CONTENTS

| List of Figures | vii |
|------------------------------------|-----|
| Abstract | ix |
| 1. INTRODUCTION | 1 |
| 1.1. Introduction | 2 |
| 1.2. Motivation | 4 |
| 1.3. Problem Definition | 4 |
| 1.4. Objective the Project | 4 |
| 1.5. Limitations of the Project | 4 |
| 1.6. Organization of the report | 5 |
| 2. SYSTEM SPECIFICATIONS | 6 |
| 2.1. S/w specifications | 7 |
| 2.2. H/w specifications | 10 |
| 3. LITERATURE SURVEY | 11 |
| 3.1. Papers referred | 12 |
| 3.2. Paper on Image Classification | 12 |
| 3.3. Paper on Image Augmentation | 15 |
| 3.4. Paper on CNN | 19 |
| 4. ANALYSIS | 25 |
| 4.1. Module Organization | 26 |
| 4.2. Feasibility Study | 26 |
| | |

| 5. DESIGN | 28 |
|--|----|
| 5.1. Introduction | 29 |
| 5.2. UML Diagrams | 30 |
| 5.3. Module Design and Organization | 32 |
| 6. IMPLEMENTATION AND RESULT ANALYSIS | 34 |
| 6.1. Introduction | 35 |
| 6.2. Description of key parameters and functions | 35 |
| 6.3. Method of Implementation | 37 |
| 6.4. Source Code | 38 |
| 6.5. Output Screens | 47 |
| 7. TESTING AND VALIDATIONS | 55 |
| 7.1. Introduction | 56 |
| 7.2. Testing Strategies | 56 |
| 7.3. Testing CNN model | 58 |
| 8. CONCLUSION AND FUTURE ENHANCEMENTS | 61 |
| 8.1. Conclusion | 62 |
| 8.2. Future Enhancements | 62 |
| REFERENCES | 63 |