Tech Mahindra

COGNITIVE INSPECTIONS SOLUTION WITH YOLO

Tech Mahindra's computer vision (CV) based drone enabled cognitive inspection minimizes the risks, allows collection of in-depth data, and gives faster results along with being cost efficient.

Industries from multiple domains ranging from oil and gas to smart cities will find the solution suitable to replace manual processes like plant layout, thermal hotspots identification, visual inspections, windmill health monitoring, and oil rig asset monitoring.

Our Solution

Tech Mahindra's CV-based AI solution to simplify the manual process of corrosion and dent detection during aircraft maintenance:

- Leverages deep learning framework to identify and locate damages such as corrosion and dents from streaming images of the large structure like aircraft exterior parts inspection
- Digitized to inspect, automate, and/or providing various insights such as dents and corrosion
- Demonstrates the use of CV to potentially capture streaming of images into the database for reliable decision-making and initiate maintenance activities subsequently
- CV-based platform is used to capture an image through drones and automate the process by leveraging AI and deep learning frameworks

Features of the Solution

- End to end process automation from data capture to identify defects
- Advanced AI framework such as YOLO to identify defects in a single shot
- Solution can be augmented to configure other domains for similar such defect identification

Solution Technology

- Open-source frameworks - Tensorflow and Keras
- OpenCV
- YOLO

Key Challenges

The challenges faced during human intervention for the following:

- Data acquisition and consolidation proved to be a daunting task, as there were no sources of data sets available to identify defects in aircraft parts
- Automation to data capture, process, inspect, and accurately identify defective parts for maintenance

Benefits

- Improvement in the safety of the inspection process
- 50% reduction in part scrapping
- 80% reduction in inspection time
- 50% reduction of rework
- 40% to 70% reduction in manual inspection efforts

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