

The ROSSINI Project: Autonomous Onboard Inspections for Special Nuclear Material Detection

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The ROSSINI project (Remotely-operated On-board Inspections for Special Nuclear Material) is designed to revolutionize the detection of illicit Special Nuclear Material (SNM) in cargo containers by integrating advanced aerial and ground-based robotic systems.

This innovative approach leverages radiation-sensitive detectors mounted on remotely operated drones and terrestrial robots to conduct preliminary inspections while vessels are still approaching the port. Upon docking, suspicious containers are subjected to additional external verification using robotic detection units before being unloaded. If anomalies are detected, a detailed internal inspection follows to confirm the presence of illicit material.

To enhance operational efficiency and security, the system is integrated with the RAISE network, providing real-time monitoring, automated alerts, and coordinated response planning. By minimizing the need for direct human intervention, ROSSINI significantly reduces radiation exposure, optimizes inspection times, and strengthens nuclear security protocols.

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