

# Design & Development of Pipe Inspection Robot

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**Abstract:** Pipelines are crucial for fluid and gas transportation, but pipeline leaks caused by corrosion and cracks can result in disastrous accidents. Periodical inspection is necessary to prevent such incidents, and autonomous robots have emerged as a viable solution. This paper presents the design, modeling, and simulation of an autonomous mobile robot for pipeline inspection equipped with an IR sensor for movement and a camera for visual inspection to detect cracks and corrosion. The robot also has a blockage cleaning functionality to remove any obstructions within the pipeline. Inner images of the pipe are captured for further investigation. The robot's control and mapping are performed using the Raspberry Pi Operating System and Proteus is used for simulating the robot. The proposed inspection robot provides an effective and efficient solution for pipeline inspections

**Keywords:** Pipe Inspection, Autonomous Robot, Visual Inspection, Crack Detection

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