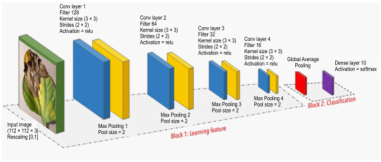
Department of Computer Science and Engineering
Bangladesh University of Business and Technology (BUBT)

CSE 498: Literature Review Records

Student's Id and Name	**Name:** Mustain Murtaza Taib and **ID:** 18193103003
Capstone Project Title	Monitoring Tomato Leaf Disease through Convolutional Neural Networks
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

Aspects	Paper # 1 (Title)
Title / Question (What is problem statement?)	Monitoring Tomato Leaf Disease through Convolutional Neural Networks
Objectives / Goal (What is looking for?)	Mexico's agricultural sector, particularly tomatoes, contributes significantly to the economy. Disease identification in crops, addressed using deep learning techniques, is crucial for improving yields. This study proposes a high-performing convolutional neural network model that classifies tomato leaf diseases with over 99% accuracy.
Methodology / Theory (How to find the solution?)	Proposed architecture for tomato leaf disease detection: Input: tomato leaf images. Output: disease labels, predicted values, and prediction percentages. Steps: dataset creation, architecture design, dataset distribution, model training and evaluation. Dataset: 13,500 images of 10 disease categories and healthy leaves. Overfitting prevention: GAN generates synthetic samples. CNN architecture: 4 convolutional layers, MaxPooling layers. Evaluation: k-fold cross-validation. Training: Adam optimizer, categorical crossentropy loss function.
Software Tools (What program/software is used for design, coding and simulation?)	Google colab, keras,Tensorflow,pandas,numpy,matplot ,os.
Test / Experiment How to test and characterize the design/prototype?	
Simulation/Test Data (What parameters are determined?)	Datasets : Bacterial Spot,Early Blight,Healthy,Late Blight, Leaf Mold,Mosaic virus,Septoria Leaf Spot,Two Spotted Spider Mites,Target Spot,Yellow Leaf Curl Virus.
Result / Conclusion (What was the final result?)	ResNet - 97.6 , VGG16Net - 98.77, Inception-v3-Net - 98.8, AlexNet - 99.64
Obstacles/Challenges (List the methodological obstacles if authors mentioned in the article)	New innovative techniques are needed to address the challenges and trends in agricultural production. This requires higher accuracy levels and improved detection methods, considering the new vision of agricultural monitoring.
Terminology (List the common basic words frequently used in this research field)	convolutional neural networks; deep learning; disease classification; generative adversarial network; tomato leaf.
Review Judgment (Briefly compare the objectives and results of all the articles you reviewed)	AlexNet - 99.64%
Review Outcome	This paper didn't use updated model