Defect Detection and Restoration

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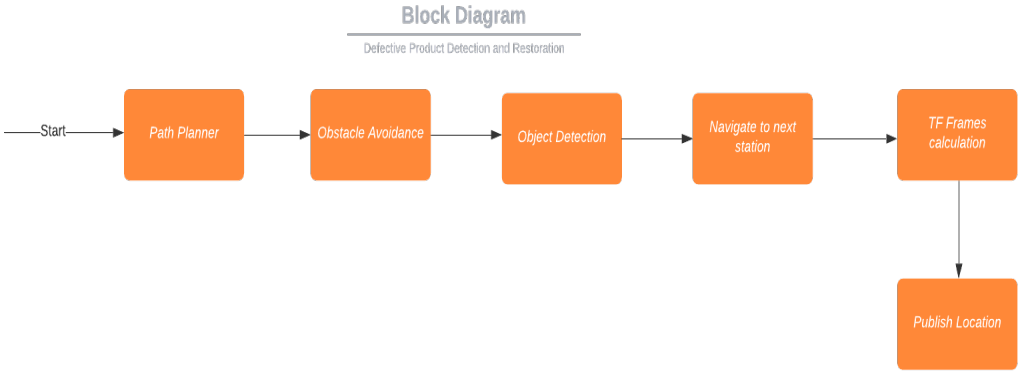
Overview:-

- Defect detection whether in the manufacturing industry or the software industry serves to be a critical part of the production cycle. In the manufacturing process the emergence of defects due to unforeseeable reasons is an inevitable part, which is also the case in software development process.
- This project attempts to implement a Defect Detection module for ACME Robotics to achieve robust defect detection and restoration using object detection and robot navigation algorithms.

Methodology:-

- The purpose of Defect Detection and Restoration is to ensure excellent product quality.
- We will use the fully ROS enabled TIAGo Robot model with its navigation, messages and controllers packages for our implementation of Defect Detection.
- Our implementation uses Object Detection, Path Planning, Trajectory Planning and HSV Color Detection algorithms for TIAGo to navigate to inspection section and identify the defective product publishing its relative location using transfer frames.

How:-



Timeline:-

Task	Expected Time	Start	End
GitHub Repository	0.15 Hrs	11/21/26	11/21/26
Project Proposal	3 Hrs	11/28/21	11/28/21
Create UML Docs, AIP sheets, Quad-Chart	3 Hrs	11/29/21	11/29/21
Tests for all Classes	4 Hrs	11/30/21	12/1/21
Stubs for all classes	3.5 Hrs	12/1/21	12/3/21
Code optimization and Error Checking	2.5 Hrs	12/2/21	12/3/21
Populating all methods to implement Path Planning and Object Detection	6 Hrs	12/4/21	12/7/21
Updating Tests and Stubs to ensure efficient implementation	5 Hrs	12/8/21	12/9/21
Static code analysis and debugging with Cpplint and Cpplint	2 Hrs	12/10/21	12/12/21
Updating Documentation and Preparing Results	4 Hrs	12/13/21	12/14/21