Design and Development of an Automated Part Inspection System

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Aim

- Design and develop an automated inspection system, which is capable of capturing images of parts moving over a conveyer belt and detect presence or absence of pre-defined features.

Objectives

- Design and develop of a software for automated image capturing
- Design and develop a software for automated visual inspection of manufactured parts
- Design and develop a mechanical system with conveyer belt, supporting electrical-mechanical setup for automated part transportation from one side to the other
- Integrate the software with the hardware setup

Deliverables

- Conveyer belt arrangement with speed control
- HD quality cameras with attachments
- Software for part inspection
- Source code of software

Significance

- There is gap in the market for an inspection system which can inspect different category of parts which may have considerable size difference
- The system should identify presence and absence of features or components on a part
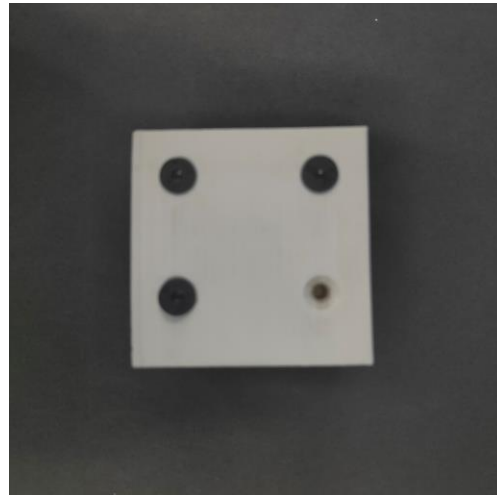
Current Status

- The team is working on improving the defect detection models for better robustness and accuracy.
- The team is currently trying to compare several neural networks that can produce better results with lower number of samples.

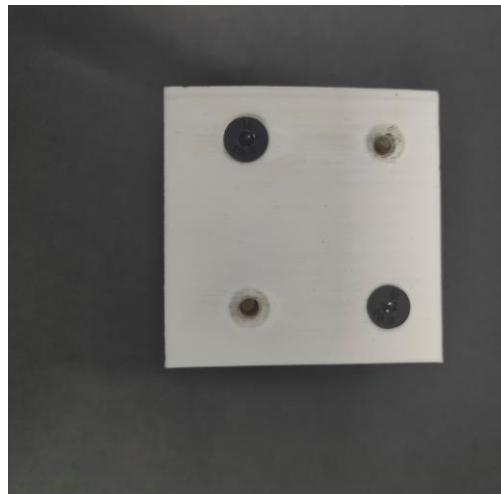# Automated Inspection System: Working video, results
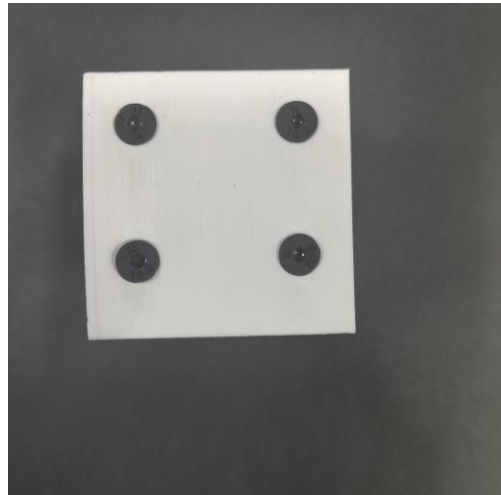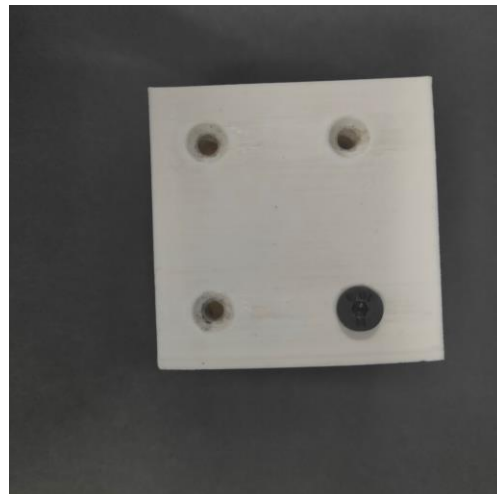

full bolts (score=0.75372)
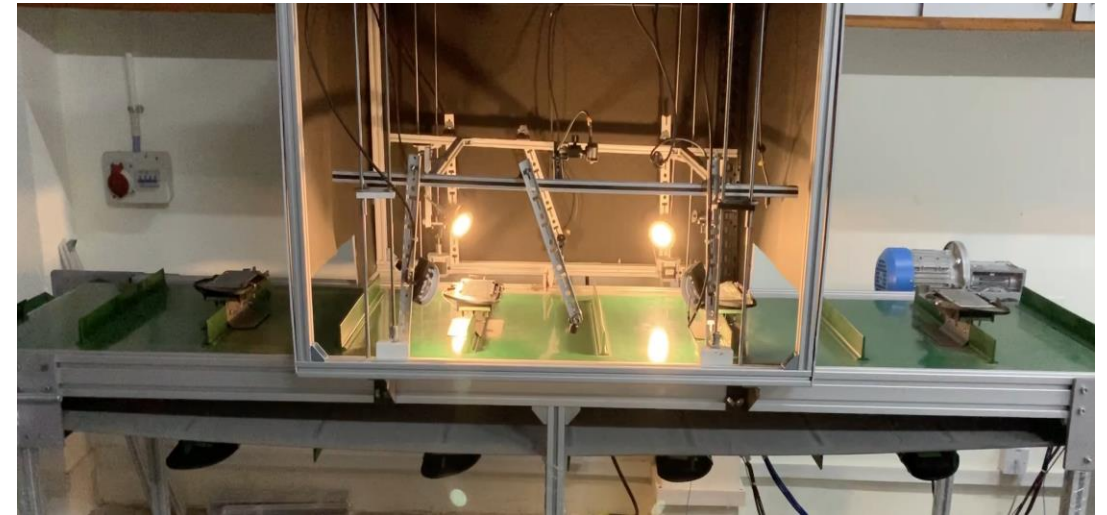Sample 1

1 defect (score=0.59847)
Sample 2

2 defects (score=0.47237)
Sample 3

3 defects (score=0.71428)
Sample 4

Inspection System (Video)
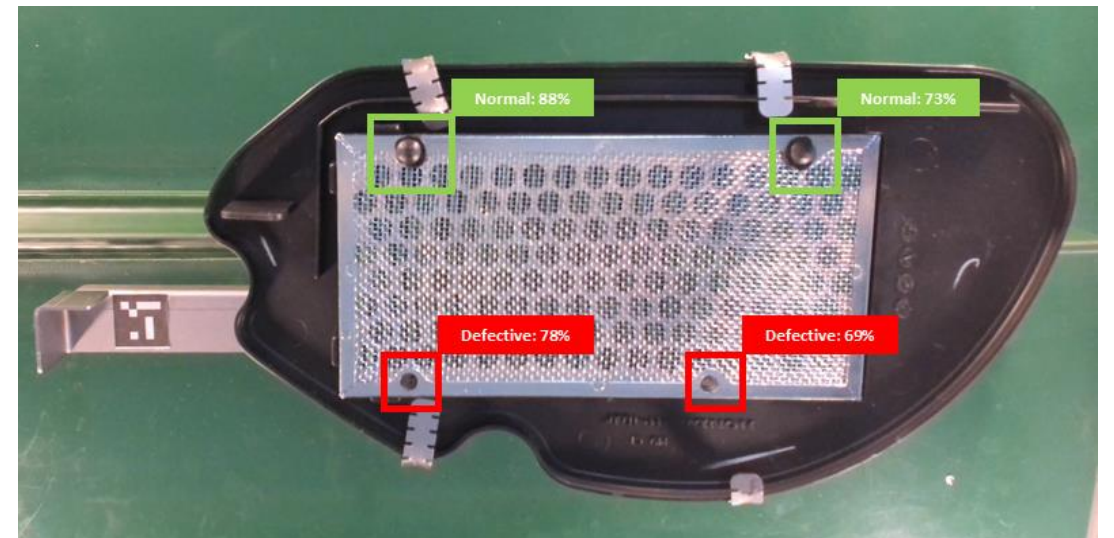
Normal: 88%   Normal: 73%
Defective: 78%   Defective: 69%
Activa air filter (result)

Thanks!