AI-BASED LOCALIZATION ANDCLASSIFICATIONOFSKINDISEASEWI THERYTHEMA

NALAIYA THIRAN PROJECT
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Submittedby

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In partial fulfillmentfortheaward ofthe degree

of

BATCHELOROFENGINNERING

IN**COMPUTERSCIENCEANDENGINEERING**

DHANALAKSHMISRINIVASANENGINEERNGCOLLEGE
(AUTONOMOUS)PER
AMBALUR-621212

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INTRODUCTION

1.1 projectoverview

Malignant melanoma is the leading cause of death from diseases of skin .Malignantmelanoma is considered to be the most dangerous form of skin cancer. This type of skincancer occurs when the human skin is exposed to the ultraviolet radiation (UV) emittedfrom sunshine or tanning beds, which caused the damage to skin cells. Image-basedcomputer aided diagnosis systems have significant potential for screening and earlydetection of malignant melanoma. In this paper, we propose a new skin melanoma CADsystemusingtextureanalysismethods.TheproposedCADsystemconsistsoffoursteps:hairremoval,filtering,featureextractionandclassification.Beforeworkingontheimageweshouldremovehairfromittofacilitateinfectedpartdetection.Inthefeatureextractionstep a histogram of oriented gradients (HOG) used to extract features, Our CAD systemclassifiesbetweennon-melanomaskinlesions(representedascommonneviordysplasticnevi) and melanoma. The experimental results show that extracting HOG features afterhair removal yields the best classification results. python software is used for skin cancerdetection.Machine learning based model is implemented for detect and classify the skindisease detection and classification ,flask based design is provide the user interfaceprovidetheresult

1.2 purpose

Thepurposeoftheprojectisdesignandimplementationofdeeplearningmodeldeployedfor detection ofimageprocessing based skin disease

2. LITEATURE SURVEY

LITERATURESURVEY

TITLE: Skin cancer and new treatment perspectives: A review.**AUTHOR:** Simes, M. C. F., J. J. S. Sousa, and A. A. C. C. Pais.**YEAR: 2015**

DESCRIPTION: Skincancersarebyfarthemostcommonmalignancyofhumans,particularly in the white population.The growing incidence of cutaneous malignancies hasheralded the need for multiple treatment options. Although surgical modalities remain themainstayoftreatment,newresearchandfreshinnovationarestillrequiredtoreducemorbidityand mortality. Approaches for skin cancer may pass through new technological methodsinstead of new molecules. The first part of this paper provides a review of the state of the artregarding skin cancer disease as well as epidemiology data.Then, it describes the goldstandards of the current recommended therapies worldwide and the actual needs of thesepatients.Thisisthefirstpaperthathighlightsthenovelandfuturetherapeuticperspectivesforthe treatmentofskinmalignancies,new therapeuticagentsandpromisingtechnologicalapproaches,fromnanotechnology to immunotherapy.

TITLE: Abenchmarkforautomaticvisualclassificationofclinicalskindiseaseimages.

AUTHOR: Sun,Xiaoxiao.

YEAR:2016

DESCRIPTIONSkindiseaseisoneofthemostcommonhumanillnesses.Itpervadesall cultures,occursatallages,andaffectsbetween30%and70%ofindividuals,witheven higherratesinat-risk.However,diagnosisofskindiseasesbyobservingisaverydifficult jobforbothdoctorsandpatients,whereanintelligentsystemcanbehelpful.Inthispaper, wemainlyintroduceabenchmarkdatasetforclinicalskindiseasestoaddressthisproblem. Tothebestofourknowledge,thisdatasetiscurrentlythelargestforvisualrecognitionof skindiseases.Itcontains6,584imagesfrom198classes,varyingaccordingtoscale,color, shapeandstructure.Wehopethatthisbenchmarkdatasetwillencouragefurtherresearchon visualskindiseaseclassification.Moreover,therecentsuccessesofmanycomputervision relatedtasksareduetotheadoptionofConvolutionalNeuralNetworks(CNNs),wealso performextensiveanalyseson thisdataset using thestate oftheartmethodsincluding CNNs.

TITLE: Improvingthediagnosticaccuracyofdysplasticandmelanomalesionsusingthedecisionte mplatecombinationmethod.

AUTHOR: Faal,Maryam,

YEAR:2013

DESCRIPTION: Melanomaisthemostdangeroustypeofskincancer,andearlydetectionofsuspiciouslesio nscandecreasethemortalityrateofthiscancer.Inthisarticle,wepresenta

multi-classifier system for improving the diagnostic accuracy of melanoma and dysplasticlesions based on the decision template combination rule.First, the lesion is differentiated fromthesurroundinghealthyskininanimage.Next,shape,colourandtexturefeaturesareextractedfrom the lesion image. Different subsets of these features are fed to three different classifiers:k-nearest neighbour (k-NN), support vector machine (SVM) and linear discriminant analysis(LDA).Thedecisiontemplatemethodis usedtocombinetheoutputsoftheseclassifiers.

TITLE: Automatic classification of skin lesions using color mathematical morphology-basedtexturedescriptors."

AUTHOR: Gonzalez-Castro,Victor,

YEAR:2015

DESCRIPTION: In thispaper an automatic classification method of skin lesionsfromdermoscopicimagesisproposed.Thismethodisbasedoncolortextureanalysisbasedbothoncolor mathematical morphology and Kohonen Self-Organizing Maps (SOM), and it does notneed any previous segmentation process. More concretely, mathematical morphology is usedto compute a local descriptor for each pixel of the image, while the SOM is used to clusterthemand,thus,createthetexturedescriptoroftheglobalimage.Twoapproachesareproposed, depending on whether the pixel descriptor is computed using classical (i.e. spatially invariant)or adaptive (i.e. spatially variant) mathematical morphology by means of the Color AdaptiveNeighborhoods (CANs) framework. Both approaches obtained similar areas under the ROCcurve (AUC): 0.854 and 0.859 outperforming the AUC built upon dermatologists' predictions(0.792).

TITLE: Performance Analysis of GFE, HOG and LBP Feature Extraction Techniques usingkNN Classifier for OralCancer Detection.

AUTHOR: Stella,X.Arockia,TamilNaduSivagangai,andIndiaDrN.Sujatha.

YEAR:2016

DESCRIPTION: Oral cancer is the abnormal growth of suspicious tissues in the mouth andvocalregionthatconsumesthelifeofbothmalesandfemalesatahighrate.Earlydiagnosisoforal cancer makes the treatments successful. The advancements in medical image processinggreatlyhelpsinthedetectionoforalcancer.Thediagnosisiscommonlydoneinaccordance

with the morphology and features of the images. The commonly used feature extractiontechniques failed to produce high accuracy and resulted in high false positive rates. As theextracted features are the base for classifying the severity, the classification techniques alsoresulted in low classification accuracy. In order to resolve these issues, this paper proposes anoralcancerdetectionsystem.Themedianfilteringtechniqueisusedintheproposedsystemforprep rocessing. In order to get the essential characteristics of features, watershed segmentationis applied before feature extraction. The feature extraction is carried out by the followingtechniques:GammabasedFeatureExtraction(GFE),HistogramofOrientedGradients(H OG)and Local Binary Pattern (LBP). Finally, the extracted features are fed into the kNN classifierfor the efficient detection of oral cancer. This paper discusses the comparative analysis ofHOG, LBP and GFE techniques. The experimental results are evaluated in terms of accuracy,sensitivity,specificityand PositivePredictiveValue(PPV).

EXISTINGSYSTEM PROBLEM

EXISTINGSYSTEM

Thecolorofpatientskinhelpsdoctorstodeterminatethetypeofskinlesion,iftheskinlesion is diagnosed as melanoma, its color could be black, brown, pink, red, purple, blue orwhite,. The dermoscopy technique is high spread skin imaging way that helps in skin lesiondetection.adermatoscopedevicetakeanimage,knownasdermoscopicimage,withalowleveln oisetoexaminetheskinlesionbymagnifyingandfilteringtheinfectedpartofskin.Anotheraiding way to detect the skin lesion at an early stage is the computer aided diagnosis (CAD)system.Thedermoscopicimagesofskinlesionshavebeenclassifiedby Gonzalez-Castroetal.Global andlocal feature extraction method to extract a different features of an image such ascolor,texture, shapeand domain specificfeatures.

EXISTINGSYSTEMDRAWBACKS

- Theconventionalmethodsfailedtogive thedesiredresult.
- Nostandardevolutionofpreviousclassifiers(limiteddataonSensitivity&specificity).
- Lesseffectivefeatureextractionmethodsusedinexistingsystems.

2.1 references

1.Kachuee,Mohammad,ShayanFazeli,andMajidSarrafzadeh."Ecgheartbeatclassification:Adeeptransferablerepresentation."2018IEEEinternationalconferenceonhealthcareinformatics (ICHI). IEEE, 2018

2.S.Zhang,W.Wang,J.Ford,andF.Makedon,"Learningfromincompleteratingsusingnon-negativematrixfactorization,"inProc. 6thSIAM Int. Conf.DataMining,2006,pp. 549–553.

3.T.HofmannandJ.Puzicha,"Latentclassmodelsforcollaborativefiltering,"inProc.6thInt.JointConf. Artif. Intell., 1999, pp. 688–693.

4.B. M. Sarwar, G. Karypis, J. A. Konstan, and J. Reidl, "Item-based collaborative filteringrecommendationalgorithms,"in Proc.10thInt. WorldWideWeb Conf.,2001,pp. 285–295

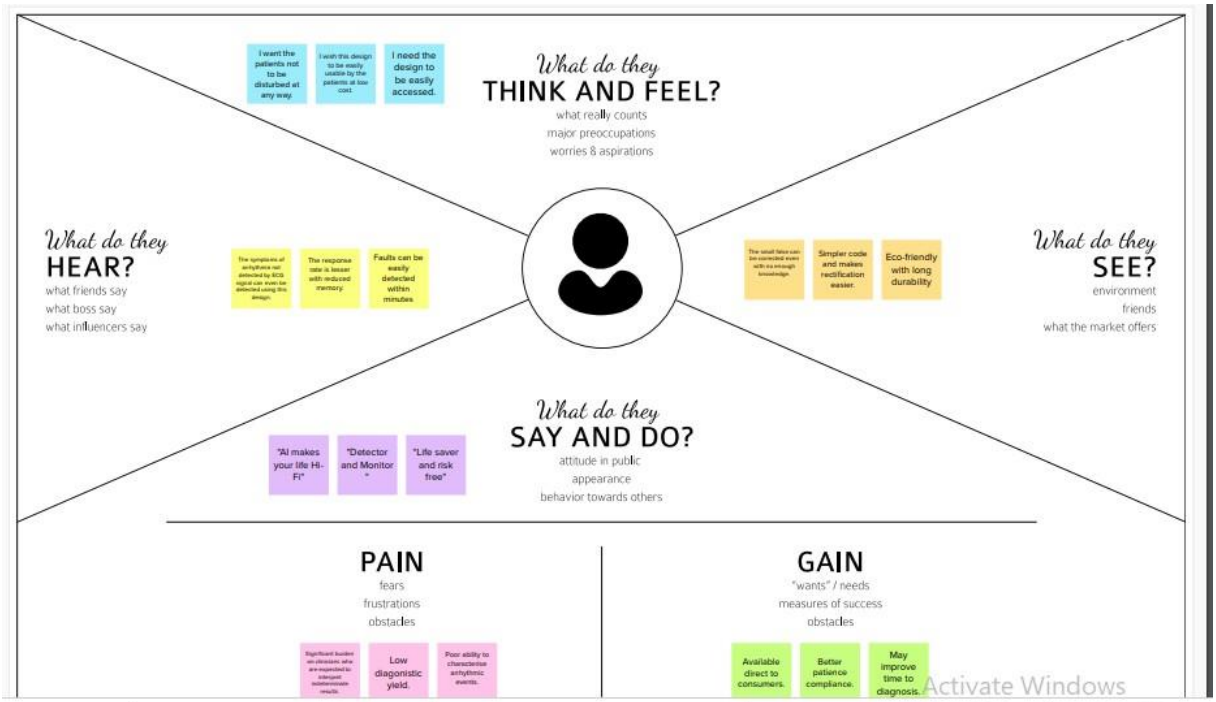
5.T. George and S. Merugu, "A scalable collaborative filtering framework based on co-clustering,"in Proc. 5th IEEEInt. Conf. DataMining,2005, pp. 625–628

2.2 problemstatementdefinition

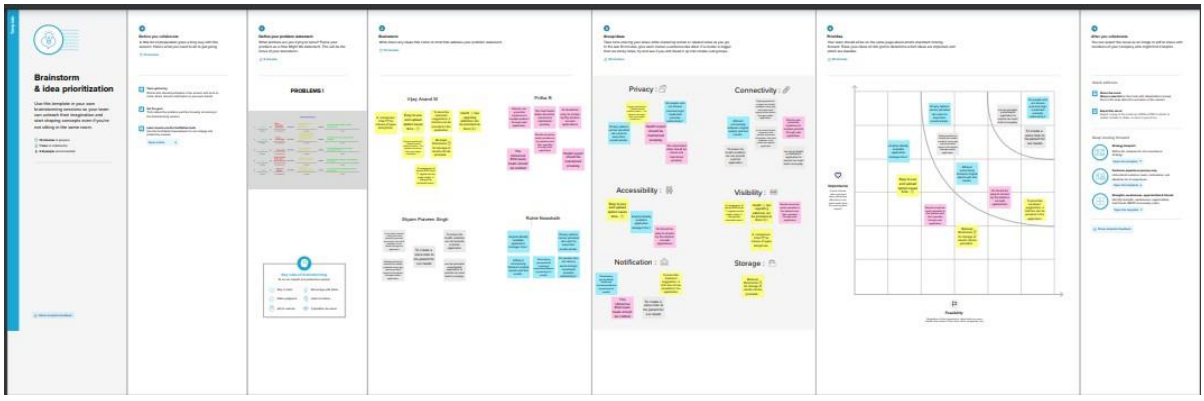
- Cardiologists by using various values which occurred during the ECG recordingcandecidewhethertheheartbeatisnormalornot.Sinceobservationoftheseval uesarenotalways clear,existenceofautomaticECGdetectionsystemis required
- Luz, Eduardo José da S., et al. "ECG-based heartbeat classification for arrhythmiadetection:Asurvey."Computermethodsandprogramsinbiomedicine127(2016):144-164
- Romdhane, Taissir Fekih, and Mohamed Atri Pr. "Electrocardiogram heartbeatclassificationbasedonadeepconvolutionalneuralnetworkandfocalloss."Computers in Biology and Medicine123 (2020):103866

3.ideationandproposedsolution

3.1 empathymapcanvas



3.2 ideationandbrainstorming



3.3 proposedsolutions

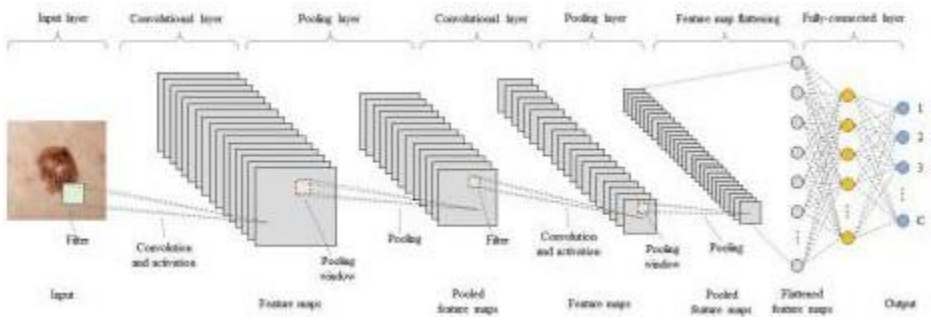
Deep learning basedalgorithm is implemented using for train the imageusing deeplearning model In this paper, we propose a new melanoma CAD system. Removing hair fromskinlesiondermoscopicimageswillbethefirststeptoapply,thenusingmedianfilterwitha

suitabledimensionswillbethenextsteptodo,histogramoforientedgradients(HOG),willbeusing to extract special features from the images. The final step will be classification using aSupport Vector Machines (SVM) classifier to determine the skin lesion. The output layer ofSVMhastwoneuralnodes,relatedtothenumberofneuralnodesthatclassifybetweenpositive(abnormal) and negative (normal) cases. Where positive cases refer to melanoma skin lesionand negative cases refer to common nevi or dysplastic nevi (non-melanoma). The final resultsevaluatetheclassifierperformancebycalculatingsomemetrics suchasAUCandsensitivity.

DATASETSs

The HAM10000 (Human Against Machine with 10, 000 training images) datasetreleased by Tschandl et. al. includes dermoscopy images from diverse populations acquiredand stored by different modalities [66]. The dataset is publicly available through the ISICarchive and consists of 10, 015 dermoscopy images, which are utilized as a training set fortesting machine learning algorithms. Cases include a representative collection of all importantdiagnostic categories in the realm of pigmented lesions. The diagnoses of all melanomas wereverified through histopathological evaluation of biopsies, while the diagnoses of nevi weremade by either histopathological examination (24%), expert consensus (54%) or anotherdiagnosismethod,suchas aseries ofimages thatshowednotemporalchanges (22%).

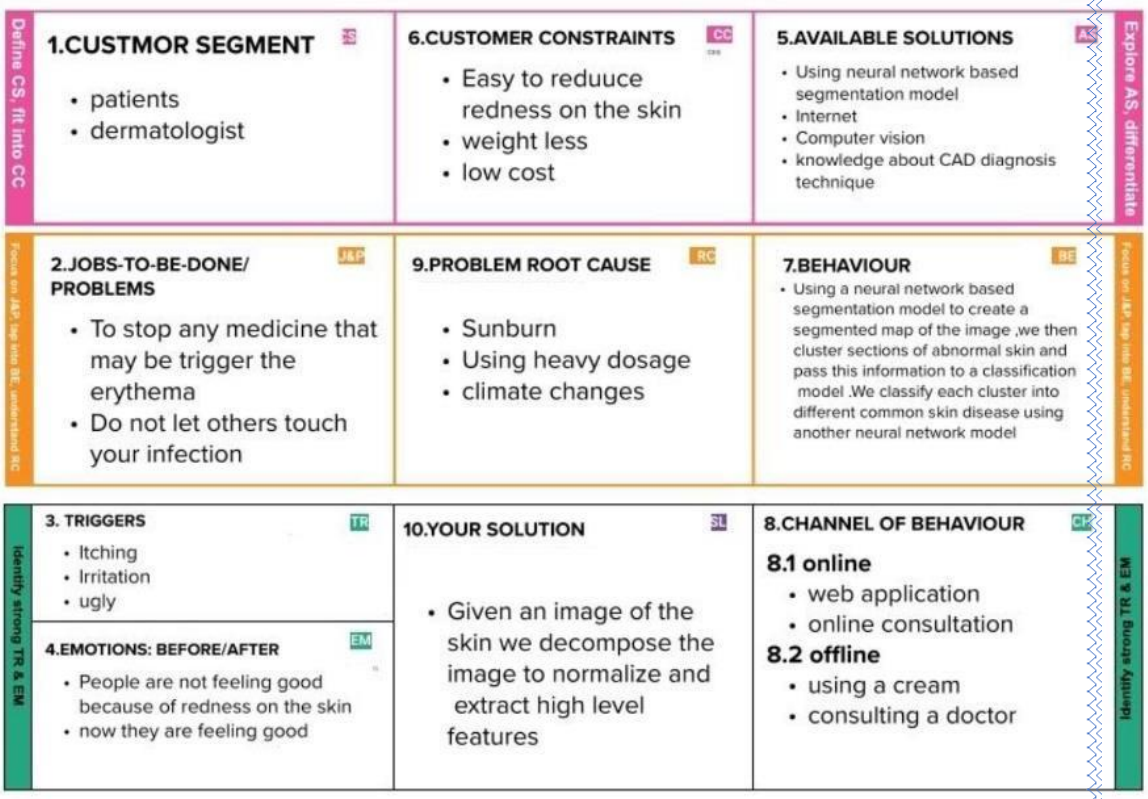
Designandimplementation



TensorFlow was developed by researchers and engineers from the Google Brain team.It is by far the most popular software library in the field of deep learning (though others arecatching up quickly). One of the biggest reasons accounting for the popularity of TensorFlowis that it supports multiple programming languages, such as Python, C++ and R, to build deeplearning models. It is handy for creating and experimenting with deep learning architectures.Inaddition,itsformulationisconvenientfordata(suchasinputtinggraphs,SQLtables, and

images)integration.Moreover,itprovidesproperdocumentationsandwalkthroughsforguidance.
The flexible architecture of TensorFlow makes it easy for people to run their deeplearning models on one or more CPUs and GPUs. It is backed by Google, which guaranteesthat it will stay around for a while. Therefore, it makes sense to invest time and resources touseit.

3.4 problemsolutionfit



4.<u>requirementanalysis</u>

4.1 functionalrequirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form , Registration through Gmail
FR-2	User Confirmation	Confirmation via Email , Confirmation via OTP
FR-3	Get User Input	Upload image as jpeg , Upload image as png
FR-4	Save Image	Images are saved in the uploads folder
FR-5	Chat with Doctor	Consult with Doctor
FR-6	Report Generation	Get complete Report

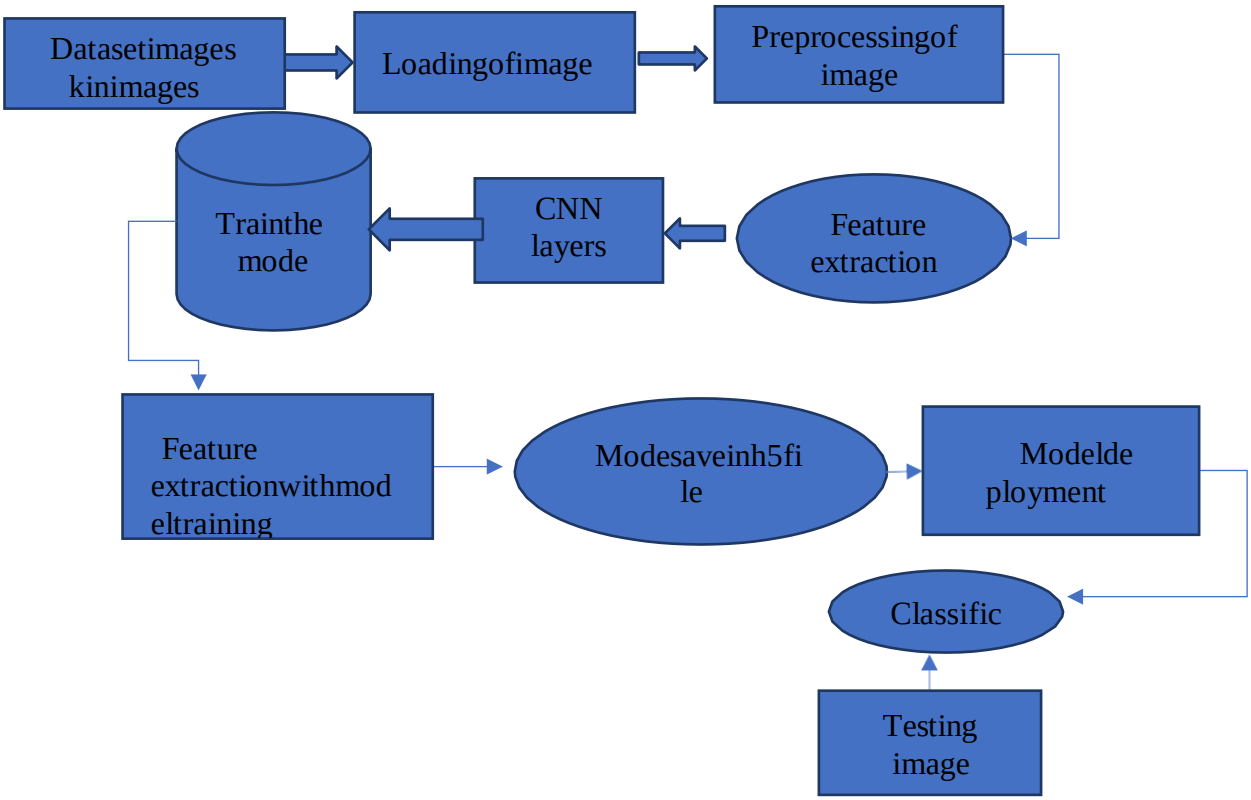
4.2 Non-functionalrequirement

A Data Flow Diagram (DFD) is a traditional visual representation of the information flowswithin a system. A neat and clear DFD can depict the right amount of the system requirementgraphically.Itshowshowdataentersandleavesthesystem,whatchangestheinformatio n,andwheredataisstored.

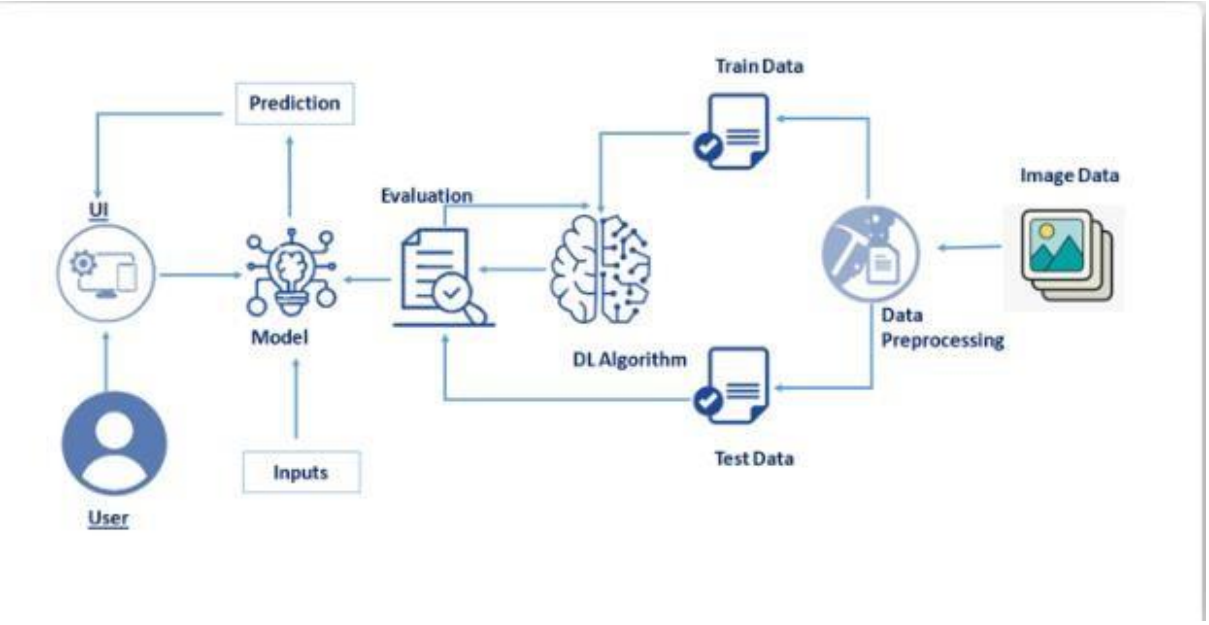
FRNo.	Non-Functional Requirement	Description
NFR-1	**Usability**	Classification of Arrhythmia with the help of AI.
NFR-2	**Security**	User's data cannot be accessed by unauthorized people.
NFR-3	**Reliability**	The system performs without failure.
NFR-4	**Performance**	High accuracy.
NFR-5	**Availability**	Anyone who is authorized.
NFR-6	**Scalability**	Does not affect the performance even though.

5.projectdesign

5.1 Dataflowdiagrams



5.2 solutionsandTechnicalArchitecture



6.Projectplanningandscheduling

Milestones	Activities
Project development phase	Delivery of sprint- 1,2,3,4
Create and configure and IBM cloud services	Create IBM Watson
Create and access deep learning	Create v1 to interact with app deploy
	Create IBM and connect with python
Create & database in cloud and DB	Launch the cloudant DB and Create database
Develop the python flask	Install the python software
	Develop python code
Create the web application	Develop the web application

Milestones	Activities	Description
Ideation phase	literature	Literature survey on the selected project & information gathering
	Empathy Map	Prepare empathy map to capture the user pains & gains, prepare list of problem statement
	Ideation	Organizing the brainstorming session and priorities the top 3 ideas based on feasibility & importance

7.coding

%packages

```
importos

%matplotlibinline
import matplotlib.pyplot as
pltimportnumpyasnp
import pandas as
pdimportos
from    glob    import
globimport seaborn as
snsfromPILimportImage
np.random.seed(11)#It'smyluckynumber
fromsklearn.preprocessingimportStandardScaler
from sklearn.model_selection import train_test_split, KFold, cross_val_score,
GridSearchCVfromsklearn.metrics importaccuracy_score
importitertools

import keras
fromkeras.utils.np_utilsimport to_categorical#usedforconvertinglabelstoone-hot-encoding
fromkeras.modelsimportSequential,Model
from keras.layers import Dense, Dropout, Flatten, Conv2D,
MaxPool2DfromkerasimportbackendasK
fromkeras.layers.normalizationimportBatchNormalization
fromkeras.utils.np_utilsimportto_categorical#converttoone-hot-encoding
fromkeras.optimizersimportAdam,RMSprop
fromkeras.preprocessing.imageimportImageDataGeneratorfromke
ras.callbacksimportReduceLROnPlateau
fromkeras.wrappers.scikit_learnimportKerasClassifierfromke
ras.applications.resnet50importResNet50
```

```
fromkerasimportbackendasK
```

preprocessingofcode

```
size=64color_mode='gra
yscale'batch_size=32
train_images=train_generator.flow_from_dataframe(dataframe=dataframe_tr
    ain,
    x_col='Filepath',y_col='L
    abel',target_size=(size,
    size),color_mode=color_mo
    de,class_mode='categorica
    l',batch_size=batch_size,
    shuffle=True,
    seed=42,subset='t
    raining'
)

val_images=train_generator.flow_from_dataframe(dataframe=dataframe_trai
    n,
    x_col='Filepath',y_col='L
    abel',target_size=(size,
    size),color_mode=color_mo
    de,class_mode='categorica
    l',batch_size=batch_size,
    shuffle=True,
    seed=42,subset='validatio
    n'
)

test_images=test_generator.flow_from_dataframe(dataframe=dataframe_test
    ,
    x_col='Filepath',y_col='L
    abel',target_size=(size,
    size),color_mode=color_mo
    de,class_mode='categorica
    l',batch_size=batch_size,
    shuffle=False
)
```

Modelsummary

esandmakingDictionaryofimagesandlabels

InthisstepI loadinthepicturesandturnthem intonumpyarraysusingtheirRGBvalues.Asthepictureshavealreadybeen resized to 224x224, there's no need to resize them. As the pictures do not have any labels, these need to becreated.Finally,thepicturesareaddedtogethertoabigtrainingset andshuffeled.

In[2]:
linkcode

```
folder_benign_train=
'../input/data/train/benign'folder_malignant_train='../i
nput/data/train/malignant'

folder_benign_test=
'../input/data/test/benign'folder_malignant_test='../i
nput/data/test/malignant'

read= lambda imname: np.asarray(Image.open(imname).convert("RGB"))

# Load in training pictures
ims_benign = [read(os.path.join(folder_benign_train, filename)) for filename in os
.listdir(folder_benign_train)]
X_benign = np.array(ims_benign, dtype='uint8')
ims_malignant= [read(os.path.join(folder_malignant_train, filename)) for filename
 in os.listdir(folder_malignant_train)]
X_malignant = np.array(ims_malignant, dtype='uint8')

# Load in testing pictures
ims_benign = [read(os.path.join(folder_benign_test, filename)) for filename in
os.listdir(folder_benign_test)]
X_benign_test= np.array(ims_benign, dtype='uint8')
ims_malignant= [read(os.path.join(folder_malignant_test, filename)) for filename
in os.listdir(folder_malignant_test)]
X_malignant_test= np.array(ims_malignant, dtype='uint8')

# Create labels
y_benign =
np.zeros(X_benign.shape[0])y_malignant=np.o
nes(X_malignant.shape[0])

y_benign_test=
np.zeros(X_benign_test.shape[0])y_malignant_test=np.o
nes(X_malignant_test.shape[0])


# Merge data
X_train = np.concatenate((X_benign, X_malignant), axis =
0)y_train=np.concatenate((y_benign,y_malignant),axis=0)

X_test = np.concatenate((X_benign_test, X_malignant_test), axis =
0)y_test=np.concatenate((y_benign_test,y_malignant_test),axis=0)

# Shuffle data
s =
np.arange(X_train.shape[0])np.r
andom.shuffle(s)
X_train =
X_train[s]y_train=y_
train[s]

s =
```

```
np.arange(X_test.shape[0])np.r
andom.shuffle(s)
```

```
X_test =
X_test[s]y_test=y_
test[s]
```

Htmlcoding

```
<!DOCTYPEhtml>
<htmllang="en">
<head>
  <metacharset="UTF-8">
  <metaname="viewport"content="width=device-width,initial-scale=1.0">
  <metahttp-equiv="X-UA-Compatible"content="ie=edge">
  <title>AromaShop-Home</title>
            <linkrel="icon"href="static/img/Fevicon.png"type="image/png">
    <linkrel="stylesheet"href="static/vendors/bootstrap/bootstrap.min.css">
    <linkrel="stylesheet"href="static/vendors/fontawesome/css/all.min.css">
          <linkrel="stylesheet"href="static/vendors/themify-icons/themify-icons.css">
  <linkrel="stylesheet"href="static/vendors/nice-select/nice-select.css">
  <linkrel="stylesheet"href="static/vendors/owl-carousel/owl.theme.default.min.css">
  <linkrel="stylesheet"href="static/vendors/owl-carousel/owl.carousel.min.css">

  <linkrel="stylesheet"href="static/css/style.css">
</head>
<body>
  <!--================StartHeaderMenuArea================-->
          <headerclass="header_area">
    <divclass="main_menu">
      <navclass="navbarnavbar-expand-lgnavbar-light">
        <divclass="container">
          <aclass="navbar-brandlogo_h"href="index.html"><imgsrc="static/img/logo.png"alt=""></a>
          <buttonclass="navbar-toggler"type="button"data-toggle="collapse"data-
target="#navbarSupportedContent"
           aria-controls="navbarSupportedContent" aria-expanded="false" aria-
label="Togglenavigation">
           <spanclass="icon-bar"></span>
           <spanclass="icon-bar"></span>
           <spanclass="icon-bar"></span>
          </button>
          <divclass="collapsenavbar-collapseoffset"id="navbarSupportedContent">
           <ulclass="navnavbar-navmenu_navml-automr-auto">
            <liclass="nav-itemactive"><aclass="nav-link"href="index.html">Home</a></li>
            <liclass="nav-itemsubmenudropdown">
              <a href="#" class="nav-link dropdown-toggle" data-
toggle="dropdown"role="button" aria-haspopup="true"
               aria-expanded="false">Shop</a>
              <ulclass="dropdown-menu">
```

```
            <liclass="nav-item"><aclass="nav-
link"href="category.html">ShopCategory</a></li>
            <liclass="nav-item"><aclass="nav-link"href="single-
product.html">ProductDetails</a></li>
            <liclass="nav-item"><aclass="nav-
link"href="checkout.html">ProductCheckout</a></li>
            <liclass="nav-item"><aclass="nav-
link"href="confirmation.html">Confirmation</a></l
i>
            <liclass="nav-item"><aclass="nav-
link"href="cart.html">ShoppingCart</a></li>
          </ul>
                                                    </li>
          <liclass="nav-itemsubmenudropdown">
          <a href="#" class="nav-link dropdown-toggle" data-
toggle="dropdown"role="button" aria-haspopup="true"
            aria-expanded="false">Blog</a>
          <ulclass="dropdown-menu">
            <liclass="nav-item"><aclass="nav-link"href="blog.html">Blog</a></li>
            <liclass="nav-item"><aclass="nav-link"href="single-
blog.html">BlogDetails</a></li>
          </ul>
                                                    </li>
                                                    <liclass="nav-itemsubmenu
dropdown">
          <a href="#" class="nav-link dropdown-toggle" data-
toggle="dropdown"role="button" aria-haspopup="true"
            aria-expanded="false">Pages</a>
          <ulclass="dropdown-menu">
            <liclass="nav-item"><aclass="nav-link"href="sign.html">Login</a></li>
            <liclass="nav-item"><aclass="nav-link"href="/register">Register</a></li>
            <liclass="nav-item"><aclass="nav-link"href="tracking-
order.html">Tracking</a></li>
          </ul>
        </li>
        <liclass="nav-item"><aclass="nav-link"href="contact.html">Contact</a></li>
      </ul>

      <ulclass="nav-shop">
        <liclass="nav-item"><button><iclass="ti-search"></i></button></li>
        <li class="nav-item"><button><i class="ti-shopping-cart"></i><span class="nav-
shopcircle">3</span></button></li>
        <liclass="nav-item"><aclass="buttonbutton-header"href="#">BuyNow</a></li>
      </ul>
    </div>
  </div>
 </nav>
</div>
</header>
      <!--================EndHeaderMenuArea================-->
```

```
<mainclass="site-main">

<!--================Herobannerstart================-->
<sectionclass="hero-banner">
<divclass="container">
<divclass="rowno-guttersalign-items-centerpt-60px">
<divclass="col-5d-noned-sm-block">
<divclass="hero-bannerimg">
<imgclass="img-fluid"src="static/img/home/hero-banner.png"alt="">
</div>
</div>
<divclass="col-sm-7col-lg-6offset-lg-1pl-4pl-md-5pl-lg-0">
<divclass="hero-bannercontent">
<h4>Shopis fun</h4>
<h1>BrowseOurPremiumProduct</h1>
<p>Us which over of signs divide dominion deep fill bring they're meat beho uponown earth without morning over third. Their male dry. They are great appear whose land flygrass.</p>
<aclass="buttonbutton-hero"href="#">BrowseNow</a>
</div>
</div>
</div>
</div>
</section>
<!--================Herobannerstart================-->

<!--================HeroCarouselstart================-->
<sectionclass="section-marginmt-0">
<divclass="owl-carouselowl-themehero-carousel">
<divclass="hero-carouselslide">
<imgsrc="img/home/hero-slide1.png"alt=""class="img-fluid">
<ahref="#"class="hero-carouselslideOverlay">
<h3>WirelessHeadphone</h3>
<p>AccessoriesItem</p>
</a>
</div>
<divclass="hero-carouselslide">
<imgsrc="static/img/home/hero-slide2.png"alt=""class="img-fluid">
<ahref="#"class="hero-carouselslideOverlay">
<h3>WirelessHeadphone</h3>
<p>AccessoriesItem</p>
</a>
</div>
<divclass="hero-carouselslide">
<imgsrc="static/img/home/hero-slide3.png"alt=""class="img-fluid">
<ahref="#"class="hero-carouselslideOverlay">
<h3>WirelessHeadphone</h3>
<p>AccessoriesItem</p>
</a>
</div>
```

```
  </div>
 </section>
 <!--================HeroCarouselend================-->

 <!--================trendingproductsectionstart================-->
 <sectionclass="section-margincalc-60px">
  <divclass="container">
   <divclass="section-intropb-60px">
    <p>PopularIteminthemarket</p>
    <h2>Trending<spanclass="section-introstyle">Product</span></h2>
   </div>
   <divclass="row">
    <divclass="col-md-6col-lg-4col-xl-3">
     <divclass="cardtext-centercard-product">
      <divclass="card-productimg">
       <imgclass="card-img"src="static/img/product/product1.png" alt="">
       <ulclass="card-productimgOverlay">
        <li><button><iclass="ti-search"></i></button></li>
        <li><button><iclass="ti-shopping-cart"></i></button></li>
        <li><button><iclass="ti-heart"></i></button></li>
       </ul>
      </div>
      <divclass="card-body">
       <p>Accessories</p>
       <h4 class="card-producttitle"><a href="single-product.html">Quartz
BeltWatch</a></h4>
       <pclass="card-productprice">$150.00</p>
      </div>
     </div>
    </div>
    <divclass="col-md-6col-lg-4col-xl-3">
     <divclass="cardtext-centercard-product">
      <divclass="card-productimg">
       <imgclass="card-img"src="static/img/product/product2.png"alt="">
       <ulclass="card-productimgOverlay">
        <li><button><iclass="ti-search"></i></button></li>
        <li><button><iclass="ti-shopping-cart"></i></button></li>
        <li><button><iclass="ti-heart"></i></button></li>
       </ul>
      </div>
      <divclass="card-body">
       <p>Beauty</p>
       <h4class="card-producttitle"><ahref="single-product.html">WomenFreshwash</a></h4>
       <pclass="card-productprice">$150.00</p>
      </div>
     </div>
    </div>
    <divclass="col-md-6col-lg-4col-xl-3">
     <divclass="cardtext-centercard-product">
```

```
            <divclass="card-productimg">
              <imgclass="card-img"src="static/img/product/product3.png"alt="">
              <ulclass="card-productimgOverlay">
                <li><button><iclass="ti-search"></i></button></li>
                <li><button><iclass="ti-shopping-cart"></i></button></li>
                <li><button><iclass="ti-heart"></i></button></li>
              </ul>
            </div>
            <divclass="card-body">
              <p>Decor</p>
              <h4 class="card-producttitle"><a href="single-product.html">Room
FlashLight</a></h4>
              <pclass="card-productprice">$150.00</p>
            </div>
          </div>
        </div>
        <divclass="col-md-6col-lg-4col-xl-3">
          <divclass="cardtext-centercard-product">
            <divclass="card-productimg">
              <imgclass="card-img"src="static/img/product/product4.png"alt="">
              <ulclass="card-productimgOverlay">
                <li><button><iclass="ti-search"></i></button></li>
                <li><button><iclass="ti-shopping-cart"></i></button></li>
                <li><button><iclass="ti-heart"></i></button></li>
              </ul>
            </div>
            <divclass="card-body">
              <p>Decor</p>
              <h4 class="card-producttitle"><a href="single-product.html">Room
FlashLight</a></h4>
              <pclass="card-productprice">$150.00</p>
            </div>
          </div>
        </div>
        <divclass="col-md-6col-lg-4col-xl-3">
          <divclass="cardtext-centercard-product">
            <divclass="card-productimg">
              <imgclass="card-img"src="static/img/product/product5.png"alt="">
              <ulclass="card-productimgOverlay">
                <li><button><iclass="ti-search"></i></button></li>
                <li><button><iclass="ti-shopping-cart"></i></button></li>
                <li><button><iclass="ti-heart"></i></button></li>
              </ul>
            </div>
            <divclass="card-body">
              <p>Accessories</p>
              <h4 class="card-producttitle"><a href="single-product.html">Man
OfficeBag</a></h4>
              <pclass="card-productprice">$150.00</p>
            </div>
```

```
          </div>
        </div>
        <divclass="col-md-6col-lg-4col-xl-3">
          <divclass="cardtext-centercard-product">
            <divclass="card-productimg">
              <imgclass="card-img"src="static/img/product/product6.png"alt="">
              <ulclass="card-productimgOverlay">
                <li><button><iclass="ti-search"></i></button></li>
                <li><button><iclass="ti-shopping-cart"></i></button></li>
                <li><button><iclass="ti-heart"></i></button></li>
              </ul>
            </div>
            <divclass="card-body">
              <p>KidsToy</p>
              <h4 class="card-producttitle"><a href="single-
product.html">ChargingCar</a></h4>
              <pclass="card-productprice">$150.00</p>
            </div>
          </div>
        </div>
        <divclass="col-md-6col-lg-4col-xl-3">
          <divclass="cardtext-centercard-product">
            <divclass="card-productimg">
              <imgclass="card-img"src="static/img/product/product7.png"alt="">
              <ulclass="card-productimgOverlay">
                <li><button><iclass="ti-search"></i></button></li>
                <li><button><iclass="ti-shopping-cart"></i></button></li>
                <li><button><iclass="ti-heart"></i></button></li>
              </ul>
            </div>
            <divclass="card-body">
              <p>Accessories</p>
              <h4class="card-producttitle"><ahref="single-
product.html">BlutoothSpeaker</a></h4>
              <pclass="card-productprice">$150.00</p>
            </div>
          </div>
        </div>
        <divclass="col-md-6col-lg-4col-xl-3">
          <divclass="cardtext-centercard-product">
            <divclass="card-productimg">
              <imgclass="card-img"src="static/img/product/product8.png"alt="">
              <ulclass="card-productimgOverlay">
                <li><button><iclass="ti-search"></i></button></li>
                <li><button><iclass="ti-shopping-cart"></i></button></li>
                <li><button><iclass="ti-heart"></i></button></li>
              </ul>
            </div>
            <divclass="card-body">
              <p>KidsToy</p>
```

```
            <h4class="card-producttitle"><ahref="#">ChargingCar</a></h4>
            <pclass="card-productprice">$150.00</p>
           </div>
          </div>
         </div>
        </div>
       </div>
    </section>
    <!--================trendingproductsectionend================-->


    <!--================offersectionstart================-->
    <section class="offer" id="parallax-1" data-anchor-target="#parallax-1" data-300-
top="background-position:20px30px"data-top-bottom="background-position:020px">
      <divclass="container">
       <divclass="row">
        <divclass="col-xl-5">
         <divclass="offercontenttext-center">
          <h3>UpTo50%Off</h3>
          <h4>WinterSale</h4>
          <p>Himshe'dletthemsixthsawlight</p>
          <aclass="buttonbutton--activemt-3mt-xl-4"href="#">ShopNow</a>
         </div>
        </div>
       </div>
      </div>
    </section>
    <!--================offersectionend================-->

    <!--================BestSellingitemcarousel================ -->
    <sectionclass="section-margincalc-60px">
      <divclass="container">
       <divclass="section-intropb-60px">
        <p>PopularIteminthemarket</p>
        <h2>Best<spanclass="section-introstyle">Sellers</span></h2>
       </div>
       <divclass="owl-carouselowl-theme"id="bestSellerCarousel">
        <divclass="cardtext-centercard-product">
         <divclass="card-productimg">
          <imgclass="img-fluid"src="static/img/product/product1.png"alt="">
          <ulclass="card-productimgOverlay">
           <li><button><iclass="ti-search"></i></button></li>
           <li><button><iclass="ti-shopping-cart"></i></button></li>
           <li><button><iclass="ti-heart"></i></button></li>
          </ul>
         </div>
         <divclass="card-body">
          <p>Accessories</p>
          <h4 class="card-producttitle"><a href="single-product.html">Quartz
BeltWatch</a></h4>
```

```
            <pclass="card-productprice">$150.00</p>
          </div>
        </div>

        <divclass="cardtext-centercard-product">
          <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product2.png"alt="">
            <ulclass="card-productimgOverlay">
              <li><button><iclass="ti-search"></i></button></li>
              <li><button><iclass="ti-shopping-cart"></i></button></li>
              <li><button><iclass="ti-heart"></i></button></li>
            </ul>
          </div>
          <divclass="card-body">
            <p>Beauty</p>
            <h4class="card-producttitle"><ahref="single-
product.html">WomenFreshwash</a></h4>
            <pclass="card-productprice">$150.00</p>
          </div>
        </div>

        <divclass="cardtext-centercard-product">
          <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product3.png"alt="">
            <ulclass="card-productimgOverlay">
              <li><button><iclass="ti-search"></i></button></li>
              <li><button><iclass="ti-shopping-cart"></i></button></li>
              <li><button><iclass="ti-heart"></i></button></li>
            </ul>
          </div>
          <divclass="card-body">
            <p>Decor</p>
            <h4 class="card-producttitle"><a href="single-product.html">Room
FlashLight</a></h4>
            <pclass="card-productprice">$150.00</p>
          </div>
        </div>

        <divclass="cardtext-centercard-product">
          <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product4.png"alt="">
            <ulclass="card-productimgOverlay">
              <li><button><iclass="ti-search"></i></button></li>
              <li><button><iclass="ti-shopping-cart"></i></button></li>
              <li><button><iclass="ti-heart"></i></button></li>
            </ul>
          </div>
          <divclass="card-body">
            <p>Decor</p>
```

```
            <h4 class="card-producttitle"><a href="single-product.html">Room
FlashLight</a></h4>
            <pclass="card-productprice">$150.00</p>
          </div>
        </div>

        <divclass="cardtext-centercard-product">
          <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product1.png"alt="">
            <ulclass="card-productimgOverlay">
              <li><button><iclass="ti-search"></i></button></li>
              <li><button><iclass="ti-shopping-cart"></i></button></li>
              <li><button><iclass="ti-heart"></i></button></li>
            </ul>
          </div>
          <divclass="card-body">
            <p>Accessories</p>
            <h4 class="card-producttitle"><a href="single-product.html">Quartz
BeltWatch</a></h4>
            <pclass="card-productprice">$150.00</p>
          </div>
        </div>

        <divclass="cardtext-centercard-product">
          <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product2.png"alt="">
            <ulclass="card-productimgOverlay">
              <li><button><iclass="ti-search"></i></button></li>
              <li><button><iclass="ti-shopping-cart"></i></button></li>
              <li><button><iclass="ti-heart"></i></button></li>
            </ul>
          </div>
          <divclass="card-body">
            <p>Beauty</p>
            <h4class="card-producttitle"><ahref="single-
product.html">WomenFreshwash</a></h4>
            <pclass="card-productprice">$150.00</p>
          </div>
        </div>

        <divclass="cardtext-centercard-product">
          <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product3.png"alt="">
            <ulclass="card-productimgOverlay">
              <li><button><iclass="ti-search"></i></button></li>
              <li><button><iclass="ti-shopping-cart"></i></button></li>
              <li><button><iclass="ti-heart"></i></button></li>
            </ul>
          </div>
          <divclass="card-body">
```

```
            <p>Decor</p>
            <h4 class="card-producttitle"><a href="single-product.html">Room
FlashLight</a></h4>
            <pclass="card-productprice">$150.00</p>
           </div>
          </div>

          <divclass="cardtext-centercard-product">
           <divclass="card-productimg">
            <imgclass="img-fluid"src="static/img/product/product4.png"alt="">
            <ulclass="card-productimgOverlay">
             <li><button><iclass="ti-search"></i></button></li>
             <li><button><iclass="ti-shopping-cart"></i></button></li>
             <li><button><iclass="ti-heart"></i></button></li>
            </ul>
           </div>
           <divclass="card-body">
            <p>Decor</p>
            <h4 class="card-producttitle"><a href="single-product.html">Room
FlashLight</a></h4>
            <pclass="card-productprice">$150.00</p>
           </div>
          </div>
        </div>
      </div>
    </section>
    <!--================BestSelling itemcarouselend=================-->

    <!--================Blogsectionstart=================-->
    <sectionclass="blog">
     <divclass="container">
      <divclass="section-intropb-60px">
       <p>PopularIteminthemarket</p>
       <h2>Latest<spanclass="section-introstyle">News</span></h2>
      </div>

      <divclass="row">
       <divclass="col-md-6 col-lg-4mb-4mb-lg-0">
        <divclass="cardcard-blog">
         <divclass="card-blogimg">
          <imgclass="card-imgrounded-0"src="static/img/blog/blog1.png"alt="">
         </div>
         <divclass="card-body">
          <ulclass="card-bloginfo">
           <li><ahref="#">ByAdmin</a></li>
           <li><ahref="#"><iclass="ti-comments-smiley"></i>2Comments</a></li>
          </ul>
          <h4 class="card-blogtitle"><a href="single-blog.html">The Richland
CenterShoopingNewsand weekly shooper</a></h4>
```

```
            <p>LetonefifthibringflytodividedfaceforbearingdivideuntoseedWingeddividedl
ightForth.</p>
            <a class="card-bloglink" href="#">Read More <i class="ti-arrow-
right"></i></a>
          </div>
        </div>
      </div>

      <divclass="col-md-6 col-lg-4mb-4mb-lg-0">
        <divclass="cardcard-blog">
          <divclass="card-blogimg">
            <imgclass="card-imgrounded-0"src="static/img/blog/blog2.png"alt="">
          </div>
          <divclass="card-body">
            <ulclass="card-bloginfo">
              <li><ahref="#">ByAdmin</a></li>
              <li><ahref="#"><iclass="ti-comments-smiley"></i>2Comments</a></li>
            </ul>
            <h4class="card-blogtitle"><ahref="single-
blog.html">TheShoppingNewsalsooffers top-quality printing services</a></h4>
            <p>LetonefifthibringflytodividedfaceforbearingdivideuntoseedWingeddividedl
ightForth.</p>
            <a class="card-bloglink" href="#">Read More <i class="ti-arrow-
right"></i></a>
          </div>
        </div>
      </div>

      <divclass="col-md-6 col-lg-4mb-4mb-lg-0">
        <divclass="cardcard-blog">
          <divclass="card-blogimg">
            <imgclass="card-imgrounded-0"src="static/img/blog/blog3.png"alt="">
          </div>
          <divclass="card-body">
            <ulclass="card-bloginfo">
              <li><ahref="#">ByAdmin</a></li>
              <li><ahref="#"><iclass="ti-comments-smiley"></i>2Comments</a></li>
            </ul>
            <h4 class="card-blogtitle"><a href="single-blog.html">Professional design
staffandefficientequipmentyou'llfind weoffer</a></h4>
            <p>LetonefifthibringflytodividedfaceforbearingdivideuntoseedWingeddividedl
ightForth.</p>
            <a class="card-bloglink" href="#">Read More <i class="ti-arrow-
right"></i></a>
          </div>
        </div>
      </div>
    </div>
  </section>
```

```
    <!--================Blogsectionend================-->

    <!--================Subscribesectionstart================-->
    <sectionclass="subscribe-position">
      <divclass="container">
        <divclass="subscribetext-center">
          <h3class="subscribetitle">GetUpdateFromAnywhere</h3>
          <p>BearingVoidgatheringlight lighthiseaveninguntodontafraid</p>
          <divid="mc_embed_signup">
            <form target="_blank" action="https://spondonit.us12.list-
manage.com/subscribe/post?u=1462626880ade1ac87bd9c93a&amp;id=92a4423d01"method=
"get" class="subscribe-formform-inlinemt-5 pt-1">
              <divclass="form-groupml-sm-auto">
                <input class="form-control mb-1" type="email"
name="EMAIL"placeholder="Enteryouremail"onfocus="this.placeholder=""onblur="this.pla
ceholder='YourEmailAddress'">
                <divclass="info"></div>
              </div>
              <button class="button button-subscribe mr-auto mb-1"
type="submit">SubscribeNow</button>
              <divstyle="position:absolute;left: -5000px;">
                <input name="b_36c4fd991d266f23781ded980_aefe40901a" tabindex="-
1"value="" type="text">
              </div>

            </form>
          </div>

        </div>
      </div>
    </section>
    <!--================Subscribesectionend================-->



  </main>


  <!--================StartfooterArea================-->
        <footerclass="footer">
                <divclass="footer-area">
                        <divclass="container">
                                <divclass="rowsection_gap">
                                        <divclass="col-lg-3col-md-6col-sm-6">
                                                <divclass="single-footer-widgettp_widgets">
                                                        <h4class="footer_titlelarge_title">Our
Mission</h4>
                                                                <p>
                                                                        Soseedseedgreenthatwinged
cattlein.Gatheringthingmadeflyyou'reno
```

```
                                                    divideddeepmoveduslan
Gatheringthinguslandyearsliving.
                                                </p>
                                                <p>
                                                    Soseedseedgreenthatwinged
    cattlein.Gatheringthingmadeflyyou'renodivideddeepmoved
                                                </p>
                                            </div>
                                        </div>
                                         <divclass="offset-lg-1col-lg-2col-md-6col-sm-6">
                                            <divclass="single-footer-widgettp_widgets">
                                                <h4class="footer_title">Quick
Links</h4>
                                                <ulclass="list">
                                                    <li><ahref="#">Home</a></li>
                                                    <li><ahref="#">Shop</a></li>
                                                    <li><ahref="#">Blog</a></li>
                                                    <li><a
href="#">Product</a></li>
                                                    <li><ahref="#">Brand</a></li>
                                                    <li><a
href="#">Contact</a></li>
                                                </ul>
                                            </div>
                                        </div>
                                        <divclass="col-lg-2col-md-6col-sm-6">
                                            <divclass="single-footer-widgetinstafeed">
                                                <h4class="footer_title">Gallery</h4>
                                                <ulclass="listinstafeedd-flexflex-
wrap">
                                                    <li><img
src="static/img/gallery/r1.jpg"
                                                    <li><img
alt=""></li>src="static/img/gallery/r2.jpg"
                                                    <li><img
alt=""></li>src="static/img/gallery/r3.jpg"
                                                    <li><img
alt=""></li>src="static/img/gallery/r5.jpg"
                                                    <li><img
alt=""></li>src="static/img/gallery/r7.jpg"
                                                    <li><img
alt=""></li>src="static/mg/gallery/r8.jpg"a
                                                </ul>
lt=""></li>                                 </div>


                                        </div>
                                         <divclass="offset-lg-1col-lg-3col-md-6col-sm-6">
                                            <divclass="single-footer-widgettp_widgets">
                                                <h4class="footer_title">Contact
Us</h4>
                                                <divclass="ml-40">
```

```
                                                    <pclass="sm-head">
                                                        <spanclass="fafa-
location-arrow"></span>
                                                        HeadOffice
                                                    </p>
                                                    <p>123,MainStreet,Your
City</p>

                                                    <pclass="sm-head">
                                                        <spanclass="fafa-
phone"></span>
                                                        PhoneNumber
                                                    </p>
                                                    <p>
                                                        +123456 7890 <br>
                                                        +123 456 7890
                                                    </p>

                                                    <pclass="sm-head">
                                                        <spanclass="fafa-
envelope"></span>
                                                        Email
                                                    </p>
                                                    <p>
                                                        free@infoexample.com
<br>
                                                        www.infoexample.com
                                                    </p>
                                                </div>
                                            </div>
                                        </div>
                                    </div>
                                </div>
                            </div>

                            <divclass="footer-bottom">
                                <divclass="container">
                                    <divclass="rowd-flex">
                                        <pclass="col-lg-12footer-texttext-center">
                                            <!--LinkbacktoColorlibcan'tberemoved.
TemplateislicensedunderCCBY 3.0.-->
Copyright &copy;<script>document.write(new Date().getFullYear());</script> All
rightsreserved|Thistemplateismadewith<iclass="fafa-heart"aria-
hidden="true"></i>by<ahref="https://colorlib.com" target="_blank">Colorlib</a>
<!--LinkbacktoColorlibcan'tberemoved.TemplateislicensedunderCCBY3.0.--></p>
                                        </div>
                                    </div>
                                </div>
                            </footer>
                            <!--================EndfooterArea=================-->
```

```
  <scriptsrc="static/vendors/jquery/jquery-3.2.1.min.js"></script>
  <scriptsrc="static/vendors/bootstrap/bootstrap.bundle.min.js"></script>
  <scriptsrc="static/vendors/skrollr.min.js"></script>
  <scriptsrc="static/vendors/owl-carousel/owl.carousel.min.js"></script>
  <scriptsrc="static/vendors/nice-select/jquery.nice-select.min.js"></script>
  <scriptsrc="static/vendors/jquery.ajaxchimp.min.js"></script>
  <scriptsrc="static/vendors/mail-script.js"></script>
  <scriptsrc="static/js/main.js"></script>
</body>
</html>
```

8.SYSTEMTESTING

Thepurposeoftestingistodiscovererrors.Testingistheprocessoftryingtodiscoverevery conceivable fault or weakness in a work product. It provides a way to check thefunctionality of components, sub-assemblies, assemblies and/or a finished product It is theprocess of exercising software with the intent of ensuring that the Software system meets itsrequirements and user expectations and does not fail in an unacceptable manner. There arevarious types oftest.Eachtesttypeaddressesaspecifictestingrequirement.

6.1 TYPESOFTESTS

6.1.1 Unittesting

Unit testing involves the design of test cases that validate that the internal programlogic is functioning properly, and that program inputs produce valid outputs. All decisionbranches and internal code flow should be validated. It is the testing of individual softwareunitsoftheapplication.itisdoneafterthecompletionofanindividualunitbeforeintegration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unittests 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 processperforms accurately to the documented specifications and contains clearly defined inputs andexpectedresults.

6.1.2 Integrationtesting

Integration tests are designed to test integrated software components to determine iftheyactuallyrunasoneprogram.Testingiseventdrivenandismoreconcernedwiththebasicoutcom eofscreensorfields.Integrationtestsdemonstratethat althoughthecomponentswere

individuallysatisfaction,asshownbysuccessfullyunittesting,thecombinationofcomponentsis correct and consistent. Integration testing is specifically aimed atexposing the problemsthatarisefromthecombination ofcomponents.

6.1.3 Functionaltest

Functional tests provide systematic demonstrations that functions tested are available asspecifiedbythebusinessandtechnicalrequirements,systemdocumentation,andusermanuals.Fu nctionaltestingis centered on thefollowing items:

ValidInput :identified classes of valid input must be accepted.InvalidInput :identifiedclasses ofinvalidinputmustberejected.Functions :identified functions mustbeexercised.

Output :identifiedclassesofapplicationoutputsmustbeexercised.Syst ems/Procedures:interfacingsystemsorproceduresmustbeinvoked.

Organization and preparation of functional tests is focused on requirements, key functions,or special test cases. In addition, systematic coverage pertaining to identify Business processflows; data fields, predefined processes, and successive processes must be considered fortesting. Before functional testing is complete, additional tests are identified and the effectivevalueof currenttestsisdetermined.

6.1.4 SystemTest

Systemtestingensuresthattheentireintegratedsoftwaresystemmeetsrequirements.Ittestsaconfigu ration to ensure known and predictable results. An example of system testing is theconfiguration-orientedsystemintegrationtest.Systemtestingisbasedonprocessdescriptionsandflows,emphasizi ng pre-drivenprocesslinks andintegrationpoints.

6.1.5 WhiteBoxTesting

White Box Testing is a testing in which in which the software tester has knowledge of theinner workings, structure and language of the software, or at least its purpose. It is purpose. Itis used to testareasthatcannotbereached fromablack box level.

6.1.6 BlackBoxTesting

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 requirementsdocument,suchasspecificationorrequirementsdocument.Itisatestinginwhichthesof tware

under test is treated, as a black box .you cannot “see” into it. The test provides inputs andresponds to outputswithoutconsidering how thesoftwareworks.

6.2 UnitTesting:

Unit testing is usually conducted as part of a combined code and unit test phase of thesoftware lifecycle, although it is not uncommon for coding and unit testing to be conducted astwodistinctphases**.**

6.2.1 Teststrategyandapproach

Fieldtestingwillbeperformedmanuallyandfunctionaltests willbewrittenindetail.

6.2.2 Testobjectives

- Allfieldentriesmustworkproperly.
- Pagesmustbeactivatedfromtheidentifiedlink.
- Theentryscreen,messages andresponsesmustnotbedelayed.

6.2.3 Featurestobetested

- Verifythattheentriesareofthecorrectformat
- Noduplicateentriesshouldbeallowed
- Alllinksshouldtaketheusertothecorrectpage.

6.3 IntegrationTesting

Software integration testing is the incremental integration testing of two or moreintegrated software components on a single platform to produce failures caused by interfacedefects.Thetaskoftheintegrationtestistocheckthatcomponentsorsoftwareapplications, e.g. components in a software system or – one step up – software applications at the companylevel–interactwithouterror.

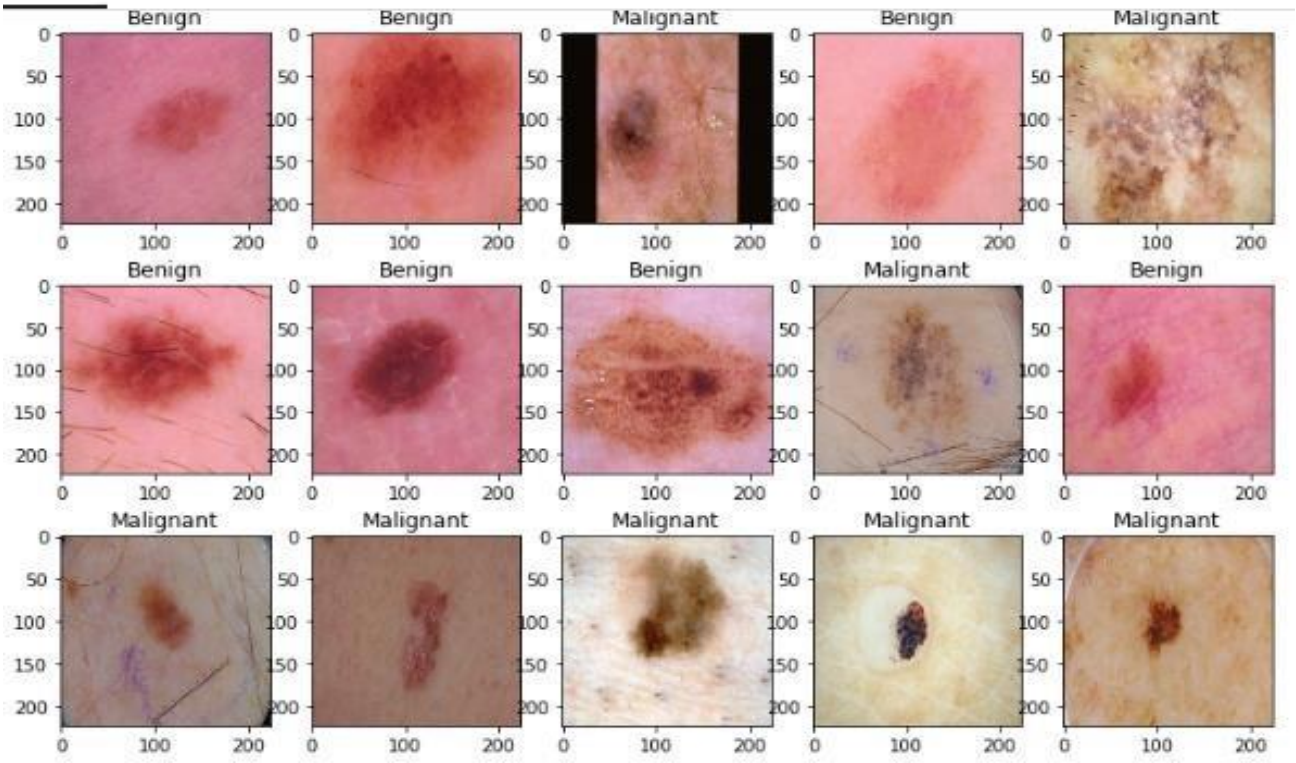
TestResults: Allthetestcasesmentionedabovepassedsuccessfully.Nodefectsencountered.

6.4 AcceptanceTesting

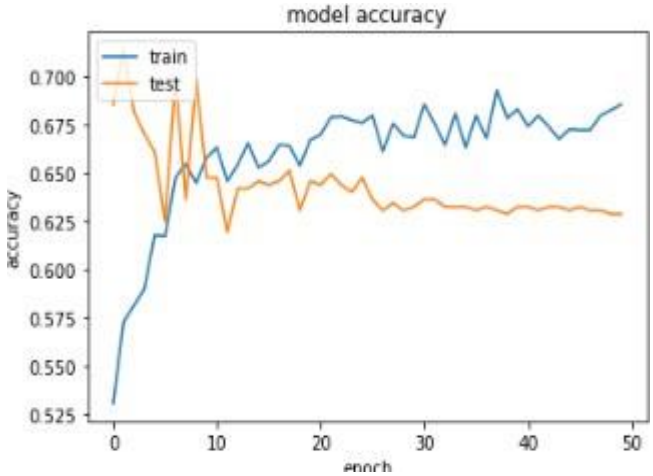
User Acceptance Testing is a critical phase of any project and requires significantparticipationbytheenduser.Italsoensuresthatthesystemmeetsthefunctionalrequirements.**TestResults:** Allthetestcasesmentionedabovepassedsuccessfully.Nodefectsencountered.

9.RESULTS

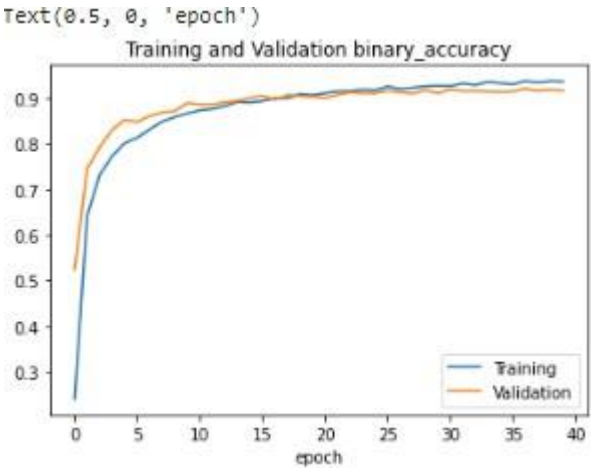
Testing image (skindatasetimages)



Modeltrainingaccuracy



Trainingandtestingaccuracy



10. advantageand disadvantages

1. Highaccuracy
2. Highsensitivity
3. Highreliability
4. Reducedloss

11. conclusions

Thisprojectdesignedthedeeplearningbased CNN(convolutionneuralnetwork)based algorithmwithconsistsinputlayer,convolutionlayer,Relulayer ,maxpoolinglayerfor extract thefeaturesfor trainingofimages

12. FUTUREWORK

In future work we designedreal time implementationtransfer The prospectspresented by the use of AItechnology inthe sphere of medical services should not beoverlooked. AI advancements can assist in filtering through massive amounts of data to findpatterns, correlations, and conduct complicated computations, activities that robots are betterable to execute than people. The suggested model, which is based on the Convolution neuralnetwork V2 and LSTM approaches, showed effectiveness for skin disease categorization anddetection while requiring little computing resources and effort. When tested and compared tootheralgorithmsusingreal-timephotographsobtainedfromCagle,theresultisencouraging,

with effectiveness of 85.34 percent. When the background of the tumor image is reduced andtheactuallevelsareself-explanatoryandcomparedtothelevelsrequiredtoformtheresultingmatrix, the pixels drop. In this phase, the process affects the values of each group of beliefs(matrices,relationshipsandbehaviors)thatareconsideredtobeinconsistent.Reliabilityissue sand time-saving costs cannot be achieved at the same time, which occurs at the training leveland is influenced by the variability of different models, which are important issues. Aneffective way to invade invasion invasion not used, not used. used, not used, not used. To testthe need, several different trainings were used. In addition, many researchers have focused onvarious features in training and measurement. Because of the variability in systems across alltextbooks,effectivecomparisonsarenotpossible

GITHUB-
https://github.com/IBM-EPBL/IBM-Project-7954-1658903841/tree/main/Project%20Development%20Phase

DEMO LINK -
https://photos.app.goo.gl/5JPLq1aa49pPeEkF6