



SOMAIYA
VIDYAVIHAR

K J Somaiya Institute of Engineering and Information Technology
An Autonomous Institute affiliated to University of Mumbai
Accredited by NAAC and NBA, Approved by AICTE, New Delhi

L.Y. Project Presentation
“Detection of Diseases using Machine Learning”

Guide: Prof. Pankaj Deshmukh
Group No: 7

Raj Ghadi (Roll No. 23)
Shrejay Patil (Roll No. 59)
Rohit Desai (Roll No. 14)

Department of Electronics Engineering, K.J. Somaiya Institute of Engineering and IT, Sion, Mumbai 400022

Table Of Contents

- Introduction
- Literature Survey
- Objectives
- Implementation
- Applications
- Expected Results
- Conclusion
- Future Scope
- References
- Achievements
- Certificates

Introduction

- As per the incrementing population and disease it is putting a substantial quantity of burden on the healthcare system.
- To minimize the pressure of the healthcare system and to avail the medicos and society we have engendered a project which will soothsay the particular disease, detect the disease in earlier stages and relegate the diseases very accurately and efficiently.
- This will avail medicos to corroborate or cross-check their postulations and analysis. It will avail them in critical situations and decisions.



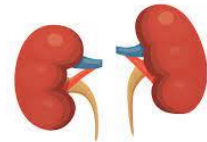
Literature Survey

Pr. No.	Author	Topic Name	Use Case	Algorithm	Technology	Learning
1	University of California – Irvine [7]	Researchers created a model to predict whether a patient needs ICU, general ward or can be sent home.	COVID-19	Ensemble and tree-based models	Software Development, Machine Learning, Data Analysis, Data Mining and Pre-Processing Techniques	The idea to develop one open-source software that will help our doctors to predict the diseases and to cross their assumptions.
2	Marouane Fergana [5]	Disease Prediction Using Machine Learning	Heart Disease Common Diseases	Logistic Regression Random Forest	Machine Learning, Data Pre-Processing techniques	Learn about the different types of algorithms that should be used to predict specific diseases.

Department of Electronics Engineering, K.J. Somaiya Institute of Engineering and IT, Sion, Mumbai 400022

Objectives

- Prediction of specific diseases (Heart, Liver, Diabetes, Cancer, Parkinson's, Kidney) ✓
- Accuracy of prediction must be more than 70%. ✓
- Detection of diseases in an earlier stage. ✓
- Increase the speed of diagnosis and efficiency in the healthcare system. ✓
- Provide the best user interface. ✓



Implementation

Part 1: Frontend

Technologies Used: HTML, CSS, Bootstrap, JavaScript

Working of Web Application:

- Login page / Sign-Up (User Authorization)
- Display all the different diseases on the home page.
- Each disease has its page.
- Click on a particular disease.
- Enter medical data conscientiously.
- Machine Learning Model will predict the output.
- The results will be exhibited on the same page itself.

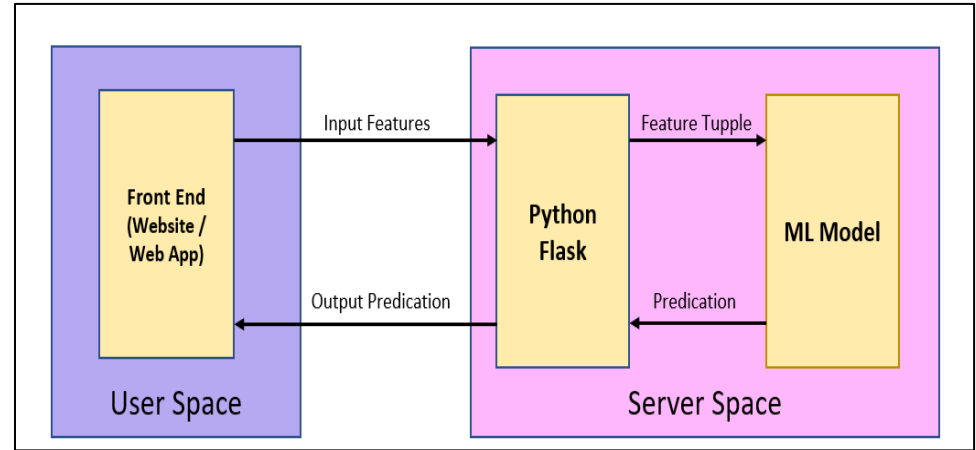


Fig1.Working of Web Application

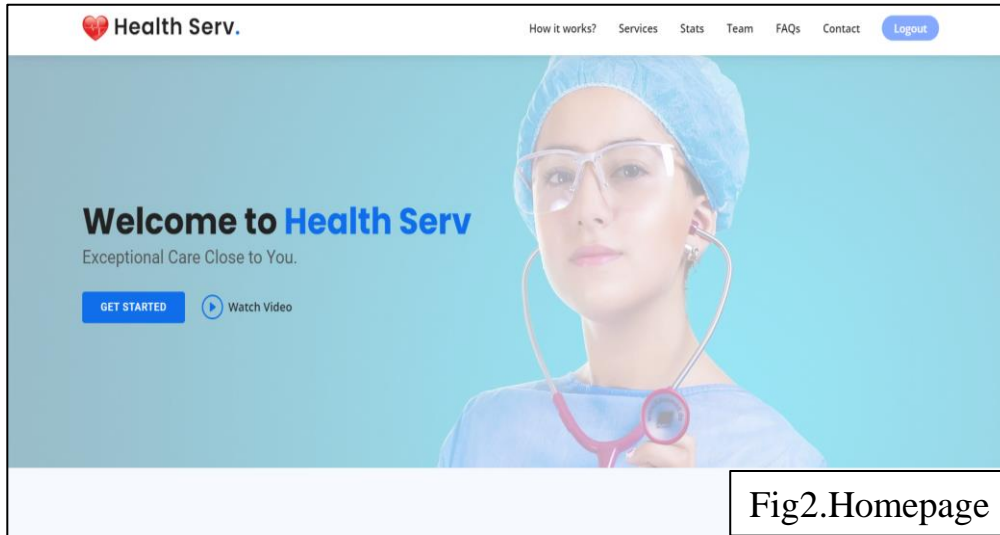


Fig2.Homepage

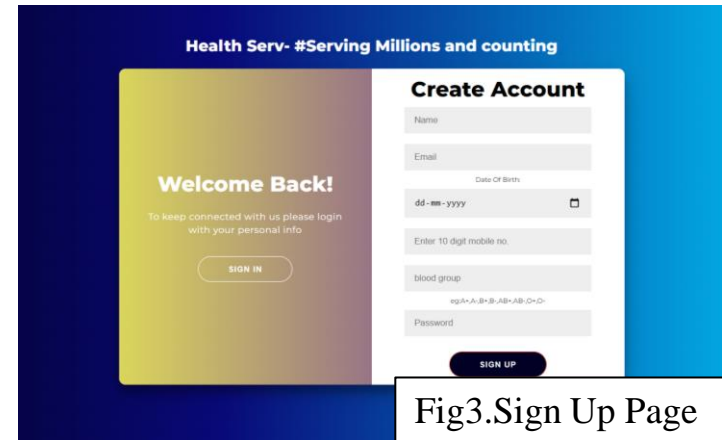


Fig3.Sign Up Page

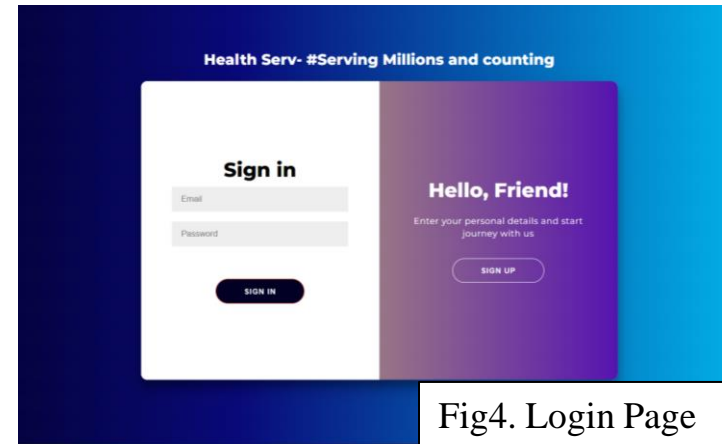


Fig4. Login Page

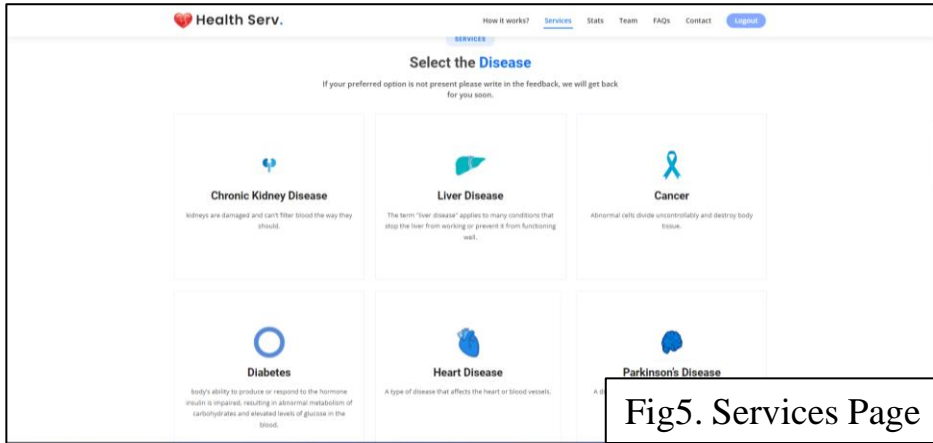


Fig5. Services Page



Fig6. Diseases Page

Sr No.	Disease	Parameters	Algorithm Used	Accuracy in (%)
1	Diabetes	BP (mm Hg), Glucose, Insulin (μ U/ml), BMI (kg/m^2), Diabetes Pedigree Function, Age	Random Forest Classifier	82
2	Heart	Cholesterol, Fasting Blood Sugar, Chest Pain type	Logistic Regression	80
3	Liver	Proteins, Albumin, Bilirubin, Albumin and Globulin Ratio	Random Forest Classifier	79
4	Kidney	Sugar, Red Blood Cells, Blood Urea, Hyper Tension	Random Forest Classifier	99
5	Parkinson's	range of biomedical voice measurements	Random Forest Classifier	94
6	Breast Cancer	Radius, Perimeter, Area, Concavity, Concave Points	Logistic Regression	97

Part 2:- Machine Learning

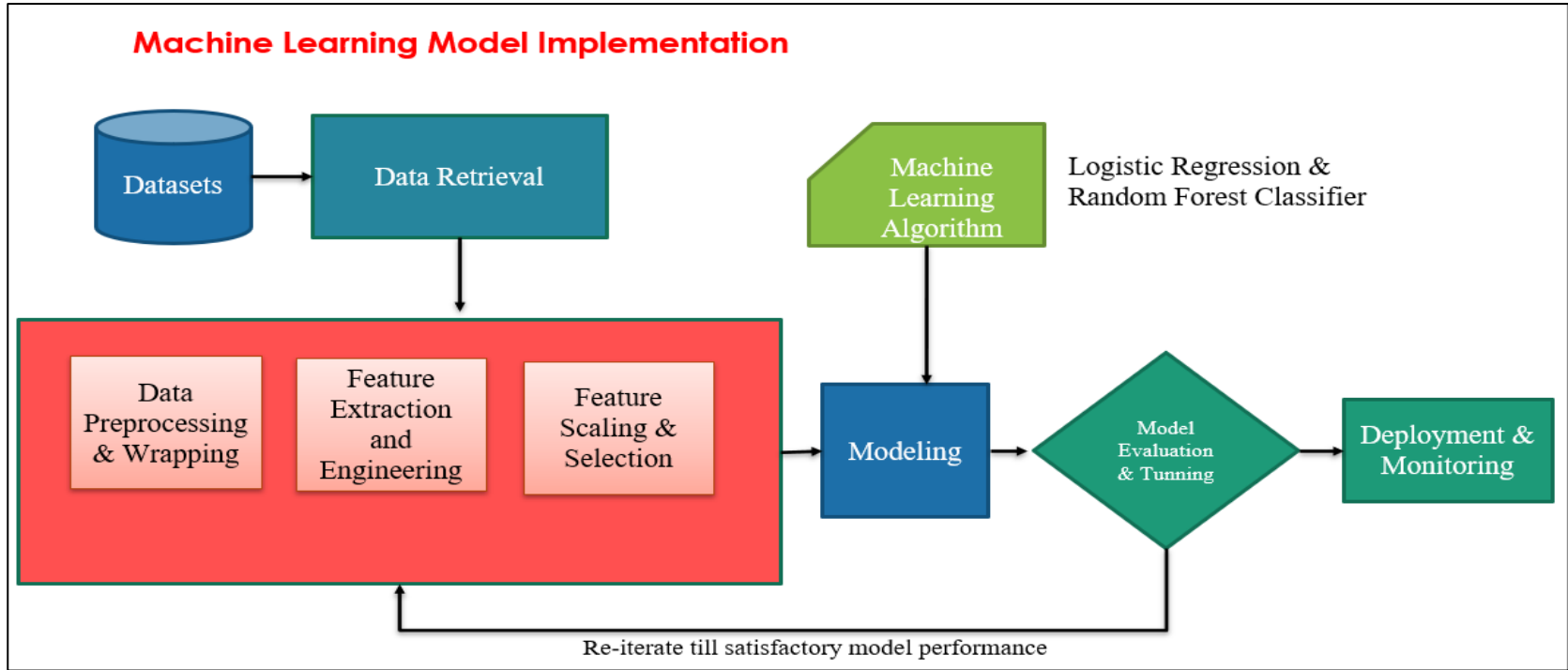


Fig7. Machine Learning Model Implementation

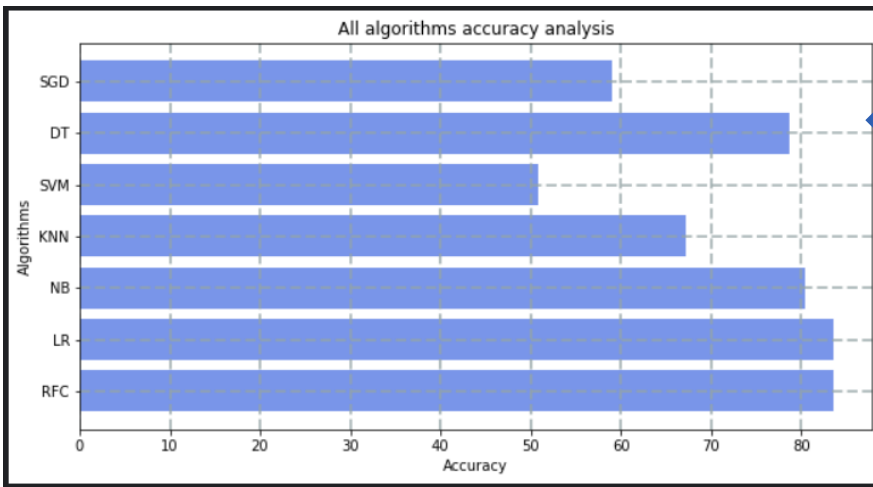


Fig8. Algorithm Analysis

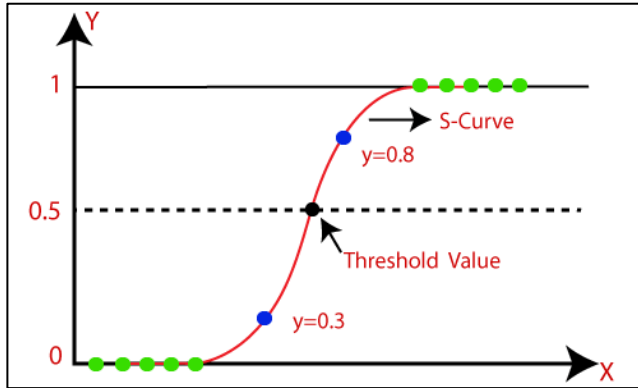


Fig9.Logistic Regression

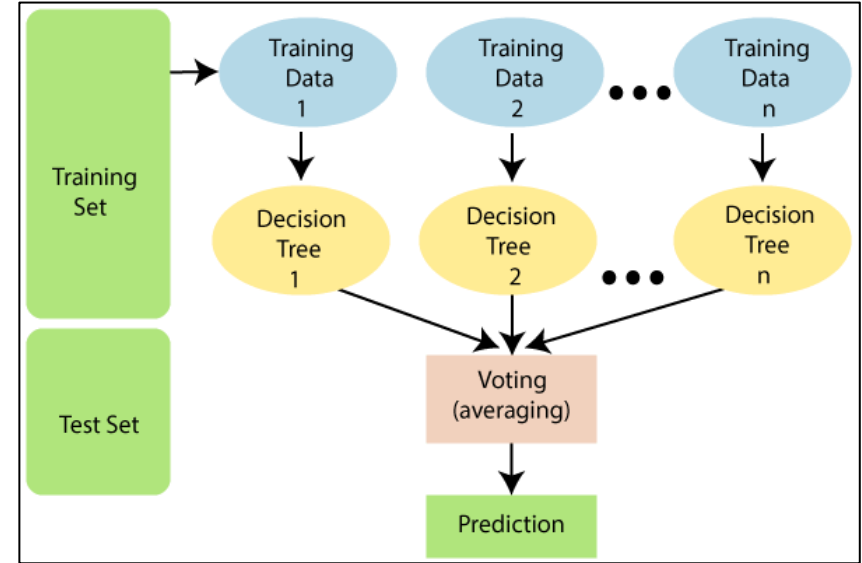


Fig10.Random Forest Classifier

Part 3:- Backend

Technologies Used: MySQL, Python Flask, JavaScript

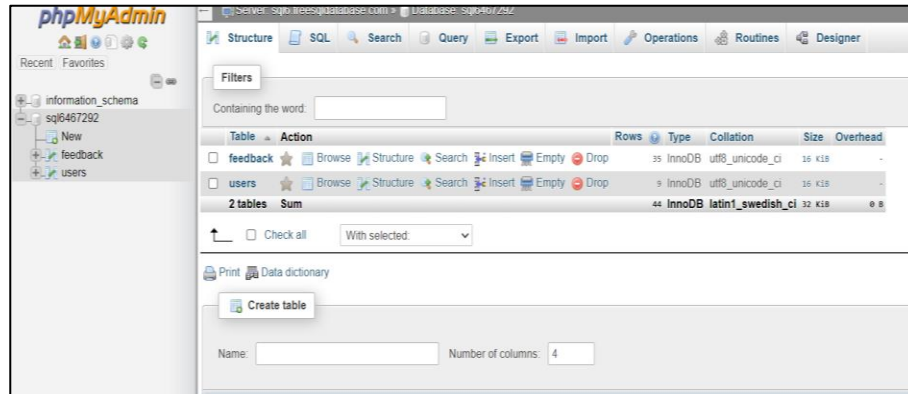


Fig11.DataBase

+ Options		user_id	name	email	password	dob	mobile	blood
<input type="checkbox"/>	Edit Copy Delete	15	Raj Ghadi	r.ghadi@somaiya.edu	1410	2000-10-14	8928669402	AB+
<input type="checkbox"/>	Edit Copy Delete	16	Rohit Desai	rohit.desai@somaiya.edu	0110	2000-10-01	8655829236	O+
<input type="checkbox"/>	Edit Copy Delete	17	Shreyay Patil	shreyay.p@somaiya.edu	0101	2000-01-01	9326486962	A-
↑ <input type="checkbox"/> Check all		With selected: Edit Copy Delete Export						

Fig12. Users Table

+ Options		user_id	name	email	subject	message
<input type="checkbox"/>	Edit Copy Delete	36	Rohit Desai	rohit.desai@somaiya.edu	Feedback	Useful Software!!
<input type="checkbox"/>	Edit Copy Delete	37	Raj Ghadi	r.ghadi@somaiya.edu	Health	Useful Medical Software!!
<input type="checkbox"/>	Edit Copy Delete	38	Shreyay Patil	shreyay.p@somaiya.edu	About Software	Useful Application
↑ <input type="checkbox"/> Check all		With selected: Edit Copy Delete Export				

Fig13. Feedback Table

Services

Patient Report

Patient Personal Details:

Name:	Mobile:	Email:	DOB:	Blood grp:
Raj Ghadi	8928669402	r.ghadi@somaiya.edu	2000-10-14	AB+

Report Details:

Total_Bilirubin:	37.7
Alamine_Aminotransferase:	1005.0
Total_Protiens:	6.25
Albumin:	3.2
Albumin_and_Globulin_Ratio:	1.55

Final Predicted Output is
liver Disease Detected

Print menu options: Destination (Save as PDF), Pages (All), Layout (Portrait), More settings.

Fig14.Download Report

15:28 43%

Your HealthServ Report External

Inbox

healthserv2022@gmail.c... 15:22 to me

Patient Report

Patient Personal Details:

Name:	Mobile:	Email:	DOB:	Blood grp:
Raj Ghadi	8928669402	r.ghadi@somaiya.edu	2000-10-14	AB+

Report Details:

Total_Bilirubin:	37.7
Alamine_Aminotransferase:	1005.0
Total_Protiens:	6.25
Albumin:	3.2
Albumin_and_Globulin_Ratio:	1.55

Final Predicted Output is
liver Disease Detected

Reply Reply all Forward

Fig15. Email Report

Applications

- Main use in Healthcare Facilities.
- Has potential utilization in Research Facilities
- Help doctor's in critical decision's and situation's.
- Classification of disease.

Results

- This project will predict the diseases of the patient based on medical data utilizing datasets.
- Precise results after the prediction(above 70%).
- Less loading time of website.
- Felicitous working of report distribution system.
- Provide best user friendly experience.

Conclusion

- The overall aim is to define various data mining techniques utilizable in efficacious disease prediction . Efficient and precise prediction with a lesser number of attributes and tests is our goal. We found the precision after implementing algorithms to be above 70%.
- Another crucial goal we are looking forward to is to soothsay the disease which affects the patients salubrity a lot.
- We all might have wondered utilizing online algorithm for these kinds of stuffs is not reliable, It provides you with even a slightest insight of your health that might get worse in future if ignored than its likely propitious for us.

Future Scope

- Addition of more diseases.
- Mobile-based / Android application in future work directions to expand the framework.
- Fixing Bugs to improve speed of website.
- Improvement in security of website.
- Facility for modifying user details.
- Provide more detailed report to the user.

References

- [1] Blake, C.L., Mertz, C.J.: “UCI Machine Learning Databases”, <http://mllearn.ics.uci.edu/databases/heart-disease/>, 2004.
- [2] Chapman, P., Clinton, J., Kerber, R. Khabeza, T., Reinartz, T., Shearer, C., Wirth, R.: “CRISP-DM 1.0: Step by step data mining guide”, SPSS, 1-78, 2000.
- [3] Charly, K.: “Data Mining for the Enterprise”, 31st Annual Hawaii Int. Conf. on System Sciences, IEEE Computer, 7, 295-304, 1998.
- [4] Fayyad, U: “Data Mining and Knowledge Discovery in Databases: Implications fro scientific databases”, Proc. of the 9th Int. Conf. on Scientific and Statistical Database Management, Olympia, Washington, USA, 2-11, 1997.
- [5] Marouane Ferjani: “Disease Prediction Using Machine Learning”, USA, 12-12, 2020.
- [6] Han, J., Kamber, M.: “Data Mining Concepts and Techniques”, Morgan Kaufmann Publishers, 2006.
- [7] University of California, Irvine.: “Researchers create model to calculate COVID-19 health outcomes”. California, 12-10, 2020.

Department of Electronics Engineering, K.J. Somaiya Institute of Engineering and IT, Sion, Mumbai 400022

Achievements

Sr. No.	Competition Name	Certificate
1	AVISHKAR Research Convention 2021-2022	Participation
2	INTECH 2K22	Participation
3	Oscillation 2K22 Technical Paper Presentation	Participation

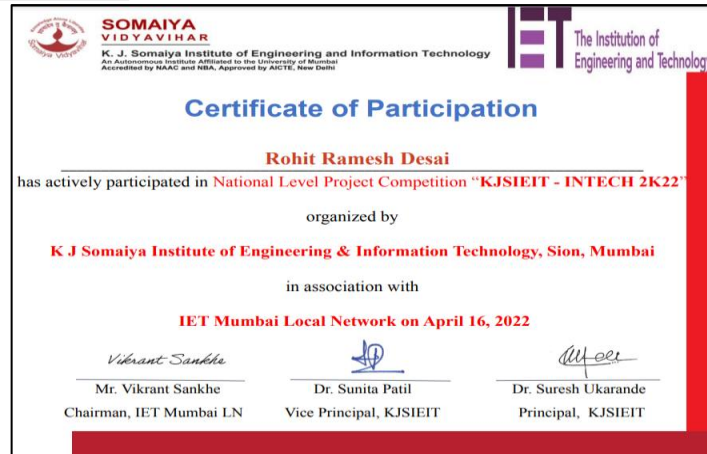
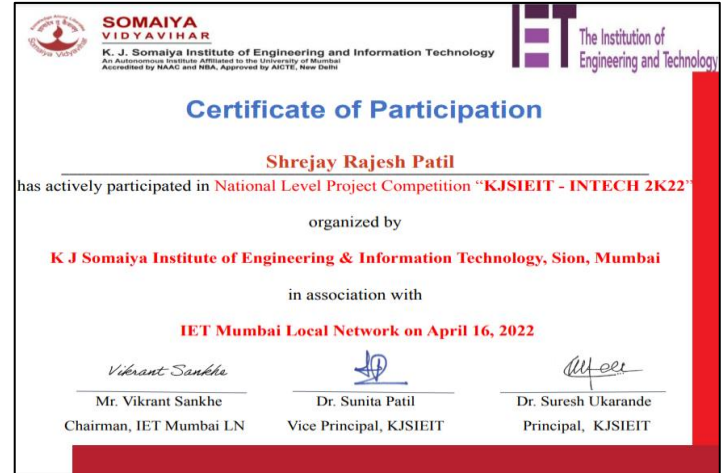
Certificates



Department of Electronics Engineering, K.J. Somaiya Institute of Engineering and IT, Sion, Mumbai 400022



Department of Electronics Engineering, K.J. Somaiya Institute of Engineering and IT, Sion, Mumbai 400022



Department of Electronics Engineering, K.J. Somaiya Institute of Engineering and IT, Sion, Mumbai 400022

Thank You !

