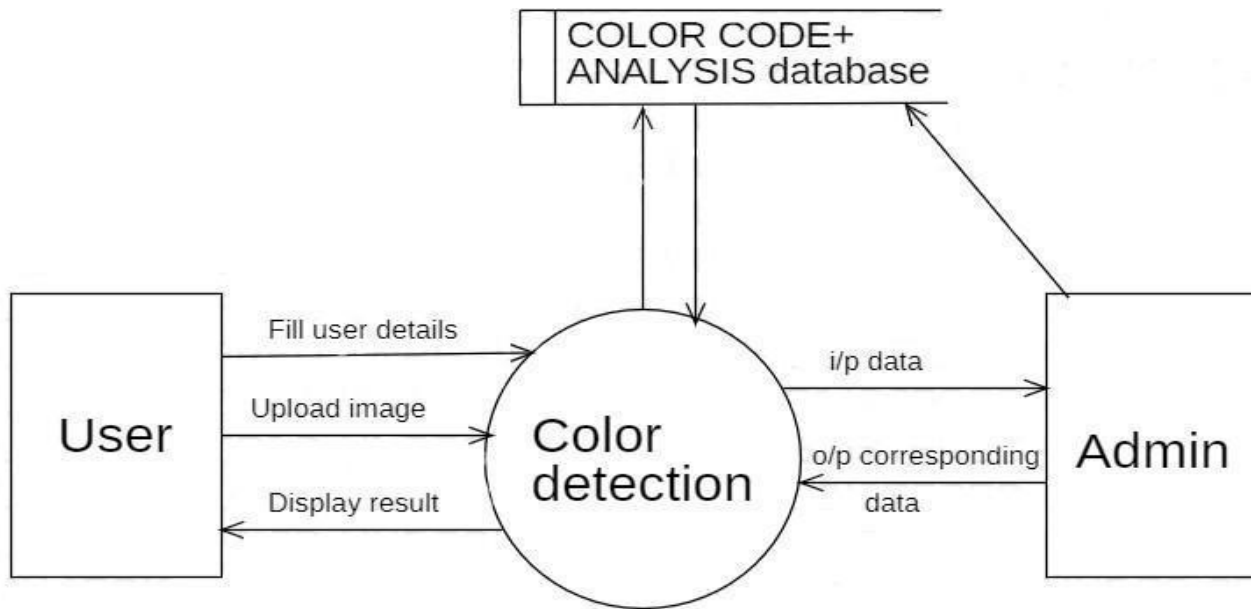


Fig 2.4 DFD Level-1

CHAPTER-3

METHODOLOGY

3.1 DEFINITION

AI stands for artificial intelligence; Its aspects include proposals, techniques, technologies, and systems utilized for incitement and exploration., horizons of which are constantly expanding. The places of AI technology in design for visual media and communication are that AI technology combined with simulation tests can provide a better bequest for design for visual media and communication, giving users a more flawless experience, and assisting creators in creating more accessible color schemes. The use of artificial intelligence in visual media communication design allows for a better perception of images. At the same time, the technology for image identification and man-made intelligence can prove to be very useful for the conception of design for visual media and communication to be more comprehensive. The followership is also more suitable to admit information and understand the meaning. The relationship between proposition and practice is the relationship between artificial intelligence and information processing. From a thinking point of view, artificial intelligence isn't limited to reasonable thinking. The study of image thinking and stimulating thinking is essential for the development of artificial intelligence.

3.2 DATABASE

Red, green, and blue are the main colors that make up all other colors. Each color value in a computer is defined within the range of 0 to 255. There are $256 \times 256 \times 256 = 16,581,375$ different ways to define a color. A color can be represented in roughly 16.5 million different ways. We must translate the values of each color to their corresponding names in our collection.

3.3 EXPERIMENTAL SETUP

It's essential to analyze the whole system before developing it. Starting with drawing a use case illustration and also the system's functionalities is a fundamental necessity. And formerly if every single functionality is linked, they're also converted into the use cases to be used in the use case illustration. Our next step will be to matrix the actors who will interact with the system. System actors are the people or things who invoke the functionality of the system. It may be a system or a private reality, similar in that it requires a reality to be material to the functionalities of the system to which it's going to interact. A relationship between actors and use cases is audited based on the actors and use cases enlisted. This number indicates how many times an actor communicates with the system. There is a possibility of an actor interacting with a use case or system more than once during a particular interval. The color detection algorithm follows the steps, directed as below:

Step 1: Procure file that contains our dataset. To create an argument parser, we're drawing the raggares package. The panda's library is really helpful when we need to conduct color related functions on data. For convenient searching, each column has a color code with a name assigned to it.

Step 2: The input image will be displayed in a window that we generate. Additionally, a message function is set to be called whenever a mouse event occurs.

Step 3: Establish a function that determines the pixel's rough values. The event name (x, y) equals the mouse position in the function parameters. When the event is double-clicked, this

algorithm creates and modifies the r, g, and b values as well as the mouse's x and y coordinates.

Step 4: Set up the getColorName function to return the color based on the Pixel value. To determine the color name, we compute a distance(d) that indicates how near we are to the color and select the option with the smallest distance. The formula used to calculate our distance is

Distance = pixel_value (Red – ithRedColor) (Green – ithGreenColor) (Blue – ithBlueColor)

The color name and pixel values on the window are updated when a user provides image input.

3.4 WORKFLOW DIAGRAM

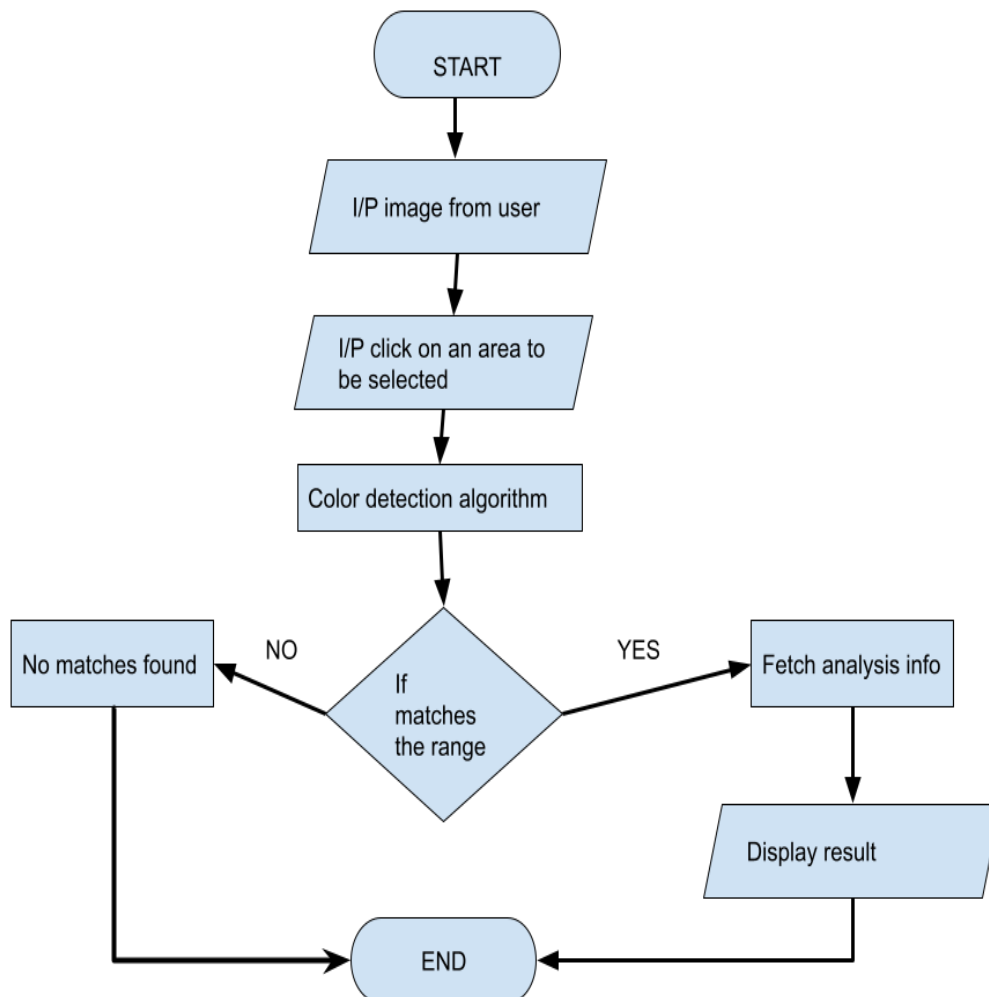


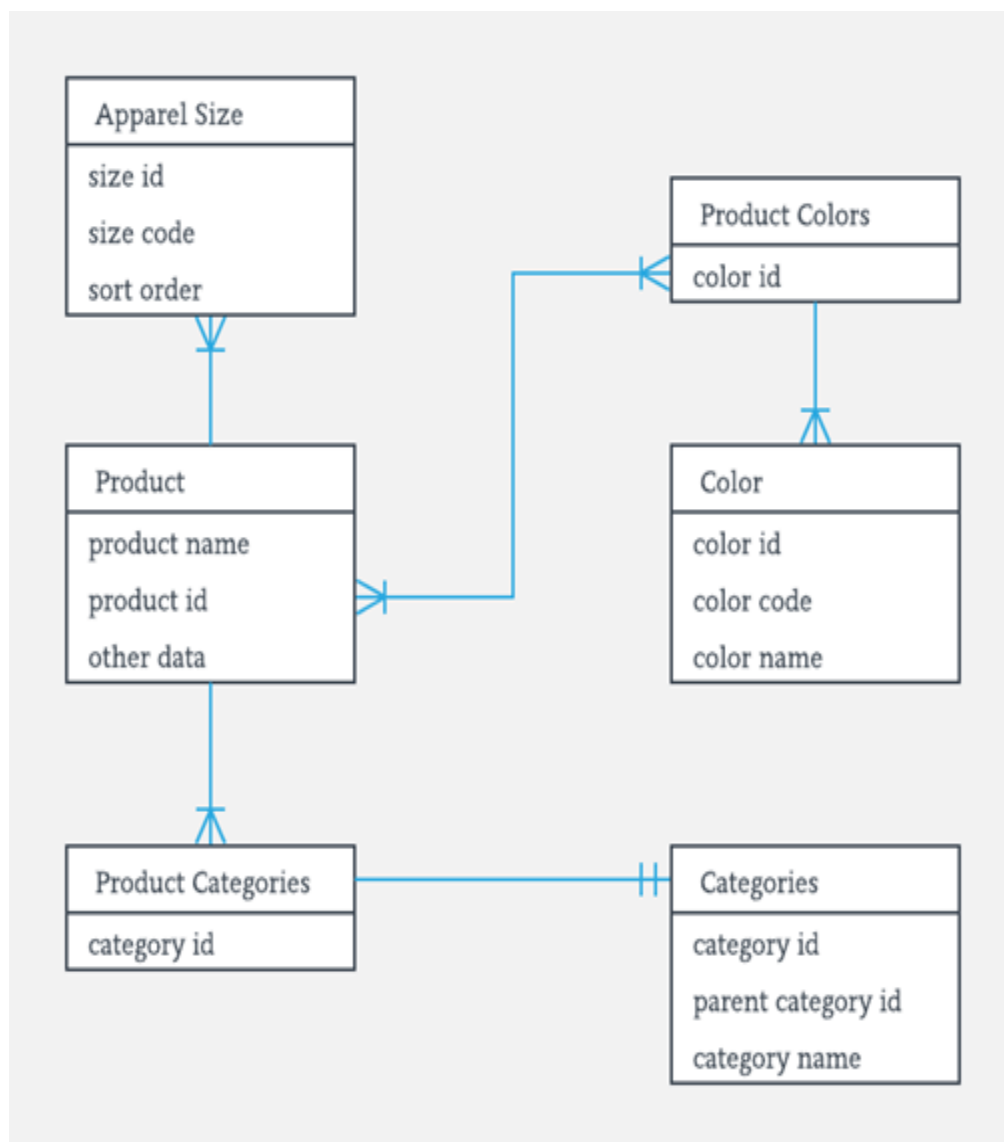
Fig 3.1: Workflow Diagram

3.5 E-R DIAGRAM

ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.

ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships.

At first look, an ER diagram looks very similar to the flowchart. However, ER Diagram includes many specialized symbols, and its meanings make this model unique. The purpose of ER Diagram is to represent the entity framework infrastructure.



3.2 Entity Relationship Diagram Example

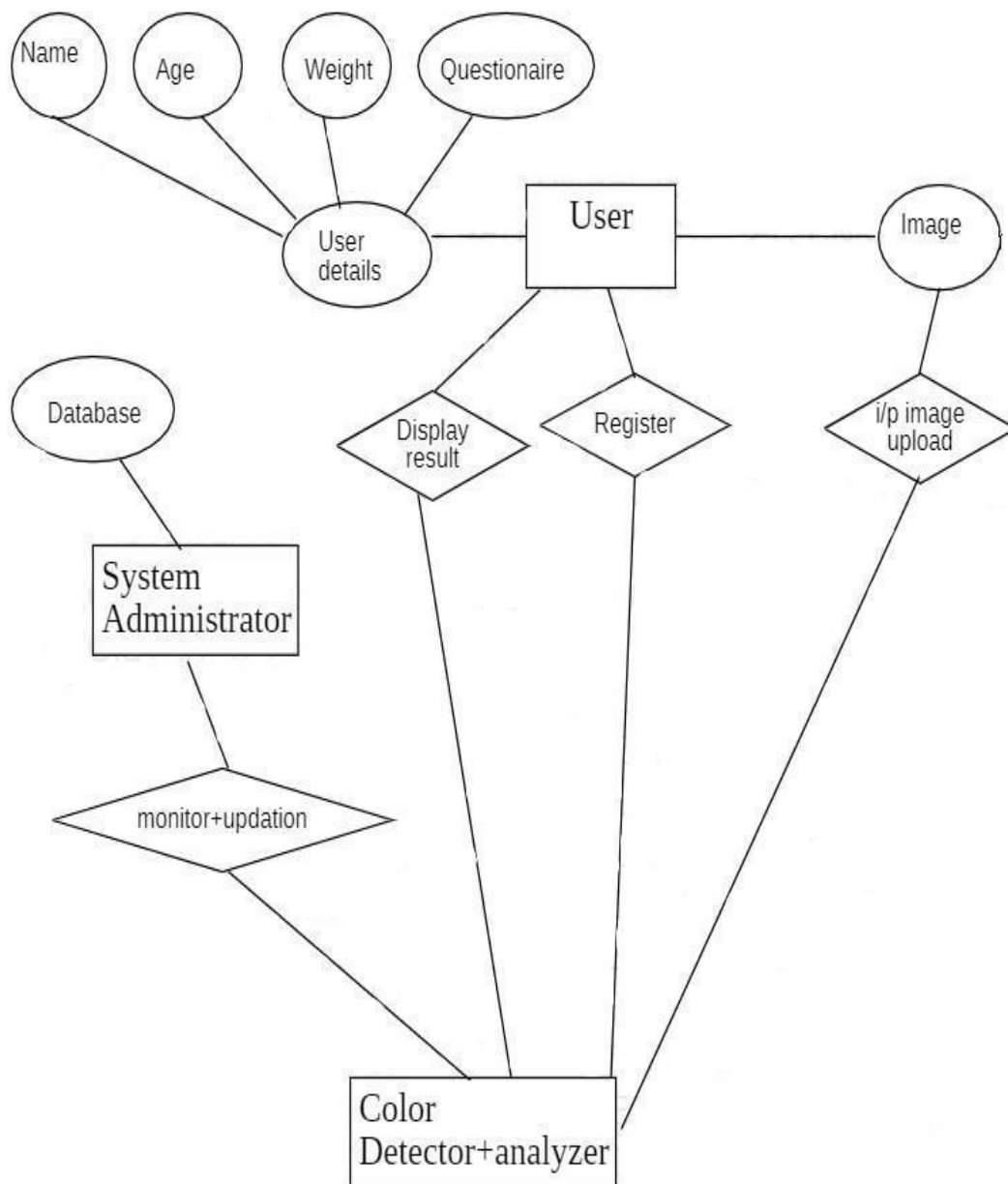


Fig 3.3 E-R Diagram

3.6 USE CASE DIAGRAM

A use case diagram is used to represent the dynamic behavior of a system. It encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system/subsystem of an application. It depicts the high-level functionality of a system and also tells how the user handles a system. Once both the actors and use cases are enlisted, the relation between the actor and use case/ system is inspected. It identifies the no of times an actor communicates with the system. Basically, an actor can interact multiple times with a use case or system at a particular instance of time.

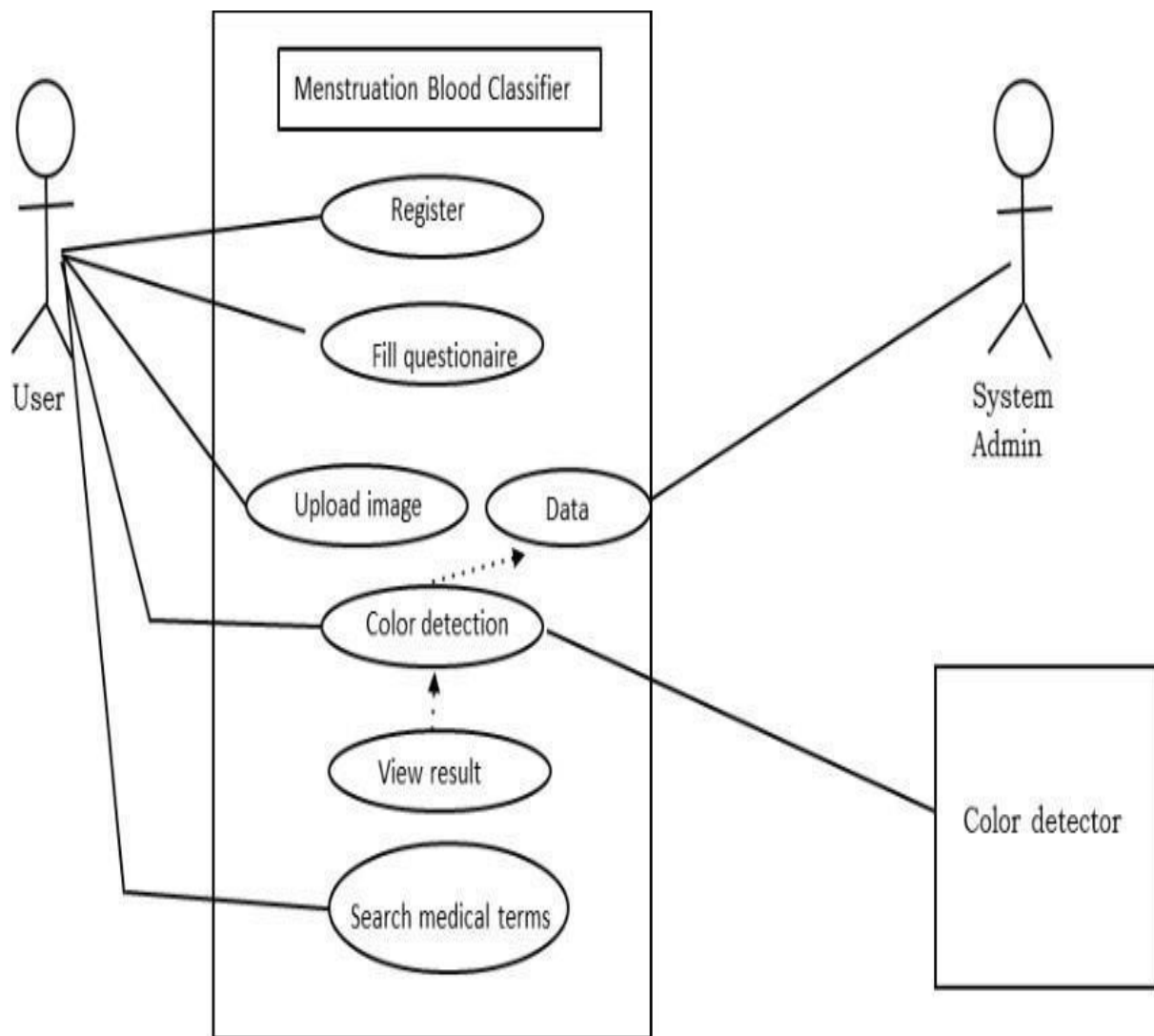


Fig 3.4 Use Case Diagram

3.7 ACTIVITY DIAGRAM

The Activity diagram represents the UML, which is used to model the workflow of a system. The Activity diagram shows the message flow from one activity to another. The basic purpose of activity diagrams is similar to the other four diagrams. It captures the dynamic behavior of the system. Other four diagrams are used to show the message flow from one object to another but the activity diagram is used to show the message flow from one activity to another.

Activity is a particular operation of the system. Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part.

It does not show any message flow from one activity to another. Activity diagram is sometimes considered as the flowchart. Although the diagrams look like a flowchart, they are not. It shows different flows such as parallel, branched, concurrent, and single.

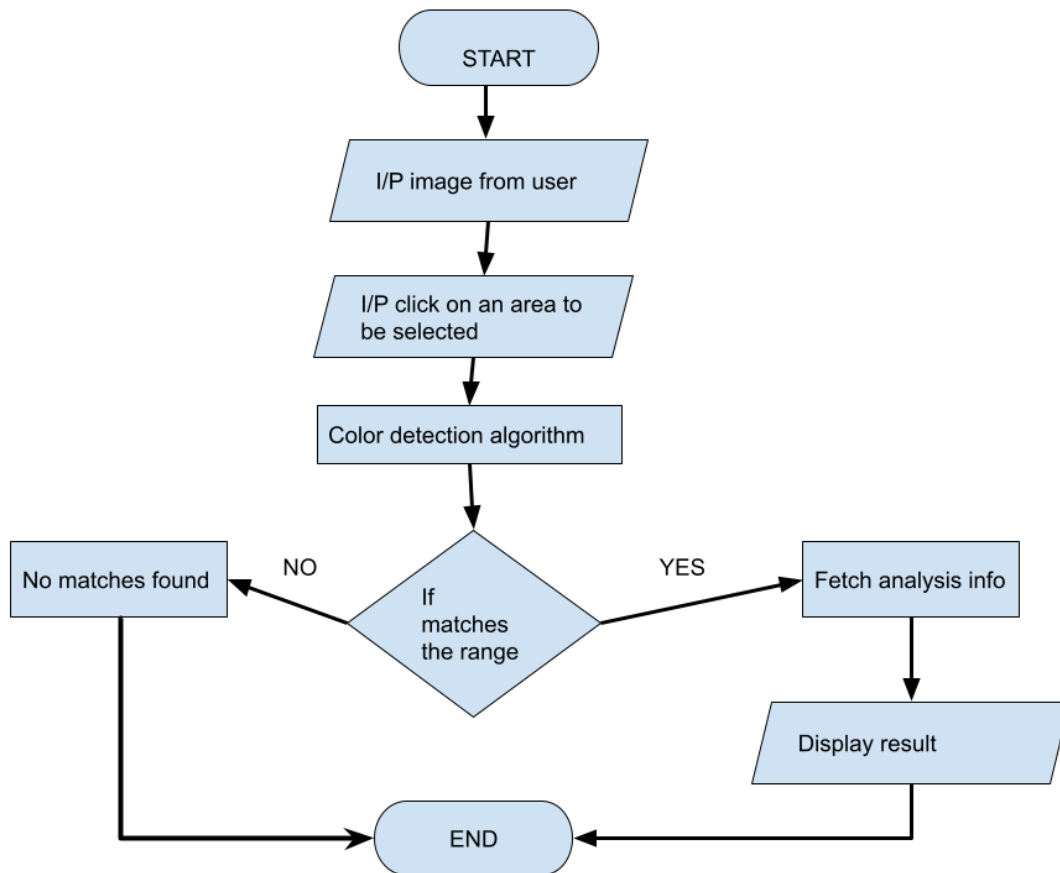


Fig 3.5 Activity Diagram

3.8 CLASS DIAGRAM

Class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software application. Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints. It is also known as a structural diagram.

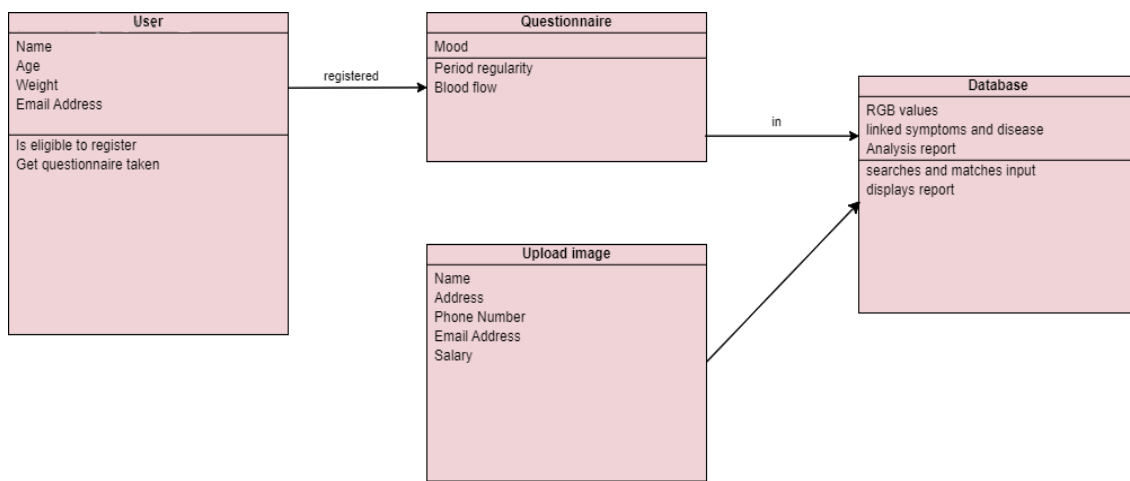


Fig 3.6 Class diagram

CHAPTER-4

RESULT

RESULT

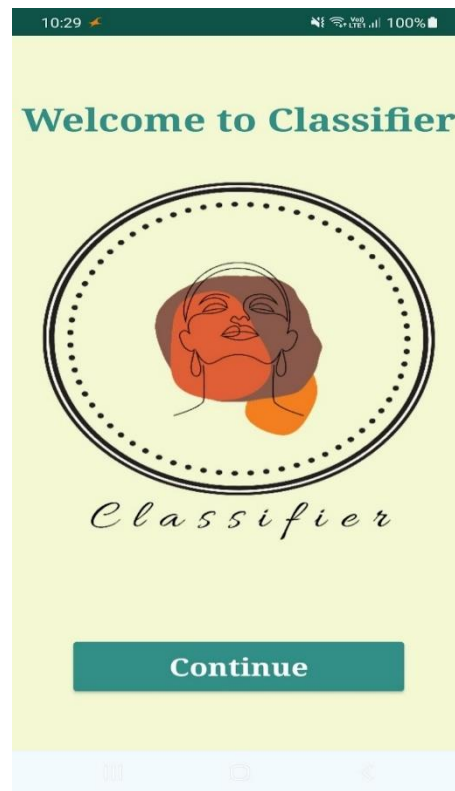


Fig 4.1: Application initializes and displays logo

In Screen 1, the application initializes and displays the logo. The application continues once the media access permission is granted. The icon of your app is the first point of engagement for a user. A great icon can increase downloads up to 560%! With a ton of options available in the App Store, the pictorial representation of the app is important to catch your user's attention and keep them away from meandering for other options. In addition to creating a great first impression, a quality app icon should also explain the basic features of the app to the viewers. For instance, a food app should be able to convey the genre of the app by using icons related to food or delivery person. It is difficult to find an attractive icon and it is even more difficult to make one. If you create an image that grabs attention in seconds, then half your job is done. By making your app unique and exquisite, you can cut through the noise and make your app recognizable. It is the first thing that will connect with people both on functional and emotional levels. While the functionality of the app does play an important role in increasing the recall value, what really sticks in the mind is the picture you use as the icon. To generate more visibility and rank higher in the App Store, developers need to optimize apps as part of the ASO. If the icon is well designed and thought through, it will get more visibility and ultimately be downloaded by the user. To design eye-catching icons, it is advised to keep the design simple and appealing. Create an icon that is relatable to your business, grabs attention and looks good even when scaled to the smallest size. Also, the icon should look equally good when viewed in light and dark backgrounds.

The image shows a mobile application interface for user registration. At the top, a dark green status bar displays the time 10:29, signal strength, and 100% battery. Below this, a light green header contains a dark green button labeled 'Register'. The main form area has a light green background. It features three input fields: 'Name' with the text 'Samaya', 'Age' with the text '20', and 'Weight' with the text '52.8'. A small orange dot is positioned below the weight input field. A dark green button labeled 'NEXT' is located below the weight field. At the bottom of the screen, a dark gray numeric keypad is visible, with buttons for digits 1-9, 0, a backspace icon, and a 'Done' button. The Android navigation bar is at the very bottom.

Fig 4.2: User registration

In Screen 2, the user registers themselves by mentioning their name, age and weight. Registration is a way to connect with the user, expedite future conversion opportunities, and enrich the relationship moving forward. Regardless of how potential participants register for your courses today, you will be able to save a considerable amount of time by using a registration system. Cut down the time spent on tedious, manual processes, countless documents and systems by gathering all registrations and participant information in one place. Also save time on updates of your own website through a few simple clicks in the sign-up system that feeds directly to the website. With a complete registration system, you not only get sign-ups and participant information in a collective and neat portal, but you also get the opportunity to follow up the participants throughout the process.

Fig 4.3: Questionnaire records user's conditions.

In Screen 3, the questionnaire records some health details from the user. In-app surveys are an amazing way to connect with your customers, and therefore a crucial tool for collecting user feedback. A health survey is a tool used to gather information on the behavior of a specific group of people from a determined area. This kind of survey allows health care experts to understand better how a community acts towards health. Health surveys are a necessary and helpful instrument for decision-making when crafting a health plan. Health surveys provide specific information about the epidemiological situation, health trends, life habits, and the use of health services from the patients' point of view. This type of survey allows physicians to locate risk factors in the community around the hospital or health care centers, such as tobacco use, alcohol use, poor diet habits, and lack of physical exercise, which are common health behaviors. These surveys are deployed into apps, enabling you to gather relevant feedback on how your customers view your app as a whole, or how they view the individual features. These surveys also provide tons of other helpful insights from your online users, which help you create and improve the overall customer experience.



Fig 4.4: Classifier detects color.

In Screen 4, the classifier detects color. It takes a photo and the color on the center is shown on RGB, HSV and HTML notation. Also looks for the nearest color name and speaks it (needs the Speech Synthesis API to speak Colors). It has a list of more than 1600 color names. Color detection is the process of detecting the name of any color. Simple isn't it? Well, for humans this is an extremely easy task but for computers, it is not straightforward. Human eyes and brains work together to translate light into color. Light receptors that are present in our eyes transmit the signal to the brain. Our brain then recognizes the color. Since childhood, we have mapped certain lights with their color names. We will be using the somewhat same strategy to detect color names. Colors are made up of 3 primary colors; red, green, and blue. In computers, we define each color value within a range of 0 to 255. So, in how many ways can we define a color? The answer is $256 \times 256 \times 256 = 16,581,375$. There are approximately 16.5 million different ways to represent a color. In our dataset, we need to map each color's values with their corresponding names. But don't worry, we don't need to map all the values. We will be using a dataset that contains RGB values with their corresponding names.

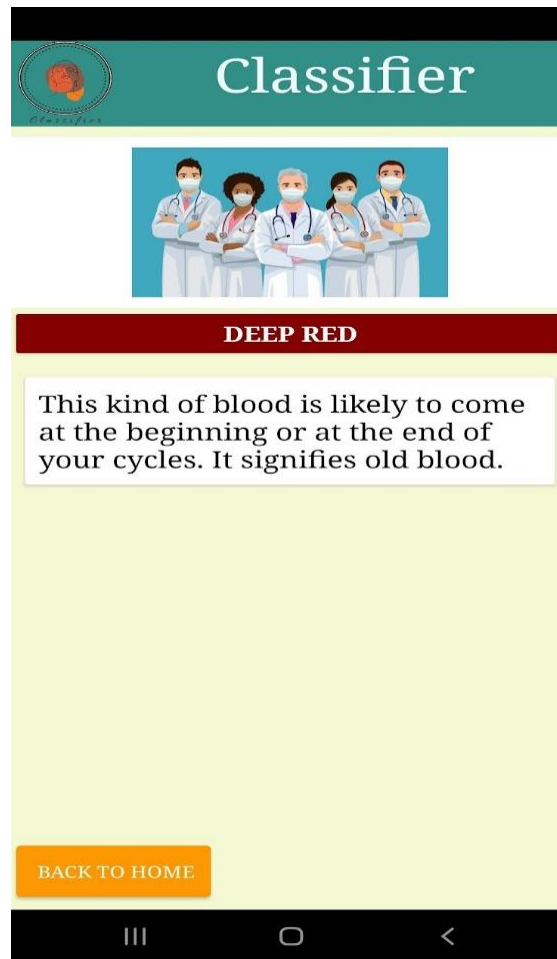


Fig 4.5: Color analysis

In Screen 5, The color analysis with health suggestions are done. The color analysis is a method that is used for evaluation of an unknown sample with reference to the known colors. It is basically a technique of evaluation by comparing a sample with a standard color. The analysis is used in a variety of industries to test the quality of the products, processes, and raw materials. It is also used to analyze the transparency of the samples as well. Here are some uses of chromatic analysis in industries. Nowadays, with the presence of modern color measuring instruments, the analysis of products has become very easy and precise. For the visual as well as automated color measurement of the products, it is necessary to make use of color measuring devices to ascertain the reflectance range & transmittance of the products. These instruments are used to measure the color quality of every form of material whether it is in liquid state, solid or powder state. The accuracy and reliability of the test results can be assured by using high-quality color measuring devices from reputed manufacturers.

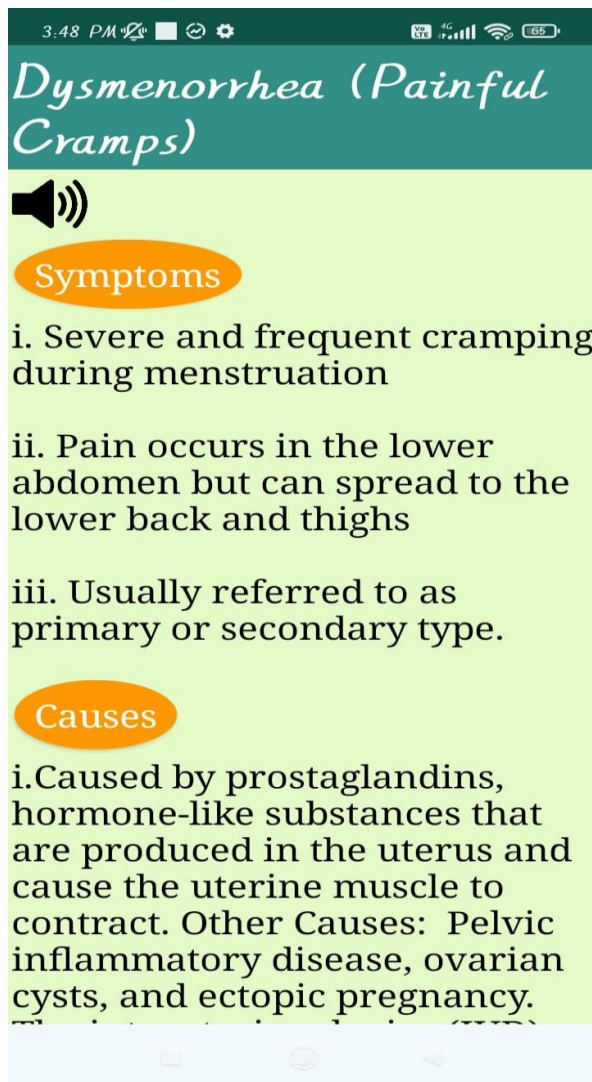


Fig 4.6: Library with speech function

In Screen 6, There is a list of diseases from which we can learn more about various diseases. In addition, with the collection of media other than books for storing information, many libraries are now also repositories and access points for maps, prints or other documents and artworks on various storage media such as microfilm, microfiche, audio tapes, CDs, LPs, cassettes, video tapes and DVDs, and provide public facilities to access CD-ROM and subscription databases and the Internet. Thus, modern libraries are increasingly being redefined as places to get unrestricted access to information in many formats and from many sources. In addition to providing materials, they also provide the services of specialists who are experts in matters related to finding and organizing information and interpreting information needs, called librarians. Libraries are valuable institutions for preserving elements of culture and tradition from generation to generation, and expanding them worldwide by enabling a smooth and accurate flow of information.

CHAPTER-5

CONCLUSION

5.1 CONCLUSION

This project was successfully completed, within the time span allotted. All the modules are tested separately and input together to form the main system. Finally, the application is tested with real data and everything works successfully. Thus, the application has fulfilled the entire objective identified. The application had been developed in an attractive interactive fashion. So, users with minimum awareness about technology can also operate our application easily. To conclude this, we thank all the people who help us to complete this project. This research focuses mostly on the study of graphic processing prototype and color detection and analysis in AI visual automation. We have thoroughly examined the color analysis system and display operation by studying related literature. This paper begins by providing a quick overview of how AI technology works as well as several ideas that are based on its inheritable algorithm. In the end, it examines from three perspectives: the analysis of the current state of color, the satisfaction analysis of color detection and graphic operation in visual media and its health analysis. The paper's limitations are that the study on related picture applications is still in its early stages and that the use of automation in the creation of visual media is not yet at a sufficiently advanced stage. Research and development still have a lot of room for improvement. Nevertheless, there is still room for creativity and advancement in the color detection and analysis of visual media.

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5.3 PAPER PUBLICATION WITH CERTIFICATE

Paper Published front Page

Menstruation Blood Classifier: Color Analysis Using Artificial Intelligence

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Abstract—The color of a period blood reveals numerous vital information about the health of the person. While a woman is in her period, the body sheds tissues and blood from the uterus through vagina. The blood discharged from the body can be of different colors and through that color we can identify if the blood discharge is good or bad, and can take necessary palladium before it gets increased to another position. i.e., vaginal infection and others. These different colors are due to different hormonal changes and health conditions, so a proper discovery is demanded. With the use of Artificial Intelligence, we can develop a mobile operation which will take a sample picture of blood as input and as a result it'll classify if the blood is healthy or not, with some health suggestions. Attention to women's and girl's menstrual requirements is critical for global health and gender equivalency. Support for this neglected experience should be empowered. We should dedicate a stage for supporting health and wellness, empowering, educating and serving to further scientific grounded health results and perfecting social participation by breaking taboos and homogenizing periods. The ideal of this classifier is to design a platform which configures women's health via color discovery and analysis of period blood through AI and decry underpinning health conditions or symptoms, if any.

Keywords— Menstruation, Health, Color Detection, Symptoms detection, Color analysis, Artificial Intelligence

I. INTRODUCTION

A woman's menstrual cycle is the hormonal process she goes through each month to prepare for a possible pregnancy. Regular menstrual ages in the times between puberty and menopause are generally a sign that your body is working typically. Irregular or heavy, painful ages aren't normal. Numerous women also get premenstrual pattern (PMS) symptoms. Your menstrual cycle can tell you a lot about your health. Period problems like irregular or painful ages may be a sign of a serious health problem. The impact of period on women's health manifests itself in different situations. The sociocultural dimension shows the influence of societal norms regulating the way of dealing with menstruating women. Menstrual diseases are in fact one of the most frequent reasons for discussion. Menstrual Disease needs to be elaborated in the physician-patient interaction. The patient has to use this platform to come to a personal and individual solution of her menstruation problem.

II. LITERATURE SURVEY

Throughout history, people have revealed, designed, and spread information using technology and information in different forms on a diurnal basis. Information about visual design plays a greater role in the development status of the design the more common it is. A visual communication design is basically influenced by color and image. There is no doubt that these two attributes contribute in achieving public attention. This composition is grounded on AI technology which further aids in the development of color detection and analysis operation in design for visual media and communication. Its aim is to propose design for visual media and communication in such a way that it breaks through the conventional mechanism of color detection and image processing, so that this field of color analysis gains new bars in research and exploration. This composition details the origins, key components, and influencing variables of visual communication design as well as how AI technology works. It also develops a paradigm for visual media design that is based on AI automations.

III. METHODOLOGY

AI stands for artificial intelligence; Its aspects include proposals, techniques, technologies, and systems utilized for incitement and exploration, horizons of which are constantly expanding. The places of AI technology in design for visual media and communication are that AI technology combined with simulation tests can provide a better bequest for esign for visual media and communication, giving users a more flawless experience, and assisting creators in creating more accessible color schemes. The use of artificial intelligence in visual media communication design allows for a better perception of images. At the same time, the technology for image identification and man-made intelligence can prove to be very useful for the conception of design for visual media and communication to be more comprehensive. The followership is also more suitable to admit information and understand the meaning. The relationship between proposition and practice is the relationship between artificial intelligence and information processing. From a thinking point of view, artificial intelligence isn't limited to reasonable thinking. The study of image thinking and stimulating thinking is essential for the development of artificial intelligence.

Certificates of Paper Published



**ICSRESM
2022**

**3rd International Conference on
Sustainable Research in Engineering
Science and Management**

Paper ID - 131

CERTIFICATE

This is to certify that

Mukesh Kumar Sahu

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has contributed a paper titled

Menstruation Blood Color Detection: Color detection using AI

in 3rd International Conference on Sustainable Research in Engineering Science and Management (ICSRESM-2022) held during December 16, 2022 on Shri Shankaracharya Institute of Professional Management and Technology, Raipur, Chhattisgarh, India We wish the authors all the very best for future endeavors.



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