Piston Defect Detection Using Computer Vision

Piston Defect Detection is one of the most important aspects of production. With the rise of piston demands for safety , they demand for higher quality components is rising.This is where Computer Vision can provide an efficient alternative for commercial automated optical inspection to assist small scale manufacturers to do an automated inspection.

20bic039@nirmauni.ac.in

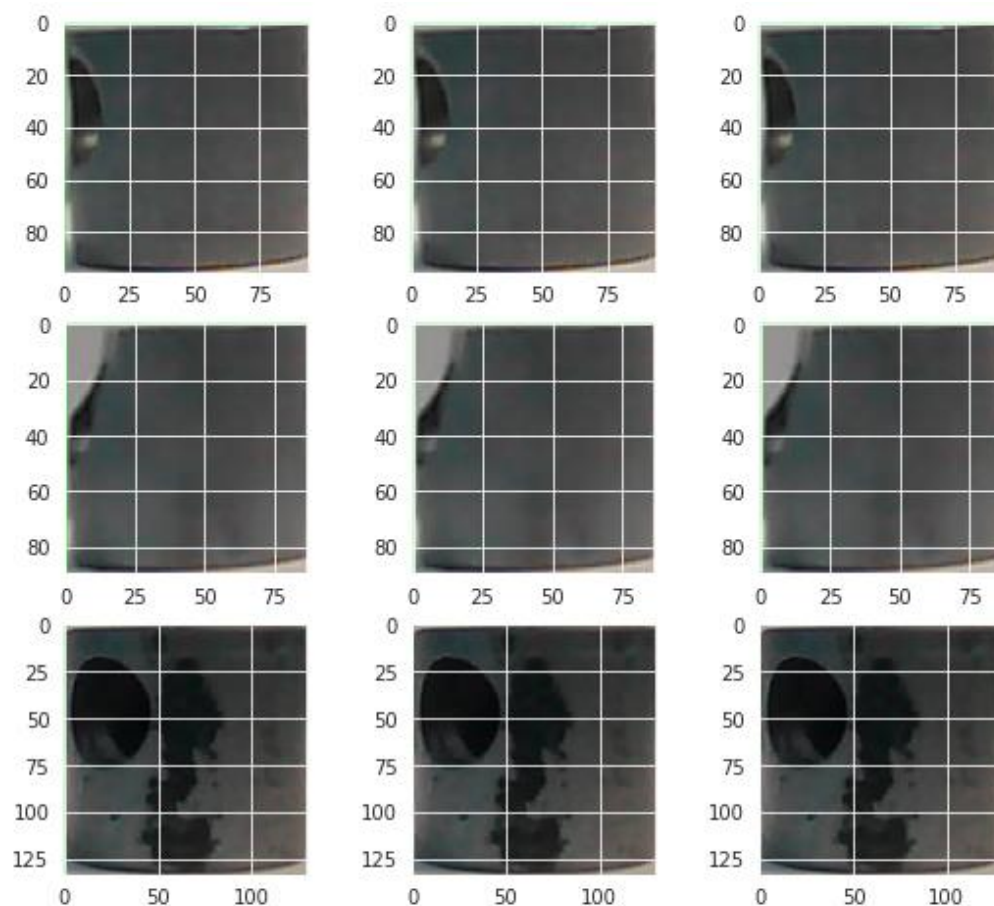Priyal Salecha

Week 4:

Whats happening this week:

- Coded for the same

- My Understanding:

Project Definition: To develop an automated system that utilizes computer vision techniques to detect defects in pistons during the manufacturing process.By analyzing images of pistons, the system will identify various types of defects, such as scratches, cracks, or abnormal shapes, enabling early detection and reducing the likelihood of faulty pistons reaching the market. This project will contribute to improving the quality control processes and overall efficiency of piston manufacturing.

Understanding: The goal of the research is to develop a computerised system that can automatically check for and find piston manufacturing problems. This system will use computer vision techniques to look for any indications of flaws in photographs of pistons by analysing and interpreting digital images or videos.Images of pistons will be recorded using cameras or other imaging equipment during the production process. The automated system will then process these photographs and analyse the visual data using cutting-edge algorithms and methods.The automated system for flaw detection in pistons that uses computer vision techniques will boost quality control procedures, reduce the output of defective pistons, and increase manufacturing efficiency all around.

Approach:

After using multiple images we can classify images as defect images and without it this can be done by image processing and classifies by computer vision.

IITD AIA-FSM GANTT CHART

PROJECT TITLE	Piston Defect Detection using Computer Vision
PROJECT MANAGER	Priyal Salecha

	TASK TITLE	START DATE	DUE DATE	DURATION	PCT OF TASK COMPLETE
1	**WEEK 1**				
1	Understanding problem statement	6/9/23	6/10/23	1	100%
2	OpenCV	6/9/23	6/13/23	4	80%
3	Deep Learning Techniques	6/10/23	6/12/23	2	70%
4	Computer Vision basic	6/11/23	6/13/23	2	90%
5	Pandas and Scikit Learn	6/12/23	6/14/23	2	80%
6	TensorFlow	6/13/23	6/15/23	2	70%
7	Pytorch	6/14/23	6/15/23	1	70%
8	Dataset preprocessing	6/14/23	6/17/23	3	80%
9	Image Processing	6/16/23	6/22/23	6	60%
10	Data Visualisation	6/21/23	6/24/23	3	50%
11	Model Selection and Training	6/26/23			
12	Model Evaluation	6/26/23			
11	Cloud Computing				
12	Final Report making	6/27/23			

Phases: PHASE ONE (WEEK 1, WEEK 2, WEEK 3), PHASE TWO (WEEK 4, WEEK 5, WEEK 6), PHASE THREE (WEEK 7, WEEK 8, WEEK 9), PHASE FOUR (WEEK 10, WEEK 11, WEEK 12)