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(57) Abstract :

A MRI safety and radiation management system, comprising a scanning module 101 configured within an MRI machine 102 to monitor surroundings of the MRI machine 102, a processing unit operatively linked with the scanning module 101 based on electromagnetic exposure levels and patient positioning segments the surroundings into geofenced zones, an AI-powered camera 103 integrated on the MRI machine 102 to monitor the segmented zones in real-time and detect human movement, presence of objects, and adherence to safety protocols, an alert module 104 connected to the MRI machine 102 to issue real-time alerts upon detection of safety violations, a pre-scan detection module 105 provided adjacent to the MRI machine 102 to scan a patient approaching the MRI machine 102, detect presence of banned items and authenticate safety parameters, and a radiation dose optimization module to dynamically adjust radiation exposure based on real-time analysis of patient body characteristics.

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