

# Literature Survey

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S.No	TITLE	PROPOSED WORK	TOOLS USED/ ALGORITHM	TECHN OLOGY	ADVANTAGES/ DISADVANTAGE S
1.	Smart railway systems of layer applications based on internet of things	Networks across the world are getting busier and busier; trains travel at higher speeds and carry more passengers or heavier axle loads than ever before. Accordingly, the railway industry calls for new information technologies (ITs) to meet its development. Railway systems have already relied on ITs almost as much as they rely on physical assets, and this dependence is growing as these systems face burgeoning demands .	Big data, sensors, data mining, intelligent systems	Internet of Things	This chapter will discuss the framework and for a smart railway based on the Internet of Things and big data, we present the architecture of a smart railway, which is divided into four layers perception and action layer, transfer layer, data engine layer, application layer, and discuss the advanced technologies in each layer.

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2.	A Novel Approach for Big Data Classification and Transportation in Rail Networks	A new framework into future data-driven railway condition monitoring systems (RCM). For this proposed an edge processing unit that includes two main parts: a data classification model that classifies Internet of Things (IoT) data into maintenancecritical data (MCD) and maintenance-non-critical data (MNCD) and a data transmission .	CBM, RCM, MCD,MNCD	Internet of Things	The development of condition based monitoring CBN systems in the railway industry has received the highest investment policy will deal with of big data problem in the future because these have velocity, and volume . RCM will be strongly reliant on data received from heterogeneous IOT devices .

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3.	Remote sensor networks for condition monitoring: An application on railway industry	In recent years, the range of sensing technologies has expanded rapidly, whereas sensor devices have become cheaper. This has prompted a fast extension in condition checking of frameworks, structures, vehicles, and hardware utilizing sensors. Key components are the current advances in systems administration	Remote sensor systems (WSNs), LPWAN, RFID.	Internet of Things	This is indispensable for the advancement, redesigning, and extension of railroad systems. This venture studies the remote sensors arrangement innovation for checking in the railroad business for dissecting frameworks, structures, vehicles, and apparatus.

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<b>4.</b>	5G key technologies for smart railways	Railway communications has attracted significant attention from both academia and industries due to the booming development of railways, especially high-speed railways (HSRs). To be in line with the vision of future smart rail communications, the rail transport industry needs to develop innovative communication network architectures and key technologies	SDN , SD-WAN ,5G edge, digital and hybrid multi cloud	Internet of Things	We have identified significant 5G-based key technologies for HSRs, such as spatial modulation, fast channel estimation, cell-free massive multiple-input-multiple-output (MIMO), mmWave, efficient beamforming, wireless backhaul, reliable low latency communications, and enhanced handover strategies.

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5.	OTFS-TSMA for Massive Internet of Things in High-Speed Railway	Massive internet of things (mIoT) could play an important role in the future smart high-speed railway (HSR), where grantfree multiple access technologies are required. Recently, tandem spreading multiple access (TSMA) has been raised for mIoT without mobility which achieves high connectivity and reliability.	MIOT , TSMA , OTFS Transceiver	Internet of Things	The four typical smart railways services, including railway safety- critical service, passenger oriented service , decision making smart HSR to enable environment sensing of IOT service in greater ways.

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<b>6.</b>	Enhancement of Railway Reservation System Using Internet of Things	Smart train using internet of things (IoT), IoT provide exploit the opportunities created by Industrial Internet of Things (IIOT). In this paper the survey focuses on different communication technologies under the paradigm of IoT. The broad band communication technologies like Global System Mobile Communications-Rail way (GSM-R), Long Term Evaluation (LTE)	WSN, I-IOT, GSM-R,LTE	Internet of Things	The base stations contains GSM-R with the distance of 7-15 KM this creates higher degree of reliability. availability, redundancy (EOR) under European Traffic Management Layer (ETML) an harmonized solution Project (3GPP) to develop specifications In it .

**THANK YOU**