Department of Collegiate and Technical Education

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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

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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	Signature of HOD	Signature of Principal
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Name of the Examiners	**Signature with Date**
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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.

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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.