Maharaja Surajmal Institute of Technology, New Delhi-110058

Department of Information Technology

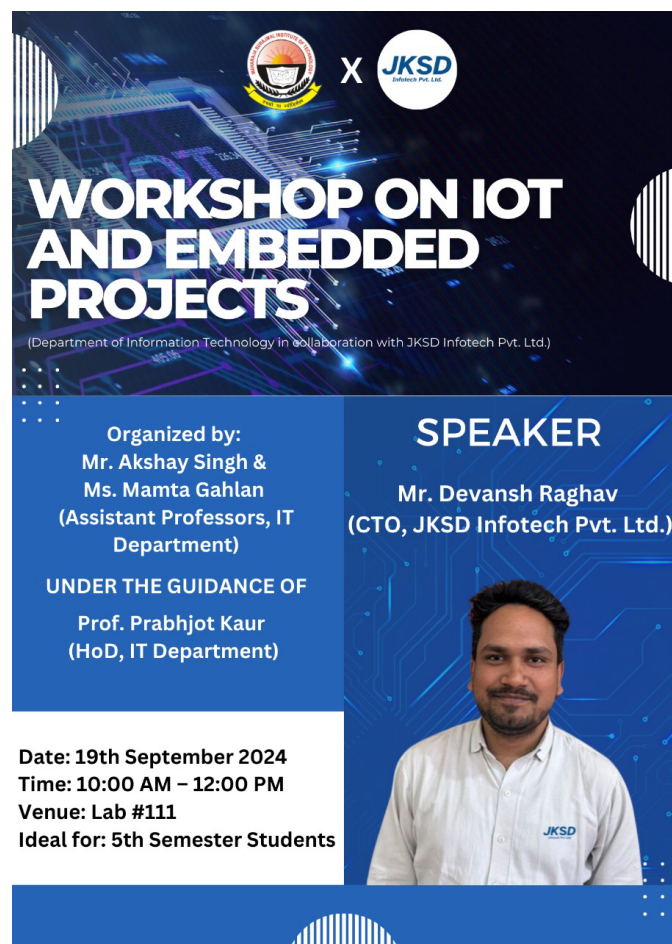## Workshop Report

Topic Name	IoT and Embedded Projects
Type of Activity Seminar/Webinar/Workshop	Workshop
Name of the Expert	Mr. Devansh Raghav
Mode, Date and Time	Offline, 19th Sept. 2024, 10 AM–12 PM
Target Audience	IT 5th Semester
Organized by	Mr. Akshay Singh, Ms. Mamta Gahlan
Attended Participants	40/40 (100%)

In today's fast-paced technological world, the Internet of Things (IoT) and embedded systems are critical in shaping the future of industries such as healthcare, agriculture, smart cities, and manufacturing. The IoT and Embedded Projects Workshop, organized by **Mr. Akshay Singh & Ms. Mamta Gahlan** (Assistant Professors, IT Department) and led by **Mr. Devansh Raghav, CTO of JKSD InfoTech Pvt. Ltd.**, aimed to offer practical knowledge and insights into these innovative fields. The workshop took place on **19th September 2024** at **Lab #111**, running from 10 AM to 12 PM.

The primary objectives of the workshop were:

- Provide a deep understanding of IoT and embedded system concepts.
- Enable participants to work with hardware components like microcontrollers.
- Offer hands-on project experience in developing IoT applications.
- Guide through the complete project development lifecycle.

Mr. Devansh Raghav began by explaining the core principles of IoT and embedded systems. He offered practical insights on IoT architecture, communication protocols, and the integration of embedded systems in various applications.

The session introduced participants to popular microcontrollers such as:

- Arduino, for prototyping IoT projects.
- ESP8266, known for wireless communication in IoT projects.

Mr. Raghav walked participants through selecting the right hardware for different projects and the essential role of sensors and actuators in gathering data from the environment. He elaborated on key communication protocols like MQTT, CoAP, and HTTP/HTTPS, emphasizing how IoT devices communicate with each other and cloud services.

The session on embedded programming focused on programming microcontrollers using C/C++ and Python. Mr. Raghav demonstrated essential programming techniques such as GPIO control, serial communication, and managing power consumption in IoT devices, making the session highly engaging and practical. Cloud platforms such as AWS IoT, Google Cloud IoT, and Microsoft Azure IoT Hub were introduced as tools for data management and real-time analytics. Mr. Raghav guided participants through the process of integrating IoT devices with these platforms, explaining how cloud services enable data visualization and remote monitoring.

A project on "***Temperature and Humidity Monitoring System***" was built using DHT11 sensors connected to an ESP8266 microcontroller. The system continuously measured temperature and humidity levels in real time and sent the data to a cloud platform for monitoring. Alerts were configured to notify users if the environment's temperature or humidity exceeded pre-set thresholds, making it a highly practical solution for home or industrial applications.
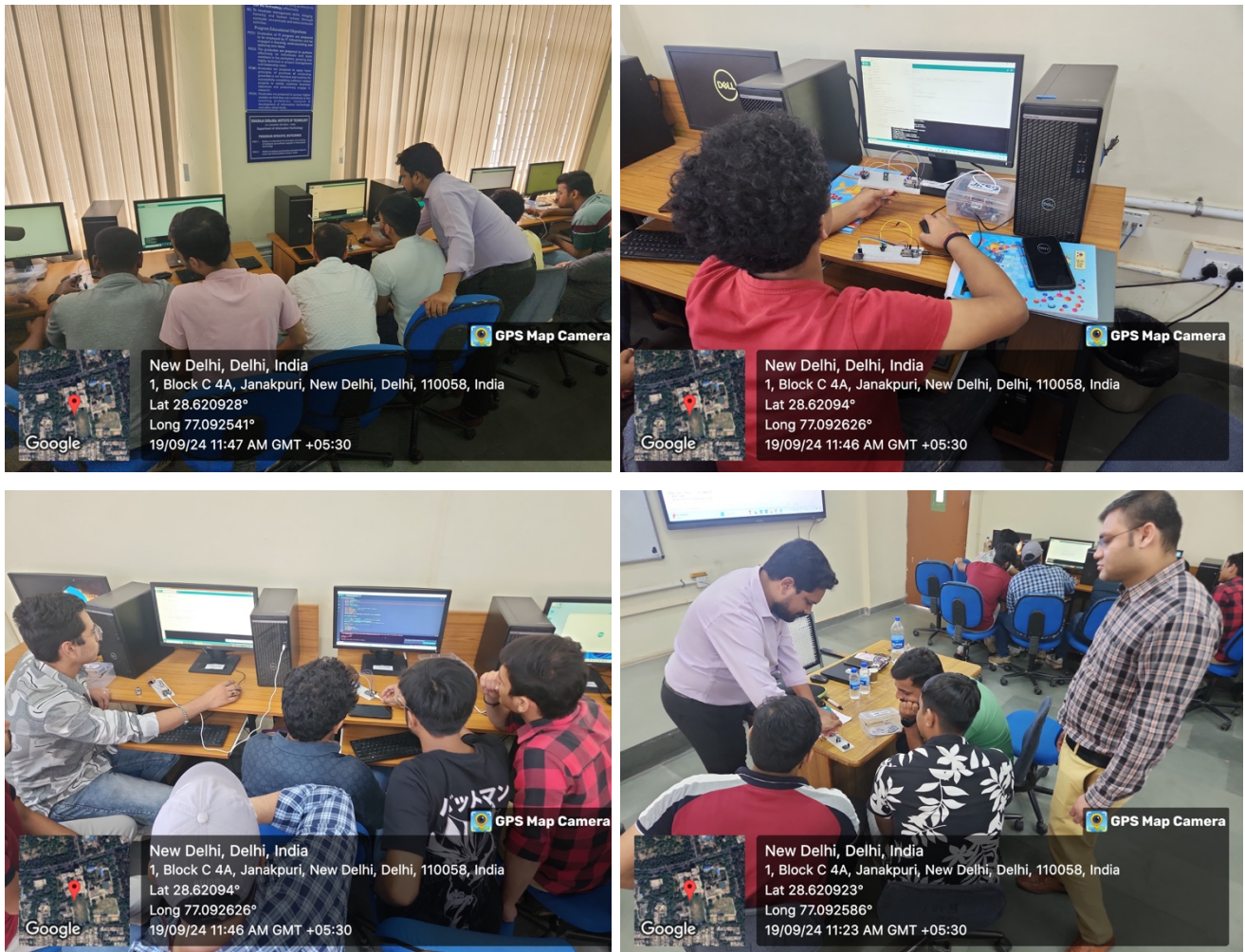
Participants presented their projects at the end of the workshop. Mr. Raghav provided constructive feedback, emphasizing both the strengths of the designs and areas for future improvement.

The IoT and Embedded Projects Workshop, provided participants with invaluable knowledge and skills. Mr. Devansh Raghav along with Mr. Jitesh Mathur, Co-Founder and CEO of JKSD InfoTech Pvt. Ltd. expertly led the sessions, offering not only theoretical understanding but also hands-on experience that participants can apply in their future endeavours. The combination of in-depth knowledge, practical guidance, and real-time problem-solving made this workshop a rewarding and enriching experience for all attendees.

We extend our gratitude to the team of JKSD InfoTech Pvt. Ltd. and HoD of IT Department, Prof. Prabhjot Kaur for organizing such an insightful and valuable workshop.

Mr. Akshay Singh   **Ms. Mamta Gahlan**

Proctor, IT-1 (5th Sem)   Proctor, IT-2 (5th Sem)

Prof. Prabhjot Kaur

HOD, IT Department