BE PROJECT

LITERATURE SURVEY

TITLE: HazardScout: Multi-Purpose Emergency Response Robot

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Sr No	Author(s) and Year of Publication	Title of the Paper	Key Methodology Followed	Findings	Gaps/Limitations	Future Work
1	X. Zhang et al., 2022	Magnetic-Wheeled Climbing Robots for Non-Destructive Testing	Magnetic adhesion combined with adaptive mechanisms for surface climbing	Effective in detecting gas leaks in hazardous vertical environments	Limited to metallic surfaces	Expand to non-metallic surface climbing techniques
2	J. Smith et al., 2023	Flexible Pipe Navigation in Robotics	Articulated joints for flexible navigation in pipelines	Capable of navigating through complex and narrow pipelines	Lacks autonomous decision-making ability	Add AI-driven navigation for better autonomy
3	A. Kumar et al., 2021	Gas Leak Detection Using Multi-Sensor Robotic Systems	Multi-sensor integration for real-time leak detection	Accurate detection of gas concentration	High energy consumption of sensors	Improve energy efficiency of sensor networks
4	M. Lee et al., 2022	Advanced Fire Detection and Suppression Robots	Use of thermal and infrared imaging with automated fire	Autonomous detection and suppression of fire in	Limited to flat, open spaces	Develop techniques for multi-level fire suppression

				industrial settings		
5	R. Diaz et al., 2021	Snake Robots for Confined Space Navigation	Serpentine movement for navigating confined spaces	Useful in post-disaster environments and confined industrial areas	Limited control in unpredictable environments	Enhance robustness to environmental changes
6	N. Patel et al., 2023	Autonomous Firefighting Robots with Sensor Fusion	Data fusion from smoke, gas, and temperature sensors	Improved accuracy in detecting fire and gas leaks	Response time is still relatively high	Develop faster response algorithms
7	F. Wilson et al., 2022	Robots for Petrochemical Industry Inspections	Magnetic wall-climbing with real-time gas monitoring	Effective for inspecting industrial pipelines and tanks	Only applicable to specific environments (petrochemical)	Adapt design for broader industrial applications
8	A. Brown et al., 2021	Real-Time Data Transmission in Hazardous Environments	High-resolution cameras and sensors for real-time data transmission	Reduces human exposure to hazardous environments	Data transmission sometimes fails in low connectivity areas	Improve connectivity in remote industrial areas
9	D. Li et al., 2022	Wireless Sensor Networks for Industrial Safety	Integration of wireless sensor networks for continuous monitoring	Autonomous detection and alarming of gas leaks	High maintenance cost of sensor systems	Develop cost-effective WSNs for widespread use
10	Y. Tanaka et al., 2023	Firefighting Robots with Water Jet Propulsion	Water jet propulsion and thermal imaging for fire suppression	Capable of extinguishing fires in challenging environments	Limited water supply for prolonged fire suppression	Integrate more efficient water storage or refuelling systems