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Machine Learning for Health Predictor Using Cloud Storage

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Abstract: ***There Are Many ML Models For Medical Sector Analysis Focus On A Single Disease. For Example, One Analysis Could Be For Diabetes, Another For Cancer, And Another For Skin Problems. There Is No Universal Approach That Can Forecast Multiple Diseases Using A Single Analysis. By Utilizing The Flask API, This Project Proposes A System That Can Forecast Different Diseases. Diabetes, Heart Disease, And Breast Cancer Were All Examined In This Investigation. Other Disorders, Such As Skin Conditions, Fever Analysis, And A Variety Of Others, Can Be Added Later. Using Machine Learning Methods, Tensor Flow, And The Flask API, Numerous Illness Analyses Was Implemented. The Model Behavior Is Saved Using Python Pickling, And It Is Loaded Using Python Unpicking. As We Are Using Various Kinds Of Vast Health Data Sets, This Leads To Need For A Cloud For Accessing The Data So Here We Use Cloud For Our Data Access, Then The Remaining Process Get Held By Using The Various ML Algorithms***
Keywords: Diabetes, Cancer, Forecast, Investigation, Universal

I. INTRODUCTION

Machine Learning Models[1] Are Used In Various Sectors For Several Uses, In Medical Sector This Plays An Crucial Role By Performing Various Analysis On Diseases And Predicting The Intensity Of Diseases. This Can Leads To The Awareness Over The Patients ,Timely Checkups May Increases The Number Of Patients In Hospitals, By Using These ML Techniques To Find The Intensity Of The Corresponding Diseases And By Analyzing The Dialogized Reports We Can Predict The Intensity Weather To Consult A Doctor Or To Take The Simple Medication. According To WHO Doctor To Patient Ratio Is 1:1456 By Implementing These Advanced Machine Learning Techniques[2] We Can Get Some Advantage Of Unnecessary Consultation Of Doctors. So We Can Save Our Time As Well As Increase The Mortality Ratio.

II. LITERACY SURVEY

CAD (Computer Aided Diagnosis) Is A Rapidly Evolving And Diversified Discipline Of Medical Analysis. Now-A-Days, Significant Trials Have Made To Build Computer-Aided Diagnostic Applications, As Mistakes In Medical Diagnosis Processes Can Result In Profoundly False Medical Therapies. In A Computer-Aided Diagnostic Exam, Machine Learning (ML) Is Critical. Body Organs, For Example, Cannot Be Appropriately Identified Using A Simple Equation.

Bio As A Result, Pattern Recognition Essentially Necessitates Instance-Based Training. Pattern Detection And Machine Learning Have The Potential To Improve The Accuracy Of Disease Identification And Approach In The Biomedical Field.

They Also Value The Technique Of Decision-Impartiality. Making's ML Offers A Respectable Service.

When Used To Visual, Text, And Speech Data In Diverse Fields, Deep Neural Networks Have Had A Lot Of Success. The Multi-Layer Design And In-Model Feature Translation Of Deep Learning Models Are Key Factors In These Results. Other Sub-Fields Of Machine Learning, Such As Ensemble Learning, Have Been Inspired By These Design Concepts. In Recent Years, Some Deep Homogeneous Ensemble Models With A Large Number Of Classifiers In Each Layer Have Been Introduced. As A Result, These Models Necessitate A Time-Consuming Computational Classification. Furthermore, Present Deep Ensemble Models Use All Classifiers, Including Those That Aren't Needed, Which Can Reduce The Number Of Classifiers Used.

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III. PROPOSED SYSTEM

We Propose A System With A User Interface That Is Both Simple And Elegant, As Well As Time Efficient. We Are Looking For A More Particular Questionnaire That Will Be Followed By The System In Order To Make It Less Time Demanding. The Goal Of This System Is To Serve As A Link Between Patients And Doctors For Consultation.

The Main Feature Will Be Machine Learning, In Which We Will Use Various Algorithms Such As The K-Nearest Algorithm,

Decision Tree Algorithm, Convolution Neural Networks, Random Forest Algorithm, And Support Vector Machine To Give Us Accurate Predictions. We Will Compare Which Algorithm Gives The Efficient And Accurate Result. Doctor's Consultation Is Another Element That Will Be Included In Our System. Following The Delivery Of The Findings, Our System Will Advise The User To Seek Medical Advice On The Report. We Will Also Earn Their Faith In The System By Demonstrating That It Is Not Impacting Their Business.

IV. IMPLEMENTATION

A. Cloud Storage: AWS S3

As We Are Using Medical Dataset Which Are Huge Amount So We Are Using Cloud For The Storage Purpose AWS S3(Simple Storage Service)S3 Is Interduce In 2006 In Our Region S3 Having Several Advanced Features Like Scalability , Availability , Internet Storage Can Be Extendable To Store Huge Amount Of Data

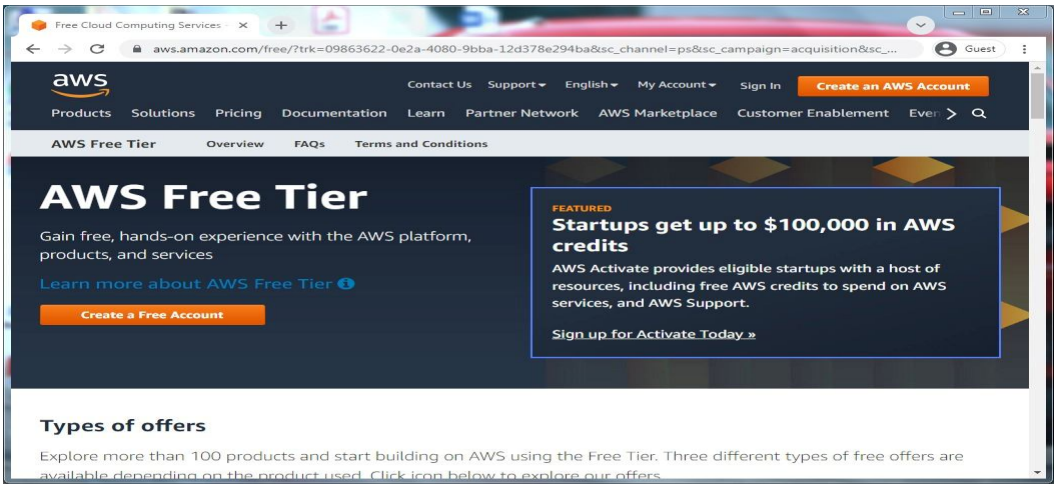
S3 Store Each Data In 3 Copies Data Can Be Available Even If Any Software Or Hardware Clash Occurs

We Access The Data From Anywhere In The World

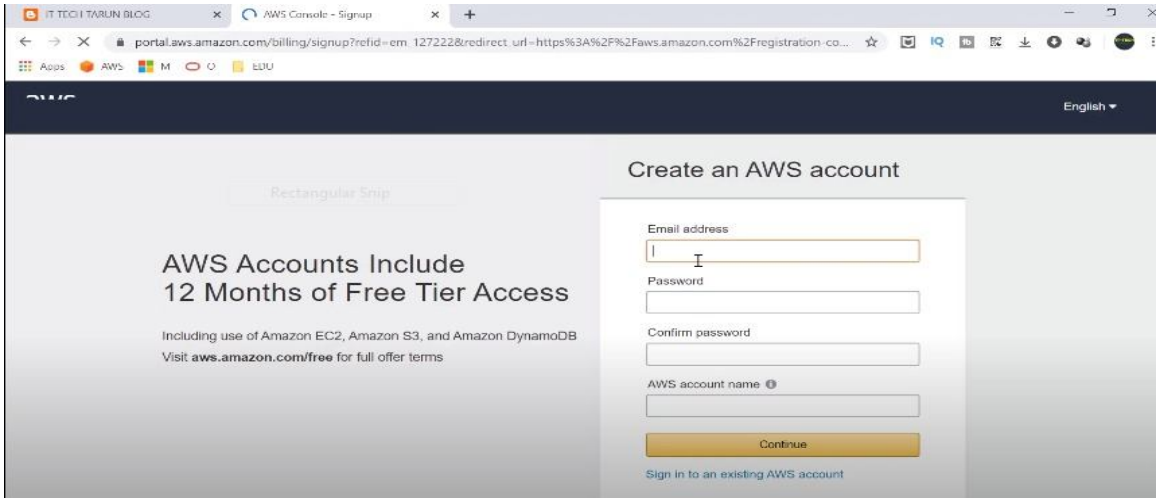
Where We Are Having Internet Facility

B. Creating An AWS Account

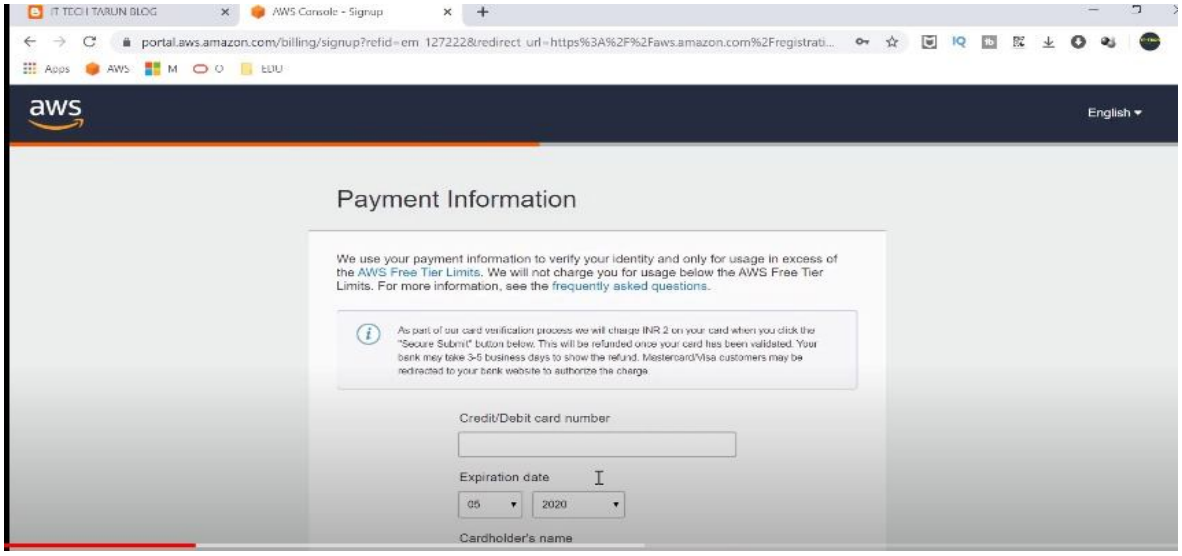
1) Open Browser Search AWS Console (AWS Free Tier)



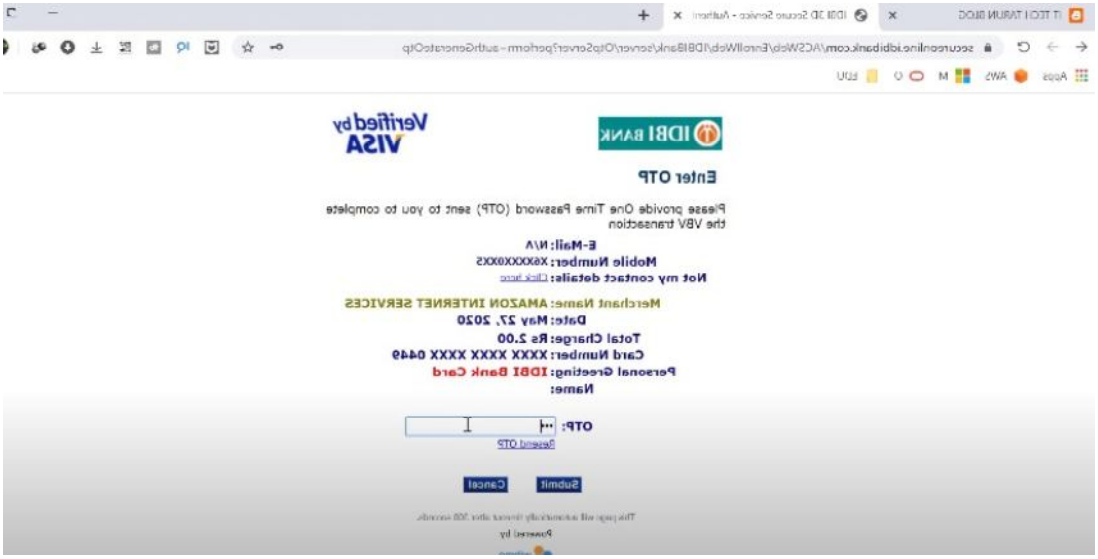
2) Enter The Required Details (Email Address , Password, Country Region And Personal Details)



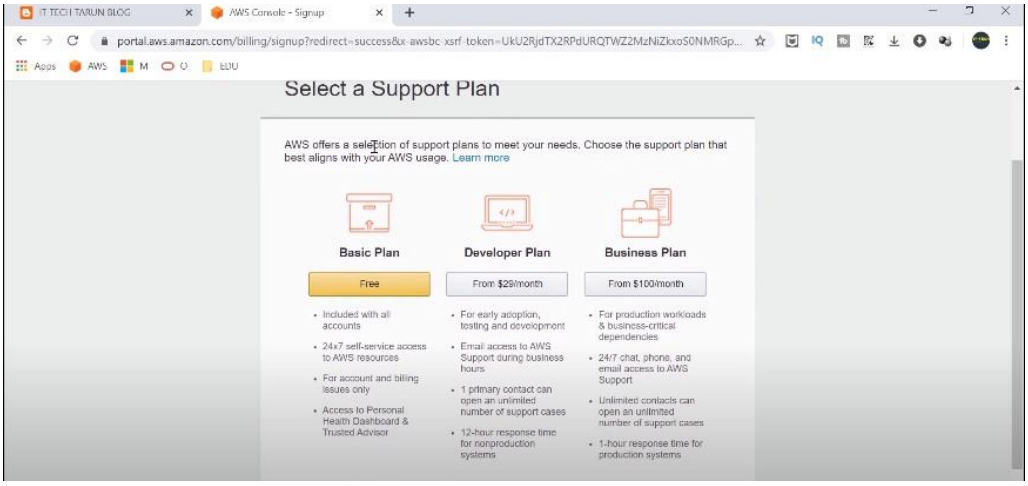
3) Payment Information =>Debit Card Information For Verification



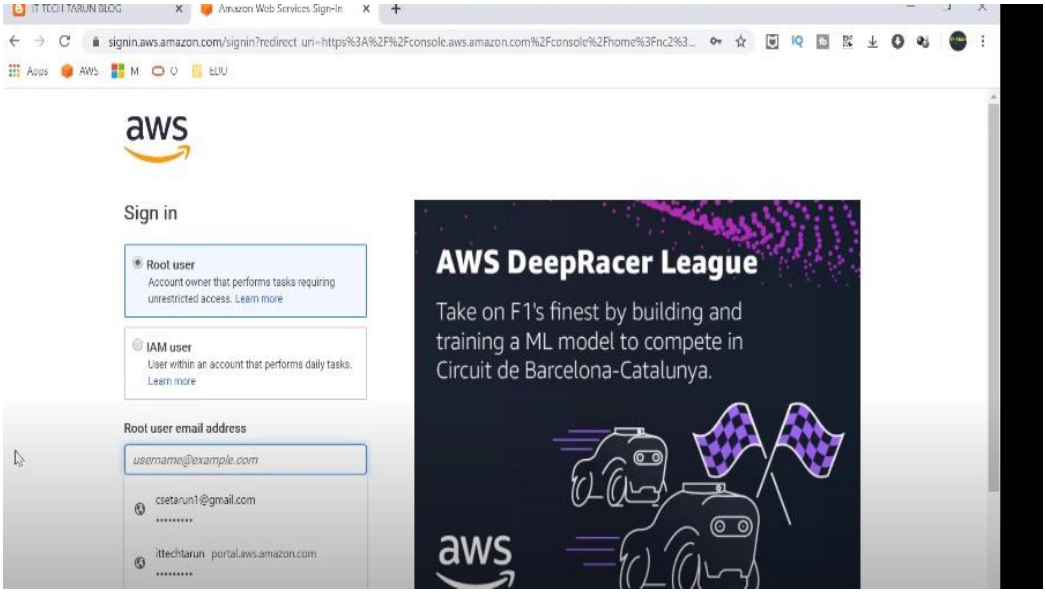
4) Verification Through Mobile By OTP For The Identify Verification



5) Select The Support Plan (We Choose Free)

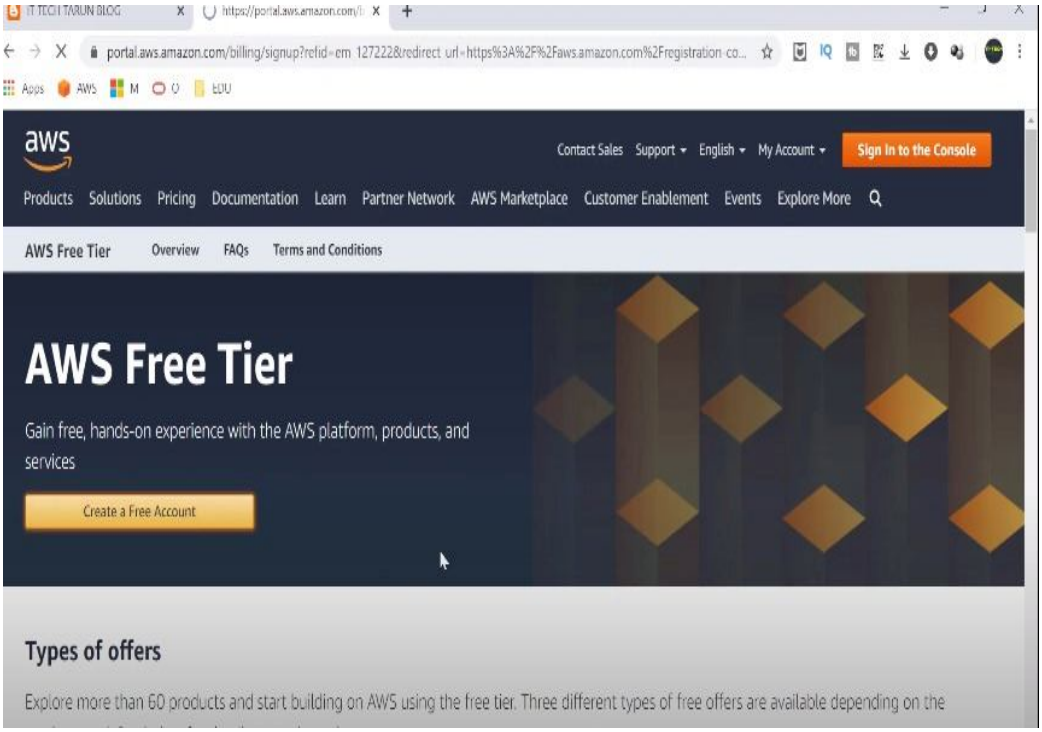


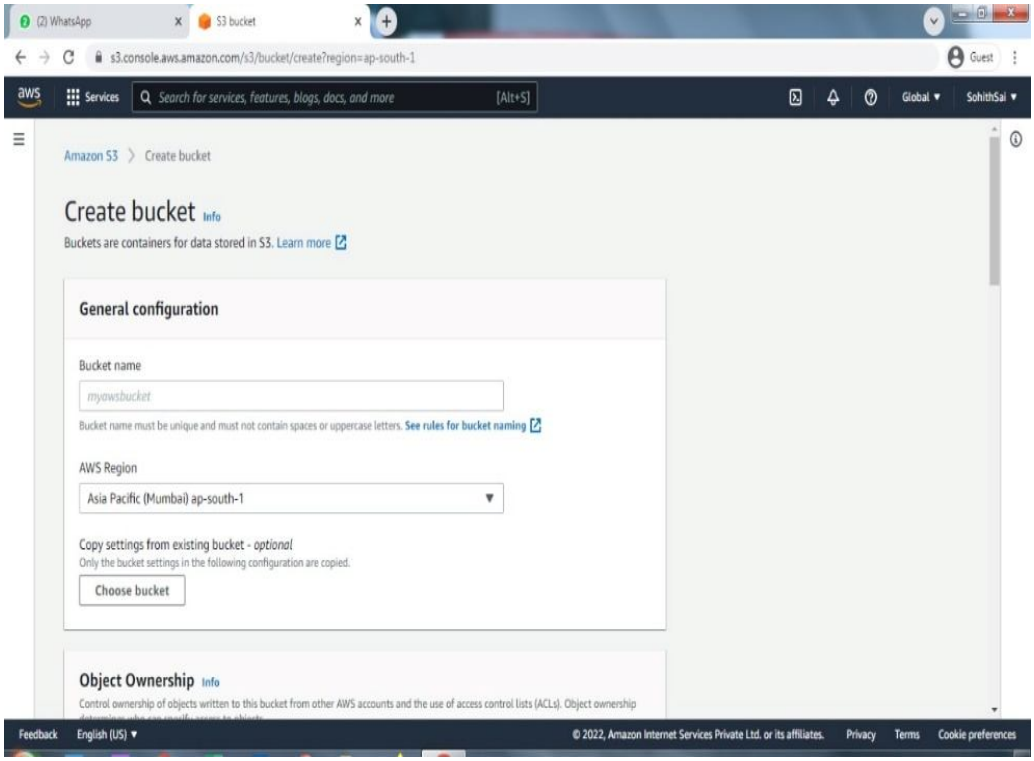
6) Then Sign In To The Console And Perform Action On AWS Cloud

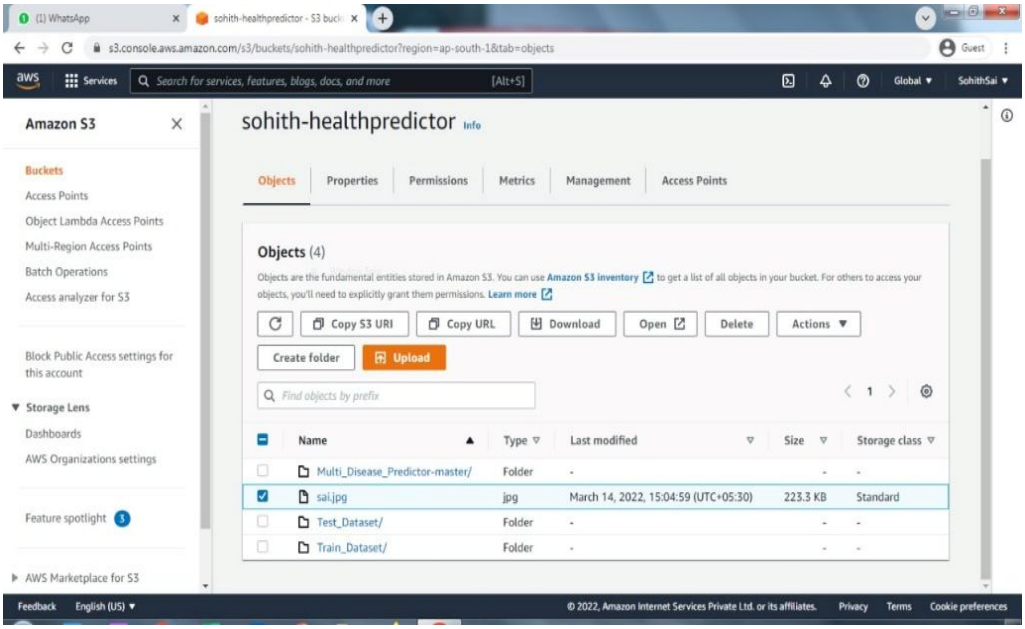


C. Using S3: Creating Bucket Insert Files(Object)

1) Login To AWS Console
2) Select S3 Service
3) We Create A Bucket Here To Store Data In S3 Buck In Just Like A Folder And File Are Known As Object
4) Bucket Name Must Be Unique As S3 Is A Global Service Cloud And Create Bucket It Shows The Creation & Modification Time
5) We Can Upload A File Directly Into A Bucket Or We Can Create A Folder And Can Upload Info It
6) To Download A File, Select Corresponding File And Click On Download







To Make Object Public And Create An URL

a) Click On The Object We Can Found An URL
b) By Default, It Is Private
c) We Get All Details Of The Corresponding Object
d) We Have To Change Permission To Make Public In Permission Tab Edit Block Public Access Able To Disable Now We Can Make Our Object Public
e) Now Copy The URL And Past It On The Browser Now We Can Access The Object In The S3 Directly

D. Random Forest Algorithm

Random Forest Is Supervised ML Algorithm, That Is Mainly Used Of Classification And Regression Issues.By Considering The All Samples ,And Creates The Decision Trees For Several Samples,It Considers The Majority Vote For Classification And Average For Regression,For Classification It Produces The Superior Results

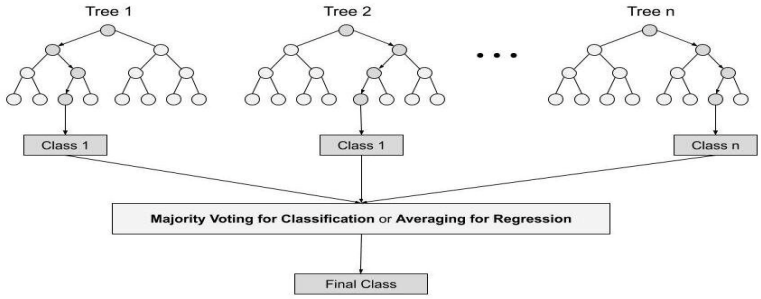


Fig: Random Forest

E. Convolution Neural Networks(CNN)

CNN(Convolutional Neural Networks) [3][4]Are Neural Networks Used To Process An Input Image And Classify The Objects Based On Values.

Convolution Neural Networks Contains 3 Layers, I.E. Input Layer, Hidden Layer, Output Layer , Input Layer Gets The Image As Input Sends To The Hidden Layer To Process The Image Or Object, Hidden Layer Contains The Major Function That Performs Based On The Trained Model, Based On The Result Of The Hidden Layer Generates The Output As A Prediction[5] Or As An Message. As The Image Taken As A Input Then It Stores In The Pixels Format Then Processing The Image[6] Gets Started And Then The Prediction Will Be Generated Based On The Trained Model.

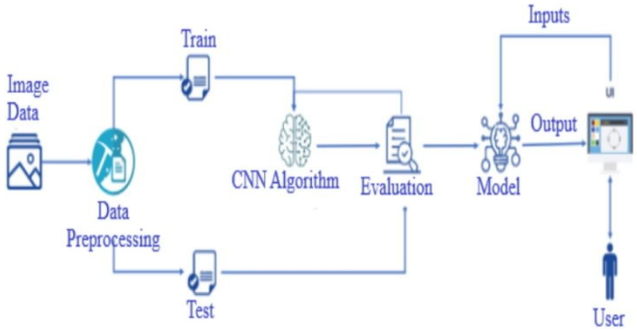


Fig: CNN Architecture

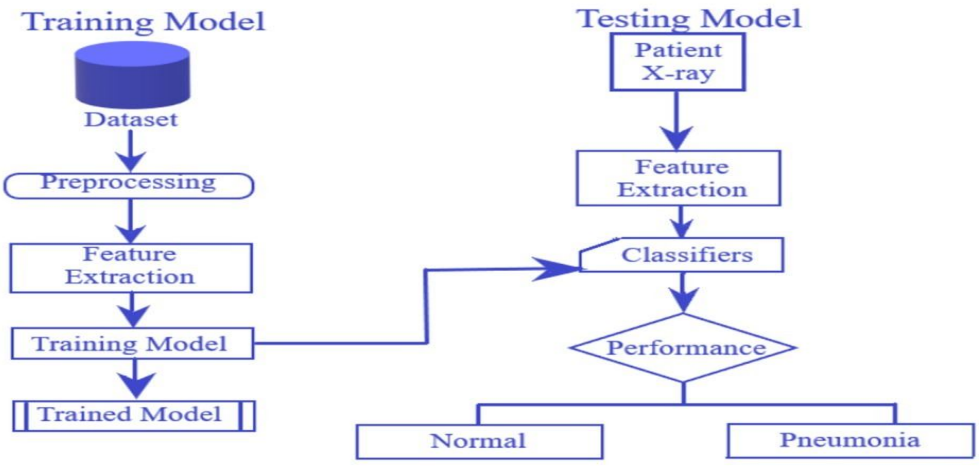


Fig: Block Diagram

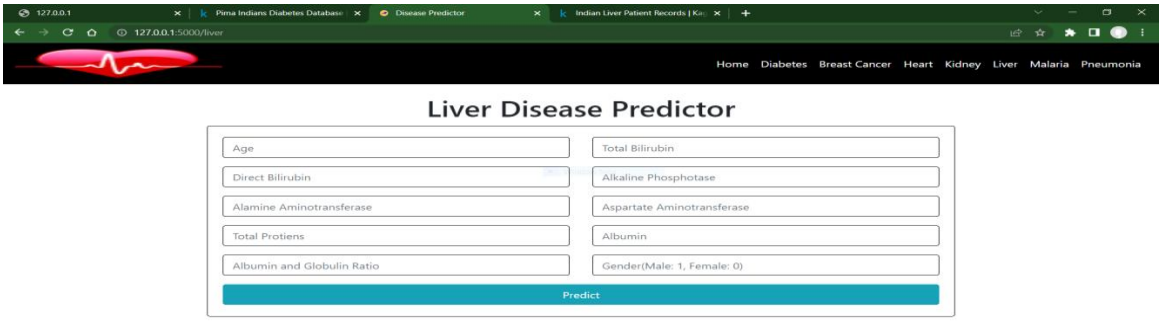
F. Dataset

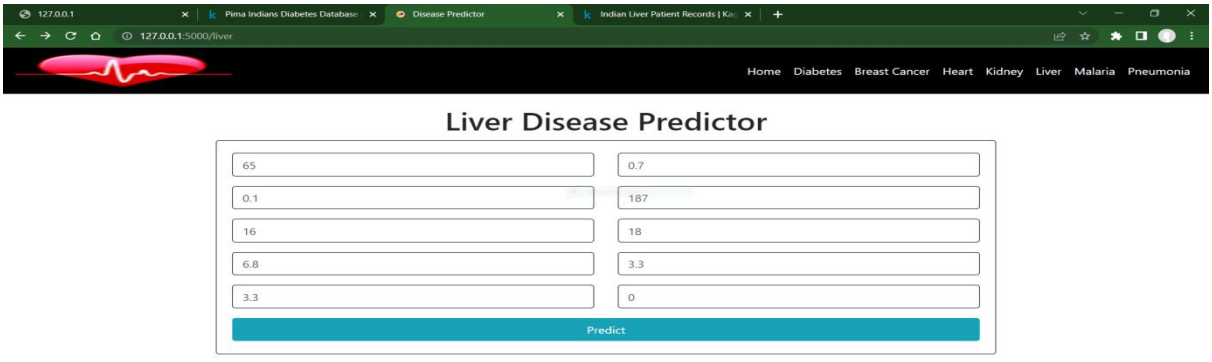
Age Age of the patients	Gender Sex of the patients	Total_Bilirubin Total Billirubin in mg/dL	Direct_Bilirubin Conjugated Billirubin in mg/dL	Alkaline_Phospho... ALP in IU/L	A ALT
4 90	Male 76% Female 24%	0.4 75	0.1 19.7	63 2110	10
65	Female	0.7	0.1	187	16
62	Male	10.9	5.5	699	64
62	Male	7.3	4.1	490	60
58	Male	1	0.4	182	14
72	Male	3.9	2	195	27
46	Male	1.8	0.7	208	19
26	Female	0.9	0.2	154	16
29	Female	0.9	0.3	202	14
17	Male	0.9	0.3	202	22
55	Male	0.7	0.2	290	53

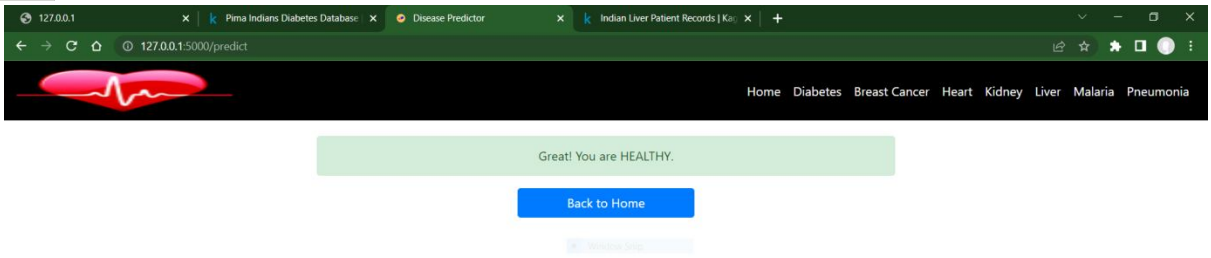
Pregnancies Number of times pregnant	Glucose Plasma glucose concentration a 2 hours in an oral glucose tolerance test	BloodPressure Diastolic blood pressure (mm Hg)	SkinThickness Triceps skin fold thickness (mm)	Insulin 2-Hour serum insulin (mu U/ml)	B Boo in k
0 17	0 199	0 122	0 99	0 846	0
6	148	72	35	0	33.
1	85	66	29	0	26.
8	183	64	0	0	23.
1	89	66	23	94	28.
0	137	40	35	168	43.
5	116	74	0	0	25.
3	78	50	32	88	31
10	115	0	0	0	35.

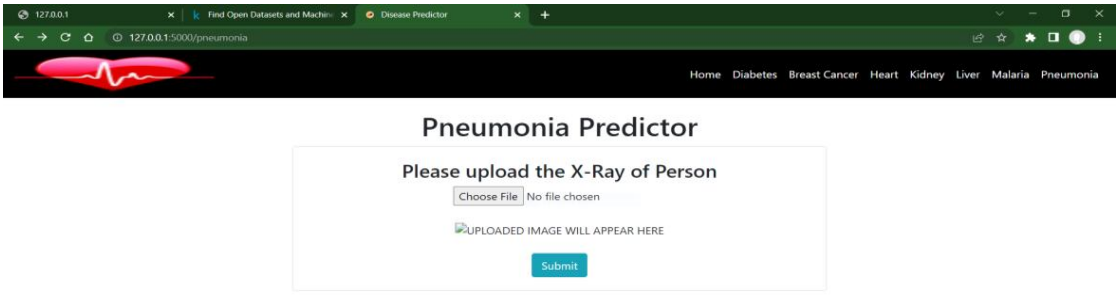
V. RESULTS AND DISCUSSION

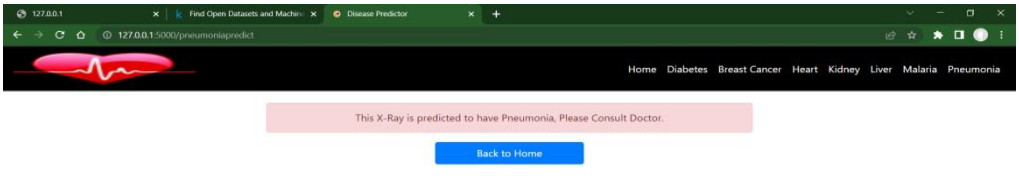
Based On The Input Values Given By The User Our Web Application Predict The Intensity Of The Disease And Shows The Result As “You Are Healthy” Or “Sorry,Please Consult A Doctor!”.

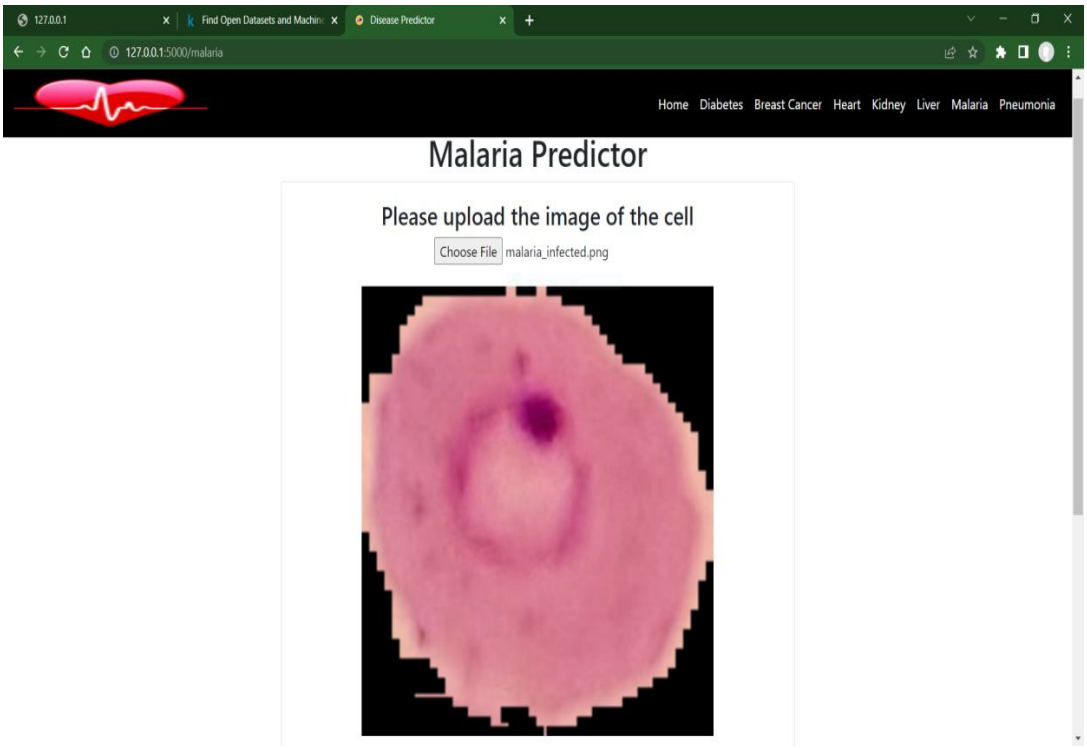




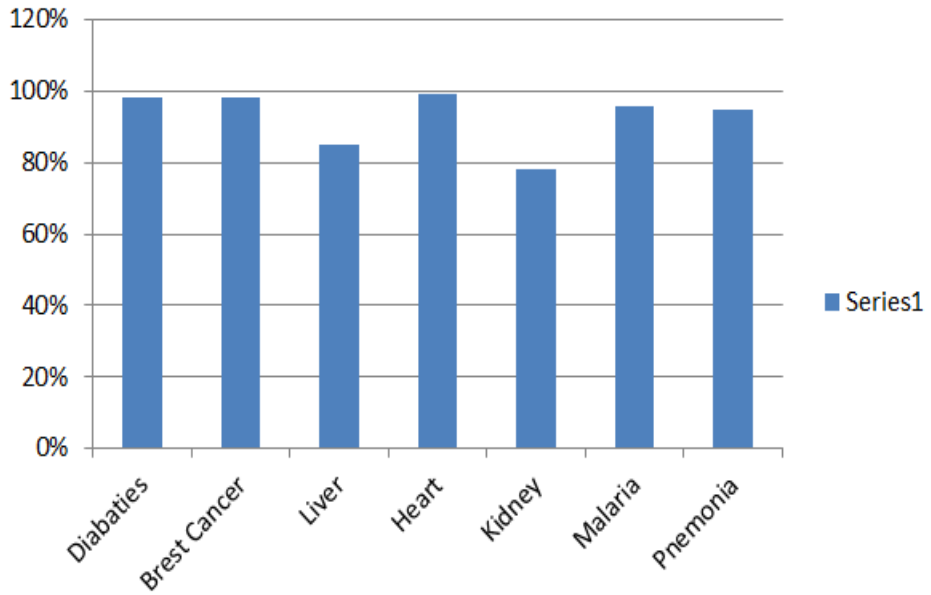

127.0.0.1
Pima Indians Diabetes Database
Disease Predictor
Indian Liver Patient Records | Ka
127.0.0.1:5000/predict
Home Diabetes Breast Cancer Heart Kidney Liver Malaria Pneumonia
Great! You are HEALTHY.
Back to Home

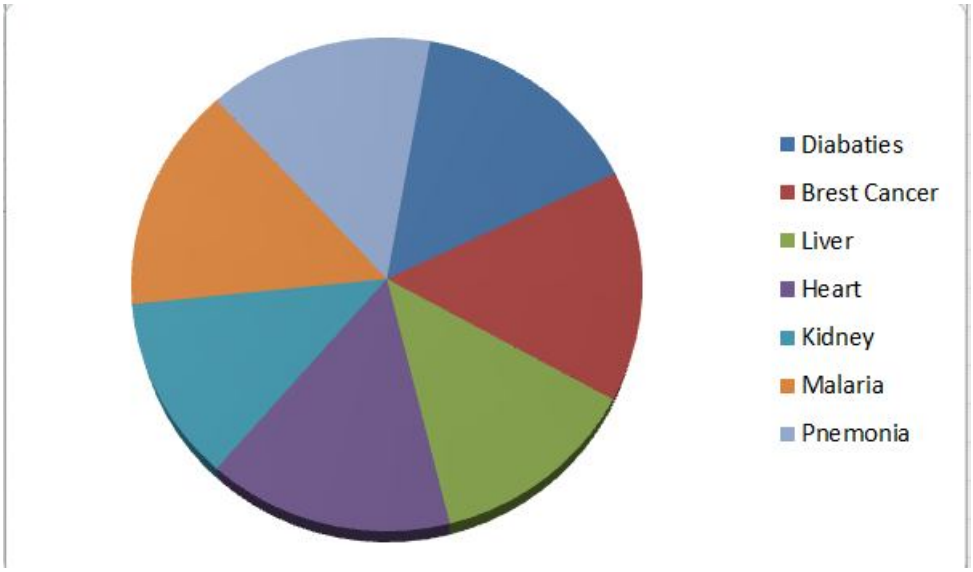

127.0.0.1
Find Open Datasets and Machin
Disease Predictor
127.0.0.1:5000/pneumonia
Home Diabetes Breast Cancer Heart Kidney Liver Malaria Pneumonia
Pneumonia Predictor
Please upload the X-Ray of Person
Choose File No file chosen
UPLOADED IMAGE WILL APPEAR HERE
Submit


127.0.0.1
Find Open Datasets and Machin
Disease Predictor
127.0.0.1:5000/pneumoniapredict
Home Diabetes Breast Cancer Heart Kidney Liver Malaria Pneumonia
This X-Ray is predicted to have Pneumonia, Please Consult Doctor.
Back to Home



Disease	Accuracy
Diabetes	98.25%
Brest Cancer	98.25%
Heart Disease	99%
Liver Disease	78%
Malaria	96%
Pneumonia	95%





VI. CONCLUSIONS

Data This Project Is The One The Implementation Of The ML Techniques In The Medical Sector As We Are Predicting Several Diseases Like Heart, Liver, Malaria, Pneumonia, Diabetes Etc. This Is Use Full For The Health Condition Of The Patient For The Corresponding Disease Intensity Otherwise To Consult A Doctor In Bad Condition We Are Having The High Accuracy Rate For Each Disease Model So The User Can Get The Accurate Results According To Their Dialogized Reports.

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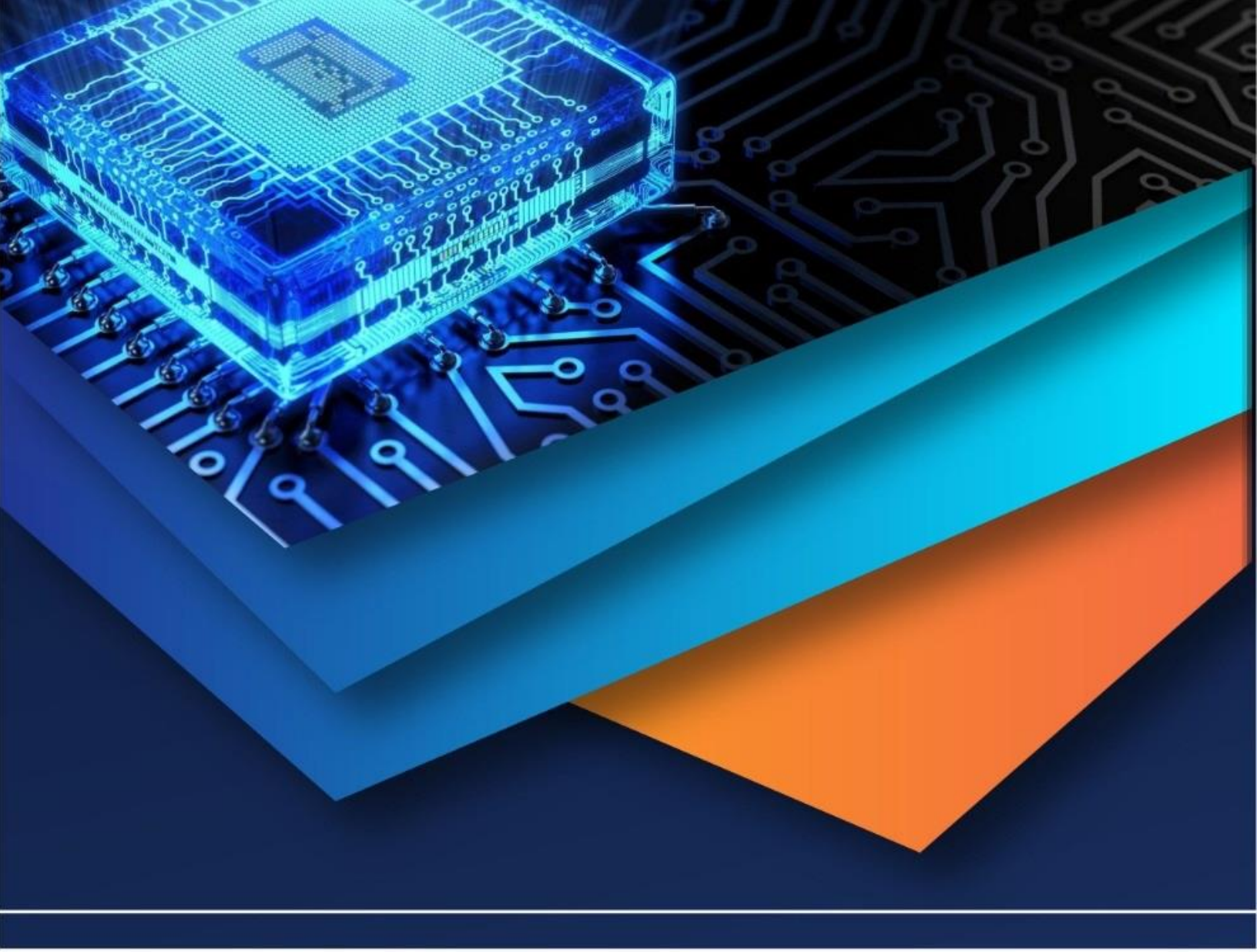

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