Department of Computer Science and Engineering
Bangladesh University of Business and Technology (BUBT)

CSE 498: Literature Review Records

Student's Id and Name	**Name:** Mustain Murtaza Taib and **ID:** 18193103003
Capstone Project Title	Plant Leaf Disease Detection and Classification based on CNN with LVQ Algorithm
Supervisor Name & Designation	**Name:** Mr.T.M. Amir - Ul - Haque Bhuiyan & **Designation:** Assistant Professor,Department of CSE, BUBT
Course Teacher's Name & Designation	**Name:** Khan Md. Hasib & **Designation:** Assistant Professor, Department of CSE, BUBT

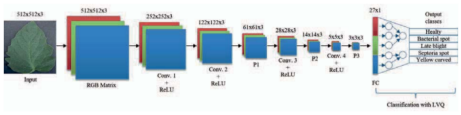
<table>
<tr><th>Aspects</th><th>Paper # 1 (Title)</th></tr>
<tr><td>Title / Question
(What is problem statement?)</td><td>Plant Leaf Disease Detection and Classification based on CNN with LVQ Algorithm</td></tr>
<tr><td>Objectives / Goal (What is looking for?)</td><td>This paper proposes a method for tomato leaf disease detection and classification using a Convolutional Neural Network (CNN) and Learning Vector Quantization (LVQ) algorithm. The dataset consists of 500 images with four disease symptoms. The CNN model extracts features from RGB channels, and the LVQ is used for network training. The experimental results demonstrate accurate recognition of the four tomato leaf diseases. Key terms: Leaf Disease Detection, Leaf Disease Classification, CNN, LVQ.</td></tr>
<tr><td>Methodology / Theory (How to find the solution?)</td><td>CNN extracts features from an input image using convolution layer.The pooling layer follows the convolution layer and reduces the size of the output matrix. A commonly used 2x2 filter is applied, with options like max pooling, average pooling, or L2-norm pooling.In this study, the LVQ algorithm is used for data classification.</td></tr>
<tr><td>Software Tools (What program/software is used for design, coding and simulation?)</td><td>Google colab, keras,Tensorflow,pandas,numpy,matplot ,os.</td></tr>
<tr><td>Test / Experiment How to test and characterize the design/prototype?</td><td> 

Fig. 6. Architecture of the proposed method.</td></tr>
<tr><td>Simulation/Test Data (What parameters are determined?)</td><td>Datasets : Healthy, Bacterial spot, Late blight, Septoria spot, Yellow curved</td></tr>
<tr><td>Result / Conclusion (What was the final result?)</td><td>TABLE I
CLASSIFICATION RESULTS AS CONFUSION MATRIX.
<table>
<tr><th>Leaf Disease</th><th>Healthy</th><th>Bacterial spot</th><th>Late blight</th><th>Septoria spot</th><th>Yellow curved</th><th>Accuracy</th></tr>
<tr><td>Healthy</td><td>18</td><td>0</td><td>0</td><td>0</td><td>2</td><td>90%</td></tr>
<tr><td>Bacterial spot</td><td>0</td><td>18</td><td>0</td><td>0</td><td>2</td><td>90%</td></tr>
<tr><td>Late blight</td><td>0</td><td>0</td><td>17</td><td>0</td><td>3</td><td>85%</td></tr>
<tr><td>Septoria spot</td><td>1</td><td>0</td><td>0</td><td>16</td><td>3</td><td>80%</td></tr>
<tr><td>Yellow curved</td><td>0</td><td>0</td><td>0</td><td>3</td><td>17</td><td>85%</td></tr>
<tr><td>Average</td><td></td><td></td><td></td><td></td><td></td><td>86%</td></tr>
</table></td></tr>
<tr><td>Obstacles/Challenges (List the methodological obstacles if authors mentioned in the article)</td><td>Team didnt find any challenges</td></tr>
<tr><td>Terminology (List the common basic words frequently used in this research field)</td><td>Leaf Disease Detection, Leaf Disease Classification, Convolutional Neural Network (CNN), Learning Vector Quantization (LVQ)</td></tr>
<tr><td>Review Judgment (Briefly compare the objectives and results of all the articles you reviewed)</td><td>Healthy class got 90% In Inceptionv3</td></tr>
<tr><td>Review Outcome</td><td>This paper didn’t use updated model</td></tr>
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