Contents

Acknowledgements **v**

Abstract **vi**

Abbreviations **vii**

List of Figures **x**

PAGE

1 Introduction **1**

1.1 What is LCC…… 1

1.2 Advantages of LCC …… 1

1.3 Why LCC…….. …… 2

1.4 Problem Statement …… 2

1.5 Motivation …… 2

1.6 Contribution Summary ……..…… 2

2 Preliminaries **4**

2.1 Notations and Equations……..…… 4

2.2 Solution of Current Problems…… 5

2.3 Literature Review ……..…… 5

2.3.1 Assessment of Color Levels in Leaf Color Chart Using Smartphone Camera with Relative Calibration …… 5

2.3.2 Android Based Mobile Application to Estimate Nitrogen Content in Rice Crop…….. 6

2.3.3 Automatic Leaf Color Level Determination for Need Based Fertilizer using Fuzzy Logic on Mobile Application…… 6
2.3.4 Nitrogen (N) Fertilizer Measuring Instrument On Maize-Based Plant Microcontroller…….. 7
2.3.5 Automated Color Prediction of Paddy Crop Leaf using Image Processing…… 7

3 Proposed Work (Digital Leaf Color Chart) 9
3.1 Overall System…… 9
3.2 Dataflow diagram……...…… 10
3.3 Ideal data …… 10
3.4 Data Collection…… 11
3.5 Offline Mode……..... 13
3.5.1 Decision Tree Classifier…… 13
3.6 Online Mode…… 15
3.6.1 Segmentation…….. 16
3.6.2 Color Net (CNN Model)…….. 17

4 Conclusion 21
4.1 Conclusions……. 21
4.2 Drawbacks…….. 21
4.3 Future Works……... 21
References……..... 22