

Department of Collegiate and Technical Education

Shivasharane Akkamahadevi

Government Women's Polytechnic, Shiralakoppa

Department Of Computer Science and Engineering



Dissertation Report on

“Raita Mitra”

Submitted in partial fulfillment of the requirement for the award of the

Diploma Course in Computer Science and Engineering – 2023-24

Submitted by

Name

Reg No

Malashree H.K

(143CS21021)

Sinchana N

(143CS22703)

Pallavi S.E

(143CS22702)

Under the Guidance Of

Mr. Umesha D.K (B.E, M.Tech)

Lecturer, Dept of CS&E



BOARD OF TECHNICAL EXAMINATION

PALACE ROAD, BANGLORE-1, Karnataka-590018

2023-24

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

SHIVASHARANE AKKAMAHADEVI

GOVERNMENT WOMEN'S POLYTECHNIC

SHIRALKOPPA-577428



Department of Computer Science & Engineering

CERTIFICATE

This is to certify that the project work entitled “**Raita Mitra** ” is a bonafide work carried out by **Malashree H K (143CS21021)**, **Pallavi S E (143CS22702)**, **Sinchana N (143CS22703)**, in partial fulfillment for the award of Diploma Course in Computer Science and Engineering , Board of Technical Examination, Bangalore during the year 2023-24. It is certified that all correction/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said diploma course.

Signature of Guide

Mr. Umesha D K (BE,M.Tech)

Lecturer, Dept of CS&E,

SAGWPT, Shiralakoppa

Signature of HOD

Mr. Umesha D K (BE,M.Tech)

HOD, Dept of CS&E,

SAGWPT, Shiralakoppa

Signature of Principal

Mr. D S Ravishankar

Principal

SAGWPT,Shiralakoppa

Externals

Name of the Examiners

1) _____

2) _____

Signature with Date

CANDIDATE'S DECLARATION

We, undersigned the students of Diploma in Computer Science and Engineering Department of Shivasharane Akkamahadevi Government Women's Polytechnic, Shiralakoppa, here by declare that, we own full responsibility for the information, results and conclusions provided in this project work titled “**Raita Mitra**” submitted to Board of Technical Examinations, Government of Karnataka for the award of Diploma in Computer Science and Engineering.

To the best of our knowledge, this project work has been not been submitted in part or full elsewhere in any other institution/ organization for the award of any certificate/diploma/degree. We have completely taken care in acknowledging the contribution of others in this academic work. We further declare that in case of any violation of intellectual property rights and particulars declared, found at any stage, we, as the candidates will be solely responsible for the same.

Sl. No	Student Name	Student Register No	Student Signature
1	Malashree H K	143CS21021	
2	Pallavi S E	143CS22702	
3	Sinchana N	143CS22703	

ACKNOWLEDGEMENT

This satisfaction and the euphoria that accompany the successful completion of any task would be but incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crowned our effort with success. We would like to express our heartfelt gratitude to those who have given us their unconditional support helped us profusely throughout this Endeavour. Firstly, we would like to express our sincere gratitude to our guide **Mr.Umesha D.K**, Lecturer, Dept. of Computer Science & Engineering Shivasharane Akkamahadevi Government Women's Polytechnic, Shiralakoppa for his guidance, encouragement and co-operation.

We extend our gratitude to beloved Head of Computer Science & engineering department **Mr. Umesha D.K** for his inspiration and support during the period of project course.

We also thankful to our Principal **Mr.D.S. Ravishankar** for their outstanding support throughout the project course.

We also thankful to all lecturers of Computer Science & Engineering.

We would consider this as an opportunity to express our thanks and sincere gratitude to our parents, classmates for their support and encouragement at hard times during the project course

Malashree H K (143CS21021)

Pallavi S E (143CS22702)

Sinchana N (143CS22703)

CONTENTS	PAGE NO
CHAPTER 1 INTRODUCTION	1
1.1 Description	1
1.2 Problem Statement	2
1.3 Objective	3
1.4 Existing System	3
1.5 Limitations Of Existing System	3
1.6 Proposed System	4
CHAPTER 2 PROJECT PLANNING REQUIREMENT AND DESIGN SPECIFICATION	5
2.1 Project Planning	5
2.2 Requirement Specification	7
2.3 User Input	8
2.4 Technical Constraints	9
2.5 Design Specification	10
2.6 Discussion Of Alternative Design	10
2.7 Detailed Description Of Component/ Subsystems	11
2.8 Hardware And Software Requirement	13
CHAPTER 3 METHODOLOGY	14
3.1 Methodology	14
CHAPTER 4 IMPLEMENTATION	17
4.1 Implementation Details	17
CHAPTER 5 TESTAND VALIDATION	20
5.1 Test Plan	20
5.2 Test Cases	21
CHAPTER 6 RESULT AND SCREENSHOTS	24
6.1 Screenshots	25
CHAPTER 7 CONCLUSION	28
7.1 Future Enhancement	28
REFERENCES	29

List of Tables

Sl.No	Name of Tables	Page. no
01	Risk Assessment	6
02	Cost Breakdown Structure	5
03	Functional Requirement Specification	7
04	Non-Functional Requirement Specification	7
05	User Input for Crop Recommendation	8
06	User Input for Plant Disease Prediction	8
07	Hardware Specification	13
08	Software Requirements	13
09	Crop Recommendation Test Cases	21
10	Fertilizer Recommendation Test Cases	22
11	Plant Diseases Test Cases	23
12	Resnet model training and Validation	24
13	Crop and Fertilizer Recommendation Accuracy.	25

LIST OF FIGURES

Sl.No	Name of the Figure	Page No
01	Work Breakdown Structure	5
02	Timeline Development-Schedule	6
03	System Architecture	11
04	Steps involved in the Methodology	14
05	Examples of our labeled dataset	15
06	Residual Function	16
07	Training graphs for proposed Resnet model.(a)Loss vs. No. of epochs (b)Accuracy Vs Epoch graphs.	24

ABSTRACT

This study endeavors to construct a robust agricultural decision support system utilizing machine learning techniques to facilitate crop recommendation, fertilizer prescription, and disease anticipation. The system integrates pertinent agricultural indicators including soil nutrient levels, pH, precipitation trends, crop varieties, and images of both healthy and diseased foliage for predictive analysis. Its principal aim is to empower farmers in making well-informed choices concerning crop selection, optimal fertilization techniques, and disease control, thereby augmenting agricultural efficiency and sustainability.

The proposed system draws upon a comprehensive dataset comprising historical agricultural information spanning diverse crops, soil compositions, climatic conditions, and disease incidences. Employing feature engineering methodologies, the data undergoes preprocessing before undergoing model training and evaluation using suitable performance criteria.

Two distinct machine learning algorithms, specifically Random Forest deployed for crop and fertilizer prediction, with their respective performances compared. Notably, the Random Forest model achieves a commendable accuracy rate of 99.09%. Furthermore, disease prediction relies on the ResNet-9 model, which attains an impressive accuracy of 83% in distinguishing between "Healthy" and "Diseased" plants.

In essence, this research contributes significantly to the progression of precision agriculture by harnessing machine learning capabilities for proactive decision-making within farming practices. The resultant system harbors immense potential for enhancing crop productivity, optimizing resource allocation, and refining disease management protocols, thus promoting sustainable agricultural methodologies and safeguarding food security.