BATCH NO: 13

PROJECT TITLE: DEVELOPMENT OF OBSTACLE DETECTION AND TRACK DAMAGE ASSESSMENT USING MULTI SENSOR FUSION FRAMEWORK

ABSTRACT:

The integration of Internet of Things (IoT) technology into railway track monitoring systems marks a pivotal advancement in ensuring the safety and efficiency of railway operations. Through strategic deployment of sensors along the tracks, this innovative system offers real-time detection of obstacles, furnishing vital data for timely intervention to avert potential accidents. This capability not only elevates passenger and crew safety but also bolsters the reliability of railway transportation systems as a whole.In addition to obstacle detection, the IoT-based solution leverages sophisticated acoustic analysis techniques to swiftly identify track faults. By scrutinizing acoustic signals, such as those emanating from cracks or irregularities, the system enhances maintenance efficiency by pinpointing areas requiring immediate repair or inspection. This proactive maintenance approach not only curtails downtime but also mitigates the risk of accidents arising from track faults, thereby ensuring uninterrupted and secure railway operations. Furthermore, the system provides precise train position monitoring, empowering operators to optimize scheduling and traffic flow. With the ability to accurately track train movements, the system enhances operational efficiency, slashes delays, and enhances overall service reliability. This IoT-based solution holds the promise of revolutionizing railway operations by furnishing augmented safety, efficiency, and reliability, thereby addressing the burgeoning demands of contemporary transportation infrastructure.

Keyword: IoT, IR Sensor, Ultrasonic Sensor, GPS