KINGS
COLLEGE OF ENGINEERING
Recognised under 2(f) & 12(B) of UGC
Approved by AICTE, New Delhi.
Affiliated to Anna University, Chennai.

B++
NAAC

DEPARTMENT OF CIVIL ENGINEERING
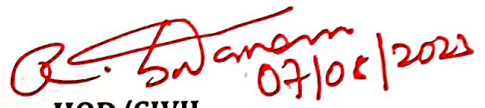## ACADEMIC YEAR 2023 – 2024
CIRCULAR

DATE: 07.08.2023

This is to inform our department faculty that there will be an internal staff seminar. The details of the staff seminar are given below.

Name of the faculty : Mr.K.ARUN

Date : 17.08.2023

Venue : Smart classroom (Hall no 236)

Time : 12:30 PM

an

DRC MEMBER   07/8/23

HOD/CIVIL   07/08/2023

DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2023-2024/ODD SEMESTER
## INTERNAL STAFF SEMINAR – REPORT

18/08/2023

Background & Objective

Department of Civil Engineering had organized an Internal Seminar for the Department staff members for accessing online journals. The purpose of this seminar is to equip the faculty in new techniques through accessing online journals like MAT, Springer etc.

Seminar Session

A Seminar was held in the Department of Civil Engineering on 17th August, 2023 at 12:30 PM. **Mr.K.Arun /AP** delivered his seminar talk on **"Wireless sensor networks for bridge structural health monitoring: A novel approach".** The paper was referred from SPRINGER Journal, Asian Journal of Civil Engineering (2023).
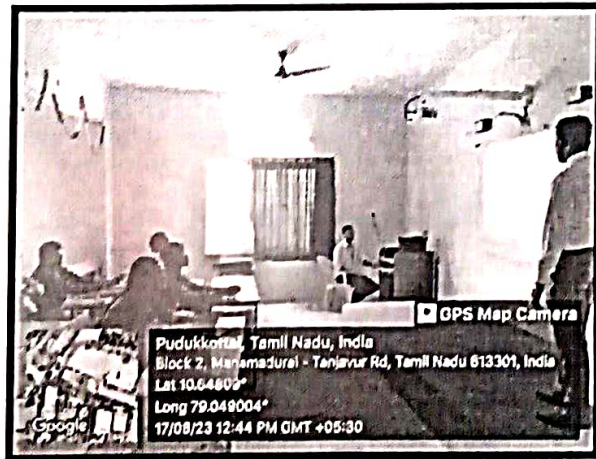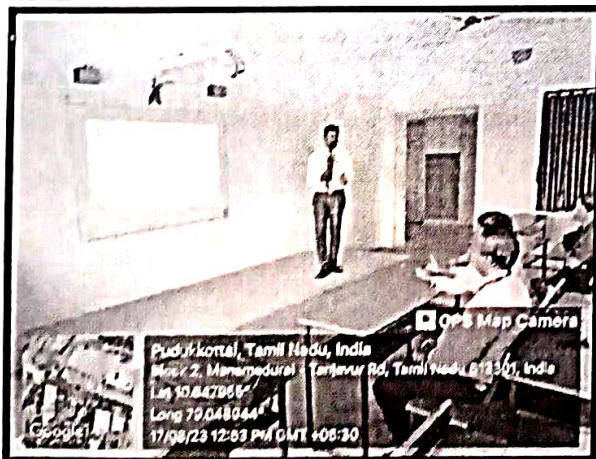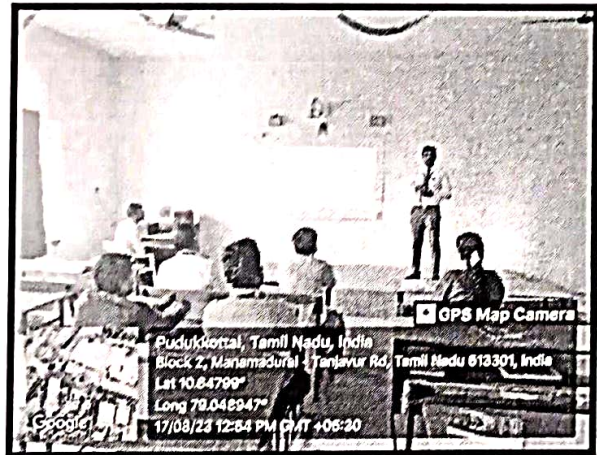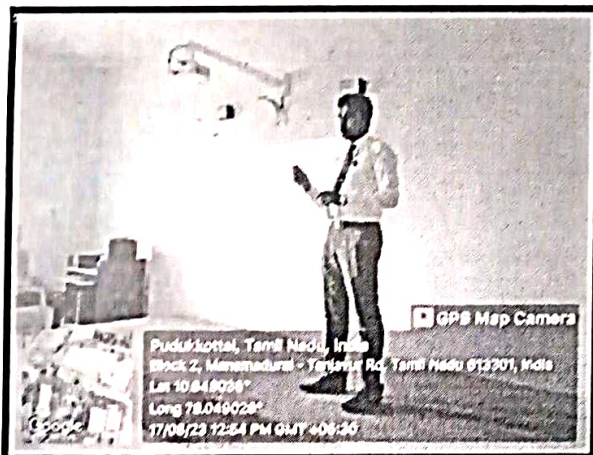
Internal Seminar Session by Mr.K.Arun /AP CIVIL

Theme:

This work presents the ML model in which data collected from the open access repository where experiments conducted on steel structure bridge data for 1-year duration are analyzed. The model combines data from sensors, applications statistics and induced load while monitoring structure. Experiments conducted have tested the ambient vibration test, explored different load condition for vibration test, and artificial damage conditions on bridge structure at different positions to collect enough data for real-time analysis at different environment condition. Five different damage scenarios were considered as a case A with no damage, in case B the vertical section was cut half at the mid-span, case C with fully cut mid-span, in case D damage was recovered by welding the vertical section, in case E 5/8th part of vertical section was cut. Ambient and load-induced vibration data are structured based on different cases using panda's data frame. The model shows the high accuracy of deformation caused due to load induced. Results show accelerometer measurement as very good feature vectors for real-time monitoring and SARIMAX as a perfect model to evaluate time series data and perform anomaly detection simultaneously.

Scope for future work:

- ➢ Here, the author has proposed the design architecture of the major components required in building a smart SHM system.
- ➢ This proposal can be extended and verified in real-time by considering certain structural health monitoring aspects.
- ➢ On the proposed model, wireless communication is used to transmit. However, latency of data transmission has been largely ignored. Hence future works can focus on that.

Outcome:

The Seminar clearly highlighted the machine learning anomaly detection using SARIMAX forecasting method. Staff members also got an idea about the proposed model from remote sensor network installed on steel truss bridge for continuous monitoring. This seminar proves to be effective in such a way that, it highlighted the model of SHM system. The future of the SHM system lies in the incorporation of Information Technology and Artificial Intelligence into the traditional health monitoring systems. Discussions were made among faculty members in various aspects of composite beams. Finally, Staff members shared their views regarding seminar and gave their valuable feedback.

J. M....... 18/8/2023

HOD/CIVIL 18/08/2023   PRINCIPAL
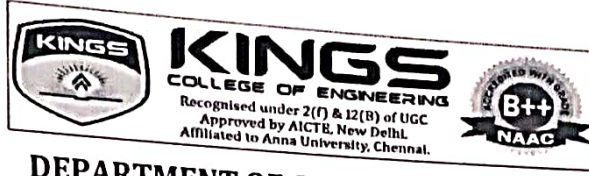
INTERNAL STAFF SEMINAR – ATTENDANCE AND FEED BACK

S.NO	NAME	FEEDBACK	SIGN
1	Dr.R.Saravanan	Very Excellent Presentation	R. Saravanan 17/08/2023
2	Mr.R.Sundharam	New topic and Usefull Presentation	P. 17/8/2023
3	Mr.R.Ramchandar	Innovative Trendy Topic	R. Ramchandar 17/08/2023
4	Mr.D.Nandhakumar	Excellent session. Queries are Clearly Explained Interested	D. Nandha 17/8/23
5	Ms.A.Suganya	Ieffective & intractive presentation interactions.	Suganya
6	Mr.A.Sagaya Albert	Nice Prasentation	A Sagaya Albert 17/08/2023