Handover Technology Using Embedded In High Speed Railway Communication

Dr. Sasikumar A.[1], K. Dhanyasri[2], S. Bhuvaneshwari[2], M. Durgadharshi[2]

[1]Assistant professor, Department of EEE, K. Ramakrishnan College of technology (Autonomous), Samayapuram, Trichy, Tamil Nadu, India

[2]Student, Department of EEE, K. Ramakrishnan College of technology (Autonomous), Samayapuram, Trichy, Tamil Nadu, India

ABSTRACT

In the evolution of the railway system,the railway has brought more frequent handovers.This article provides the information in the continous exchanging of information between the trains while crossing and passing the information to the gates.

Keywords—Wireless Communication, Railway Communication

I. INTRODUCTION

Wireless communication is the fastest growing and the most vibrant technological areas in the communication field.wireless communication is the method of transmitting the information from one source to another without any connection like wires,cables or other physical medium.wireless operations permit services such as interplanetary communications,that are impossible or impractical to implement with the use of wires.This article ensures the continuous communication between the trains whie crossing it.It also ensures the communication between the train and the gate.There is also passing of information through substation and base station..smart transportation system require the use of critical communication for operation and control.

Nowadays transportation system have an important demand of communication with very strict requirements of quality, capability and reliablity.

II. METHODOLOGY

The implementation of the wireless communication in railway system paves a way for the exchaning of information continiously without any interruption.This exchanging of information in the railway system is achieved using wifi and bluetooth module.The base and the sub ststion also act as the carrier of sending the information.

Here,the fast moving object refers the train,each fast moving object consists of microcontoller along with the GPS module through which the location of the train can be determined.From the fast moving bject the information is carried out to the sub station.Each substation is contained with the microcontroller.The information is shared from the one substation to other substation.The information from the subsation

is gathered at the base station form which the another fast moving object receives the information.
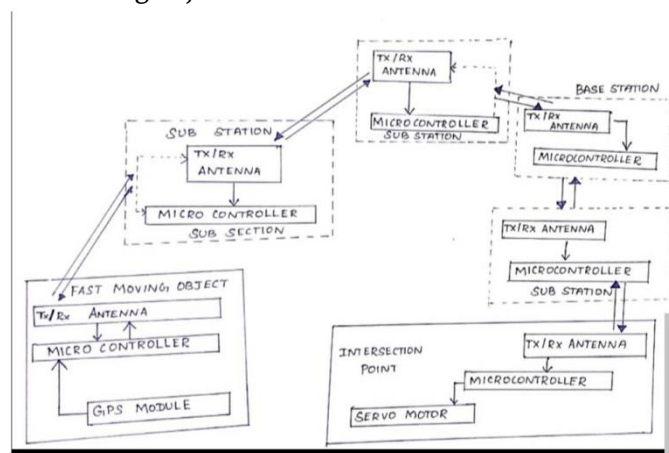
All these information from the base station is transferred to the intersectionpoint .The intersection point consists of the microcontroller and servo motor.The servo motor here act as the swith.The intersection point is nothing but the gate.The process here is when the information about the train is passed the servo motor act accordingly and the gate open or close based on the command.

Advantages of wireless communication in railway system

- The main advantage is the communication is done in the continuous manner without any interruption.
- It paves the way for the improving of the safety and security and provide better quality.
- The exchange of information takes place with high reliablity and without any interruption.

III. LITERATURE SURVEY

TITLE: Flood detection using sensor network and notification via sms and public network.
AUTHOR: Mohamed Ibrahim Khalaf alfahadiwy
DESCRIPTION: It provides the description and alert of generating system of flood detection.It is focused on the development of the system which will determine the current level by means of sensors and by usuin wireless sensor networkwill then provide thenotification via GSM modem.The system however do not just stops there but proceed to also send notification through popular social network.It is felt that notification system such as flood warning system should be carried a step further in notifying the public.

TITLE: A Survey of Underwater Magnetic Induction Communications: Fundamental Issues, Recent Advances and Challenges
AUTHOR: Yuzhou Li
DESCRIPTION: Enabling underwater wireless communications to conveniently interconnect various underwater deployed devices for data transmission, information sharing, and networking is among the most crucial issues in marine information networks. Apart from the conventional acoustic, optical, and electromagnetic techniques, the magnetic induction (MI) communication, as a promising alternative, has drawn significant attentions recently due to its inherent advantages in predictable channel responses, negligible propagation delay, and competitive energy consumption. In this paper, we attempt to provide a comprehensive and in-depth survey of the existing research on underwater MI com- munications, classified as the four topics of channel modeling, reliability guarantee, range extension, and capacity enhancement, and present the state-of-the-art advances on each topic. Specifically, the approaches for channel modeling of underwater MI communications, including proposed channel models and involved basic theories, are first summarized. Then, the existing works on reliability guarantee are expounded following the evolution of antenna design from traditional single-directional to advanced multi-directional MI antennas. Furthermore, as to range extension, two typical categories of MI relaying techniques, i.e., the MI waveguide and the active relaying techniques are reviewed in detail. In particular, the potential of a hybrid relay transmission scheme proposed by us through flexible combina-tion of these two techniques in achieving both energyefficient and long-range underwater

transmission is also addressed in this part. Finally, the existing approaches on extending or reusing the available frequency bands to enhance the underwater MI channel capacity are elaborated. Challenges and open issues that need to be further investigated.

IV. CONCLUSION

The review paper provides the view of the wireless communication in the railway system also provides the information regarding the communication betwwn the two train and gates using the implemetation of embedded hardware.

V. REFERENCES

[1]. R. Chen, W.-X. Long, G. Mao, and C. Li, "Development trends of mobile communication systems for railways," IEEE Commun. Surveys Tuts., vol. 20, no. 4, pp. 3131–3141, 4th Quart., 2018.

[2]. J. Ding, L. Zhang, J. Yang, B. Sun, and J. Huang, "Broadband wireless channel in composite high-speed railway scenario: Measurements, sim- ulation, and analysis," Wireless Commun. Mobile Comput., vol. 2017, pp. 1–15, Jan. 2017.

[3]. J. Zhao, Y. Liu, C. Wang, L. Xiong, and L. Fan, "High-speed based adaptive beamforming handover scheme in LTE-R," IET Commun., vol. 12, no. 10, pp. 1215–1222, Jun. 2018.

[4]. H. Cho, S. Shin, G. Lim, C. Lee, and J.-M. Chung, "LTE-R handover point control scheme for high-speed railways," IEEE Wireless Commun., vol. 24, no. 6, pp. 112–119, Dec. 2017.

[5]. H. Cho et al., "Handover based on maximum cell residence time and adaptive TTT for LTE-R high-speed railways," KSII Trans. Internet Inf. Syst., vol. 11, no. 8, pp. 1–16, 2017.

[6]. P. Jayaram and R. Menaka, "Performance evaluation of modified hybrid handover scheme in LTE fast moving rail networks," Int. J. Wireless Mobile Comput., vol. 12, no. 1, pp. 96–106, 2017.

[7]. C. Wu and Y. Wang, "Cognitive communication in rail transit: Awareness, adaption, and reasoning," IT Prof., vol. 19, no. 4, pp. 45–54, 2017.

[8]. C. Wu, Y. Wang, and Z. Yin, "Realizing railway cognitive radio:A reinforcement base-station multi-agent model," IEEE Trans. Intell. Transp. Syst., vol. 20, no. 4, pp. 1452–1467, Apr. 2019.

[9]. R. D. Hegazy, O. A. Nasr, and H. A. Kamal, "Optimization of user behavior based handover using fuzzy Q-learning for LTE networks," Wireless Netw., vol. 24, no. 2, pp. 481–495, Feb. 2018.

[10]. R. S. Sutton and A. G. Barto, Reinforcement Learning: An Introduction. Cambridge, MA, USA: MIT Press, 2018.