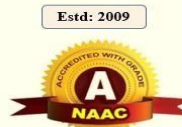**CMR TECHNICAL CAMPUS**
UGC AUTONOMOUS
Accredited by NBA & NAAC with 'A' Grade
Approved by AICTE, New Delhi and JNTU, Hyderabad
Kandlakoya, Medchal Road, Hyderabad- 501 401, Telangana

Estd: 2009

DEPARTMENT OF INFORMATION TECHNOLOGY

REPORT

Session Topic: SENSOR BASED DETECTION SYSTEM FOR COACHES WITH WIRELESS NETWORKING

1. **Objective of the Program : To check for the working of sensor based detection system for coaches and identifying the problem facing with it**

2. **Benefits /Outcome of the Program:** Modern Coach Factory, Raebareli has turned out a smart Coach No.18155 LACCN. This coach is on LHB platform and equipped with state of the art sensors and centralized computer to monitor the status of all sensors through a single window.

   The Energy harvester based sensor monitors the condition of wheel, bearing and hard spots on the Track. The same is fed to the data concentrator and transmitted via GPS/GPRS to a remote server. The data can be used for diagnosis.

Description:

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Field Visit Report on
"SENSOR BASED DETECTION SYSTEM FOR COACHES WITH WIRELESS NETWORKING"
Organised by
Department of IT, in association with IIC 6.0
CMR Technical Campus, Hyderabad
(25-11-2023, AT11:00AM – 4:00PM)

The Field visit on "Sensor Based Detection System for Coaches With Wireless Networking", organized by the Department of Information Technology in association with IIC 6.0, CMR Technical Campus on 25-11-2023 from 11:00 am to 4:00 pm. There were about **60** students and **5** faculty members attended the program. The session of Field Visit was delivered by Mr.Shiva who is a Chief of Workshop in South Central Railway

Problem Statementl

The Current specification for fire/smoke detection system in Indian Railway Coaches require large piping arrangement and other hardware components for suction of smoke from different sampling points inside the coach and transferring it to the main processing unit located at the end of the coach. In order to eliminate complete piping system, a sensor based fire/smoke detection system near the point of smoke/fire generation which is more reliable, with wireless networking giving signal to train pilot is considered essential for Railway coaches in IR.

Technical Requirement

1.   The system should be designed to give very early warning of smoke/fire incidence inside the coaches while in service for taking appropriate action for the safety of passengers. The sensitivity and location of detectors has to fulfill the requirements of ARGE guidelines.

2. Provision of Fire detection and Control unit (FDCU) and HMI IN Driving Cab at both ends.

3. Affected areas to be located exactly and systems actions activated without any delay on real time basis.

4. Provision of audio-visual alert to running staff.

5. Fire survival cables according to EN 50200 to be used for supply and other circuits of smoke/fire detection system. Survival duration classification of PH30 (30 min) or higher is desirable.

6. System should work with 110 V DC power supply with 15% ripple content.

7. On detection of a possible smoke /fire by means of suitable detection, the system shall have different level of response (minimum two i.e. pre-alarm and alarm).

8. All the major events to be recorded in the system and should be retrievable on maintenance terminal for analyzing an issue.

9. The system shall have drift compensation and designed for self – diagnostic to any failure /trouble within the system .

10. The necessary diagnostic tools (Software, Hardware etc.) should be provided in order to identify failures immediately.

11. Low maintenance and periodic system functionality test by user.

12. Display with touch screen.

13. Obscuration sensitivity range better than 0.06-6.5 % obs/m

14. Wireless connectivity

Functional Requirement

1. Earliest detection of occurrence of any fire and immediate alert to train crew.

2. Provision of dual smoke & Heat detectors (multi sensors) in passenger areas.

3. Provision of Linear Heat Detector LHD or point type detectors for Enclosures/cubicles (Electrical cabinets).

4. The Smoke/heat detectors to be integrated with Fire detection and Control unit (FDCU).

5. The affected area to be located exactly by identifying which sensor(s) is actuated and further system's actions to be activated without any delay.

6. Fire detection system and layout of detectors to meet the criteria for the performance to be done as per ARGE guidelines.

7. Provision of Alarm/Beacons in Driving cab/Guard compartment at a suitable location.

8. All major events (alarm, faults etc.) to be recorded and shall be retrievable on maintenance terminal for analyzing any issue.

9. The system shall provide a dynamic two detector dependency (smoke and/ or heat) in order to decrease the risk of false alarm.

In the valedictory function, participants expressed their feedback about the Program. The convener of the Program expressed the vote of thanks and the programme ended with a national anthem.

Coordinator   **HoD**

1. **Organized on:25 NOV 2023**

2. **Student Participants number:61**

3. Students /Faculty Registration Details with timestamp:

S.NO.	Timestamp	STUDENT NAME	HALL TICKET NO	DEPARTMENT	CLASS	SECTION	EMAIL-ID
1	2023/11/24 1:35:42 PM GMT+5:30	KODAM MAHESH	217r1a 1297	Information Technology	IT B	B	217r1a1297@cmrtc.ac.in
2	2023/11/24 1:36:21 PM GMT+5:30	A SHIVA SHANKAR	217r1a 1266	Information technology	3rd year	B	shivaabboju003@gmail.com
3	2023/11/24 1:36:28 PM GMT+5:30	PAPISHETTI VINEELA	217R1A 12B3	Department of INFORMATION TECHNOLOGY	3rd year	B	217r1a12b3@cmrtc.ac.in
4	2023/11/24 1:36:38 PM GMT+5:30	BUDDILA DIVYA JOY	217R1A 1272	Department of INFORMATION TECHNOLOGY	3year	B	217r1a1272@cmrtc.ac.in
5	2023/11/24 1:37:59 PM GMT+5:30	K SRILEKHA	217R1A 1292	Information Technology	3rd year	B	217r1a1292@cmrtc.ac.in
6	2023/11/24 1:38:05 PM GMT+5:30	KODIPAKA SRIMUKHI	217r1a 1298	Information technology	B tech 3 year	It b	217r1a1298@cmrtc.ac.in
7	2023/11/24 1:38:17 PM GMT+5:30	V SHIVA PRIYANKA	217r1a 12d0	Information technology	3 year	B	217r1a12d0@cmrtc.ac.in
8	2023/11/24 1:38:19 PM GMT+5:30	M MOUNIKA	217r1a 12a1	Information technology	3rd year	B	217r1a12a1@cmrtc.ac.in
9	2023/11/24 1:38:53 PM GMT+5:30	D JAYASREE	217R1A 1281	Information technology	3rd year	B	217r1a1281@cmrtc.ac.in
10	2023/11/24 1:38:59 PM GMT+5:30	N RAJITHA	217R1A 12A8	INFORMATION TECHNOLOGY	3rd Year	B	217r1a12a8@cmrtc.ac.in
11	2023/11/24 1:39:13 PM GMT+5:30	D DEEPIKA	217R1A 1282	Information Technology	3rd year	B	217r1a1282@cmrtc.ac.in
12	2023/11/24 1:39:57 PM GMT+5:30	D. ARCHANA	217r1a 1280	IT	3rd year	B	217r1a1280@cmrtc.ac.in
13	2023/11/24 1:40:17 PM GMT+5:30	K. SWETHA	227r5a 1209	IT	3rd year	B	227r5a1209@cmrtc.ac.in
14	2023/11/24 1:40:51 PM GMT+5:30	M. SONU	217R1A 12A3	INFORMATION TECHNOLOGY	3rd year	B	217r1a12a3@cmrtc.ac.in
15	2023/11/24 1:48:50 PM GMT+5:30	P. TEJA SREE	217R1A 12B5	IT	3rd year	B	tejasree0702@gmail.com
16	2023/11/24 1:49:01 PM	SRINATH	217R1A 12B2	INFORMATION TECHNOLOGY	IT B	B	217r1a12b2@cmrtc.ac.in

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17	2023/11/24 1:49:30 PM GMT+5:30	ASHLESHA	227R5A 1211	IT	3rd	B	bolakaganesh@ gmail.com
18	2023/11/24 1:59:14 PM GMT+5:30	M. RAVI KUMAR	227r5a 1213	Information technology	3rd year	B	227r5a1213@c mrtc.ac.in
19	2023/11/24 2:04:44 PM GMT+5:30	E. PRANEETH REDDY	217R1A 1286	IT	3rd	B	217r1a1286@c mrtc.ac.in
20	2023/11/24 2:04:50 PM GMT+5:30	P. VEDHA REDDY	217R1A 12B1	Information technology	3rd year	It-b	217r1a12b1@c mrtc.ac.in
21	2023/11/24 2:05:34 PM GMT+5:30	N. SNEHITHA	217r1a 12a7	It	3	B	217r1a12a7@c mrtc.ac.in
22	2023/11/24 2:06:48 PM GMT+5:30	T. PAVANI	217r1a 12c4	It	3	B	217r1a12c4@c mrtc.ac.in
23	2023/11/24 2:19:34 PM GMT+5:30	P. NAVYA	217R1A 1243	It	B tech	A	217R1A1243@c mrtc.ac.in
24	2023/11/24 2:19:58 PM GMT+5:30	K. SATHYA SAI SIDDARTH	217R1A 1228	Information technology	IT-A	A	217r1a1228@c mrtc.ac.in
25	2023/11/24 2:20:21 PM GMT+5:30	NIKITHA	217R1A 2236	Information Technology	3 year	A	217r1a1236@c mrtc.ac.in
26	2023/11/24 2:21:56 PM GMT+5:30	SHAIK SAMEERA	227R5A 1205	INFORMATION TECHNOLOGY	III YR	A	227r5a1205@c mrtc.ac.in
27	2023/11/24 2:22:54 PM GMT+5:30	B. POOJA	217r1a 1210	Information Technology	3nd year	A	217r1a1210@c mrtc.ac.in
28	2023/11/24 2:23:30 PM GMT+5:30	V. JHANSI	217R1A 1262	Information Technology	3 rd year	A	217r1a1262@c mrtc.ac.in
29	2023/11/24 2:25:12 PM GMT+5:30	MAHALAKSHM I	217R1A 1249	Information Technology	3	A	217r1a1249@c mrtc.ac.in
30	2023/11/24 2:39:19 PM GMT+5:30	RAMU	217R1A 1270	It	3 YR	B	217R1A1270@c mrtc.ac.in
31	2023/11/24 3:18:52 PM GMT+5:30	D. SHASHIKALA REDDY	217r1a 1283	Information technology	IT	B	217r1a1283@c mrtc.ac.in
32	2023/11/24 6:00:25 PM GMT+5:30	BHANU	227r5a 1207	Information Technology	3rd year	B	227r5a1207@c mrtc.ac.in
33	2023/11/24 6:01:54 PM	SRUTHI	217r1a 12c9	Information Technology	3rd year	B	217r1a12c9@c mrtc.ac.in

	GMT+5:30						
34	2023/11/24 6:57:58 PM GMT+5:30	AKHILESH	227R5A 1212	Information technology	3 Rd year	B	227r5a1212@c mrtc.ac.in
35	2023/11/24 7:45:27 PM GMT+5:30	Dasari Anvitha	217r1a 1215	IT	Btech 3rd year	A	217r1a1215@c mrtc.ac.in
36	2023/11/24 7:46:40 PM GMT+5:30	K Shiva Prakash Reddy	217R1A 1230	Information Technology	IT-A	A	kandurishivapra kash@gmail.co m
37	2023/11/24 7:46:41 PM GMT+5:30	B.Pooja	217R1A 1210	Information Technology	3rd year	A	217r1a1210@c mrtc.ac.in
38	2023/11/24 7:46:57 PM GMT+5:30	Rondla Manasa	217r1a 1250	IT	A	A	217r1a1250@c mrtc.ac.in
39	2023/11/24 7:47:34 PM GMT+5:30	Katikanapalli Nagaraju	227R5A 1202	IT	3rd year	A	227r5a1202@c mrtc.ac.in
40	2023/11/24 7:47:35 PM GMT+5:30	KORIDE SAIKANTA BHARADWAJ	217R1A 1234	Information Technology	3rd year	A	217r1a1234@c mrtc.ac.in
41	2023/11/24 7:48:21 PM GMT+5:30	Mukka.Ram	217R1A 1242	Information Technology	3rd year IT"A"	A	217r1a1242@c mrtc.ac.in
42	2023/11/24 7:48:22 PM GMT+5:30	D.Ganesh	217R1A 1217	IT	BTECH	A	217r1a1217@c mrtc.ac.in
43	2023/11/24 7:49:26 PM GMT+5:30	Samala Akhila	217r1a 1252	Information Technology	Btech 3rd year	A	akhilasamala22 @gmail.com
44	2023/11/24 7:50:18 PM GMT+5:30	P.Raju	217r1a 1247	IT	3	A	217r1a1247@c mrtc.ac.in
45	2023/11/24 7:52:32 PM GMT+5:30	Maddikunta Nikhitha	217R1A 1236	Information Technology	IT	A	217r1a1236@c mrtc.ac.in
46	2023/11/24 7:54:10 PM GMT+5:30	KAIPA SATYASAI SIDDHARTH	217R1A 1228	INFORMATION TECHNOLOGY	Btech	A	217r1a1228@c mrtc.ac.in
47	2023/11/24 7:59:04 PM GMT+5:30	YADARAM SHARAN	217R1A 1263	IT	3rd year	A	217r1a1263@c mrtc.ac.in
48	2023/11/24 8:04:29 PM GMT+5:30	Sk.Sameera	227R5A 1205	Information Technology	III Year	A	227r5a1205@c mrtc.ac.in
49	2023/11/24 8:13:43 PM GMT+5:30	JAMALPUR ANKUSH	227R5A 1206	IT	3 YEAR	A	227r5a1206@c mrtc.ac.in
50	2023/11/24 8:14:09 PM	Zeba tanveen	217R1A 1265	Information Technology	3rd year	A	217r1a1265@c mrtc.ac.in

	GMT+5:30						
51	2023/11/24 8:17:13 PM GMT+5:30	KATAM NITHISH CHANDRA	217R1A 1231	Information Technology	BTech-3	A	217r1a1231@c mrtc.ac.in
52	2023/11/24 8:20:06 PM GMT+5:30	D.Varalakshmi	217R1A 1216	IT	BTECH	A	217R1A1216@c mrtc.ac.in
53	2023/11/24 8:47:35 PM GMT+5:30	Aishwarya Salendra	217r1a 1202	Information Technology	3rd year	A	217r1a1202@c mrtc.ac.in
54	2023/11/24 8:57:43 PM GMT+5:30	K.SHIVAKUMA R	217R1A 1233	INFORMATION TECHNOLOGY	3rd year	A	217r1a1233@c mrtc.ac.in
55	2023/11/24 9:25:06 PM GMT+5:30	Manunuru Naga Mani Sree	217R1A 123i	IT	Third year	A	217r1a1238@c mrtc.ac.in
56	2023/11/24 10:21:07 PM GMT+5:30	Vongala Jhansi	217r1a 1262	Information Technology	Btech 3rd year	A	217r1a1262@c mrtc.ac.in
57	2023/11/24 10:39:41 PM GMT+5:30	Ramagiri Ashlesha	217R1A 1248	IT	3rd	A	217r1a1248@c mrtc.ac.in
58	2023/11/24 10:44:06 PM GMT+5:30	nikhil reddy polu	217r1a 1245	information Technology	IT	A	nikhilreddy1120 03@gmail.com
59	2023/11/24 6:41:03 AM GMT+5:30	Akula Renu	227R5A 1204	Information Technology	3rd Year	A	227R5A1204@c mrtc.ac.in
60	2023/11/24 10:42:58 AM GMT+5:30	Anjan Barman	217R1A 1203	IT	3rd	A	217r1a1203@c mrtc.ac.in

4.

5. **Faculty Participants number:5**

6. **Expenditure amount if any:**

7. **Photographs (5 to 6)**

8. **Video link url:**
   https://drive.google.com/file/d/1haNLnzjTFGQsL3xnlvxjrG7qkTW0B2XU/view?usp=drive
   _link

9. Poster

10. Keywords: Speed sensors, integrated test bench for WSP,LHB

13.Lead Expert's Name:

14.Lead Expert's Email:

15.Lead Expert's Designation:

16.Lead Expert's Organization:

17.Lead Expert's Contact number: