V. V. Sangha's

Rao Bahadur Y Mahabaleswarappa Engineering College, Ballari.

Department of Information Science Engineering

And

NEW AGE INNOVATION NETWORK 2.0

Cordially invite you for

Innovation Driven Workshop on

BIG DATA ANALYTICS AND HADOOP

Resource Person

Sri Pramodraj K
Software Developer
Nirmith AI Labs

Sri Thilak Srinivas M
Software Developer
Nirmith AI Labs

26th and 27th November,2025@10:00AM

Venue: IPCC Lab

Presided by

SRI JANEKUNTE BASAVARAJ
Vice-President, V V Sangha &
Chairman RYMEC, Ballari

In the August Presence of

Sri. Prabhu Swamy S M
GB Member
RYMEC, Ballari

Sri. Badada Prakash
GB Member
RYMEC, Ballari

Dr. S Kotresh	***Dr B Sreepathi***	***Dr. T. Hanumantha Reddy***
College Coordinator NAIN	***HOD-ISE***	***Principal***
RYMEC, Ballari	***RYMEC, Ballari***	***RYMEC, Ballari***

HEARTY WELCOME TO ONE & ALL

STAFF & STUDENTS OF RYMEC

V.V.Sangha's

ರಾವ್ ಬಹದ್ದೂರ್ ವೈ. ಮಹಾಬಲೇಶ್ವರಪ್ಪ ತಾಂತ್ರಿಕ ಮಹಾವಿದ್ಯಾಲಯ, ಬಳ್ಳಾರಿ.

Rao Bahadur Y.Mahabaleswarappa Engineering College

Cantonment. Ballari-583104.

Department of Information Science Engineering

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Dr. Kanekal Mahantesh	Sri Janekunte Basavaraj	Dr. Arvind Patel	Sri Yalpi Meti Pampanagouda	Sri Byluvaddigeri Yerriswamy	Sri Prabhu Swamy S.M	Sri Badada Prakash	Principal, Vice-Principal, HOD
President, V.V. Sangha, Ballari	Vice President, VVS & Chairman, GC, RYMEC, Ballari	Secretary, V.V.S., Ballari	Joint Secretary, V.V. Sangha, Ballari	Treasurer, V.V. Sangha, Ballari	GB Member, RYMEC Ballari	GB Member, RYMEC, Ballari	Staff and Students of ISE Department

Innovation Driven Workshop on

BIG DATA ANALYTICS AND HADOOP

1. Introduction

In the present digital era, enormous volumes of data are generated every second from various sources such as social media platforms, business transactions, sensors, mobile devices, healthcare systems, and scientific research. Managing, processing, and extracting meaningful insights from such massive data has become a critical challenge for organizations. This has led to the emergence of **Big Data Analytics**, which focuses on analyzing large, complex datasets to uncover patterns, trends, and valuable information for decision-making.

To address the growing industry demand for skilled professionals in this domain, an **Innovation Driven Workshop on Big Data Analytics and Hadoop** was organized for students and faculty members. The workshop aimed to provide participants with both theoretical knowledge and practical exposure to Big Data concepts, Hadoop ecosystem components, and real-world use cases.

The workshop served as a platform to bridge the gap between academic learning and industry requirements by emphasizing hands-on learning, problem-solving, and innovation-oriented thinking.

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2. Objectives of the Workshop

The primary objectives of the workshop were as follows:

- To introduce the fundamental concepts of **Big Data** and its importance in modern industries.
- To provide an in-depth understanding of the **Hadoop framework** and its ecosystem.
- To familiarize participants with **distributed storage and processing** concepts.
- To demonstrate real-world applications of Big Data Analytics.
- To develop practical skills through hands-on sessions using Hadoop tools.
- To encourage innovation-driven thinking and data-driven decision-making.

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3. Workshop Details

- **Title of the Workshop:** Innovation Driven Workshop on Big Data Analytics and Hadoop
- **Duration:** Two Days
- **Target Audience:** Undergraduate Student
- **Mode:** Offline
- **Resource Person(s):** Pramod Kumar/Thilak
- **Organized By:** Department of Information Science Engineering
- **Venue:**IPCC Lab

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4. Overview of Big Data

Big Data refers to datasets that are too large, complex, or fast-changing to be handled using traditional data processing tools. Big Data is commonly characterized by the **5 V's**:

1. **Volume:** Large amount of data generated every second.
2. **Velocity:** Speed at which data is generated and processed.
3. **Variety:** Different types of data (structured, semi-structured, unstructured).
4. **Veracity:** Quality and accuracy of data.
5. **Value:** Meaningful insights derived from data.

The workshop explained how Big Data Analytics helps organizations improve efficiency, predict trends, enhance customer experiences, and support strategic decision-making.

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5. Introduction to Hadoop

Hadoop is an **open-source framework** designed to store and process large datasets across clusters of commodity hardware. It enables distributed computing and fault tolerance.

The core components of Hadoop discussed in the workshop include:

5.1 Hadoop Distributed File System (HDFS)

HDFS is a distributed storage system that stores data across multiple machines. It provides high fault tolerance and is designed to run on low-cost hardware.

5.2 MapReduce

MapReduce is a programming model used for processing large datasets in parallel. It divides tasks into two phases:

- **Map Phase:** Processes input data and produces key-value pairs.
- **Reduce Phase:** Aggregates the results to produce final output.

5.3 YARN (Yet Another Resource Negotiator)

YARN manages system resources and schedules tasks efficiently across the Hadoop cluster.

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6. Hadoop Ecosystem Components

The workshop also introduced various tools in the Hadoop ecosystem:

- **Hive:** Data warehousing tool for querying large datasets using SQL-like language.
- **Pig:** High-level scripting language for data processing.
- **HBase:** NoSQL database for real-time data access.
- **Sqoop:** Tool for transferring data between relational databases and Hadoop.
- **Flume:** Used for collecting and aggregating streaming data.
- **Spark:** Fast in-memory data processing framework.

Hands-on demonstrations helped participants understand how these tools work together in real-world Big Data environments.

7. Practical Sessions and Hands-on Training

A major highlight of the workshop was the **hands-on training sessions**, where participants gained practical exposure to:

- Installation and configuration of Hadoop (Standalone / Pseudo-distributed mode)
- Working with HDFS commands
- Writing simple MapReduce programs
- Performing data analysis using Hive queries
- Understanding data ingestion using Sqoop and Flume

Participants actively engaged in lab exercises, which enhanced their confidence in handling Big Data tools and technologies.

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8. Applications of Big Data Analytics

The workshop discussed various real-world applications of Big Data Analytics, including:

- **Healthcare:** Disease prediction, patient monitoring, and personalized medicine.
- **Finance:** Fraud detection, risk analysis, and algorithmic trading.
- **Retail:** Customer behavior analysis and recommendation systems.
- **Social Media:** Sentiment analysis and trend detection.
- **Smart Cities:** Traffic management, energy optimization, and public safety.

These case studies helped participants understand how Big Data solutions drive innovation across industries.

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9. Outcomes of the Workshop

At the end of the workshop, participants were able to:

- Understand core concepts of Big Data and Hadoop.
- Gain practical skills in distributed data processing.
- Analyze large datasets using Hadoop ecosystem tools.
- Apply Big Data concepts to real-world problems.
- Develop interest in advanced research and career opportunities in data analytics.

The workshop successfully enhanced the technical competency and innovation mindset of the participants.

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10. Feedback and Participation

The workshop received **positive feedback** from participants. Students appreciated the hands-on approach and real-world examples provided by the resource persons. Faculty members found the sessions useful for integrating Big Data concepts into academic curriculum and research activities.

Active participation, interactive discussions, and doubt-clearing sessions contributed to the overall success of the workshop.

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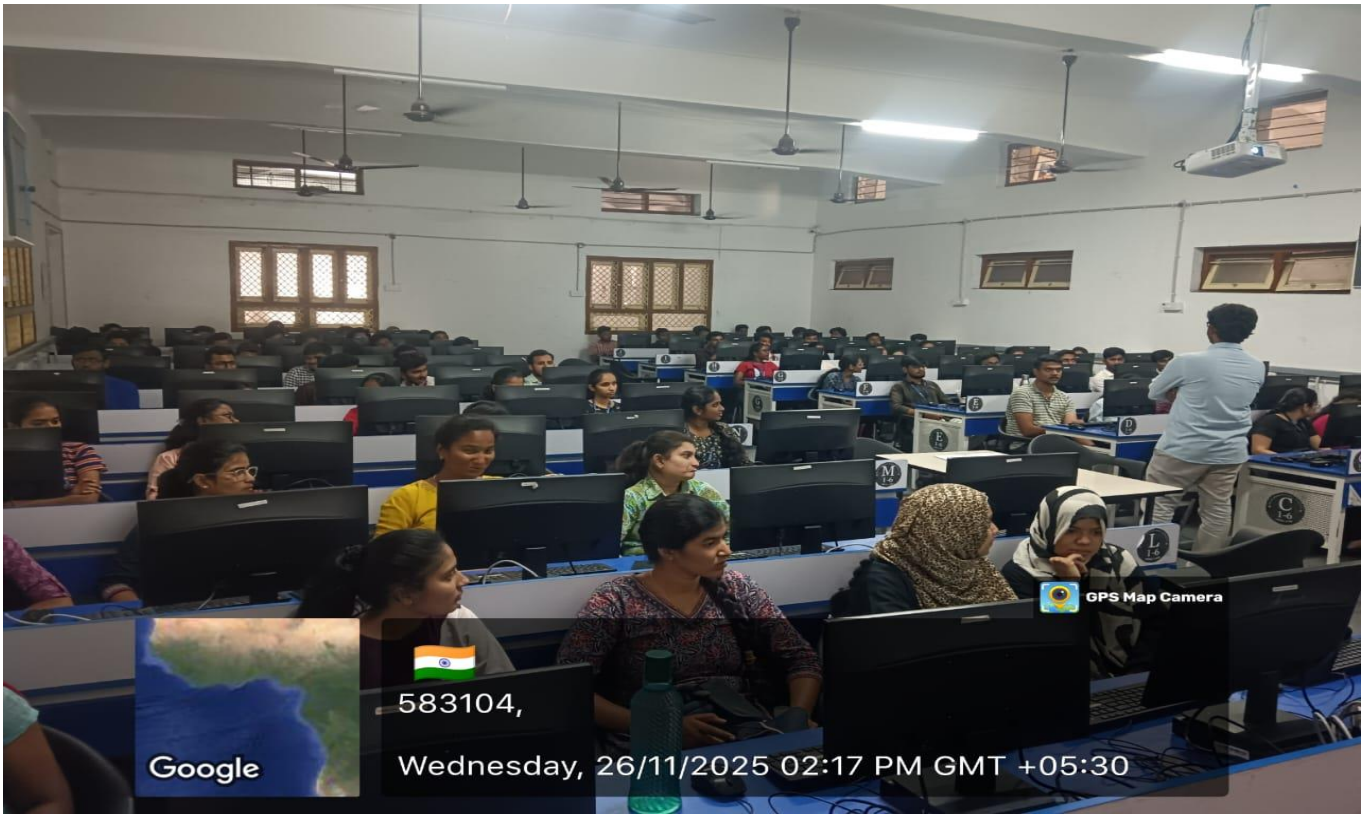
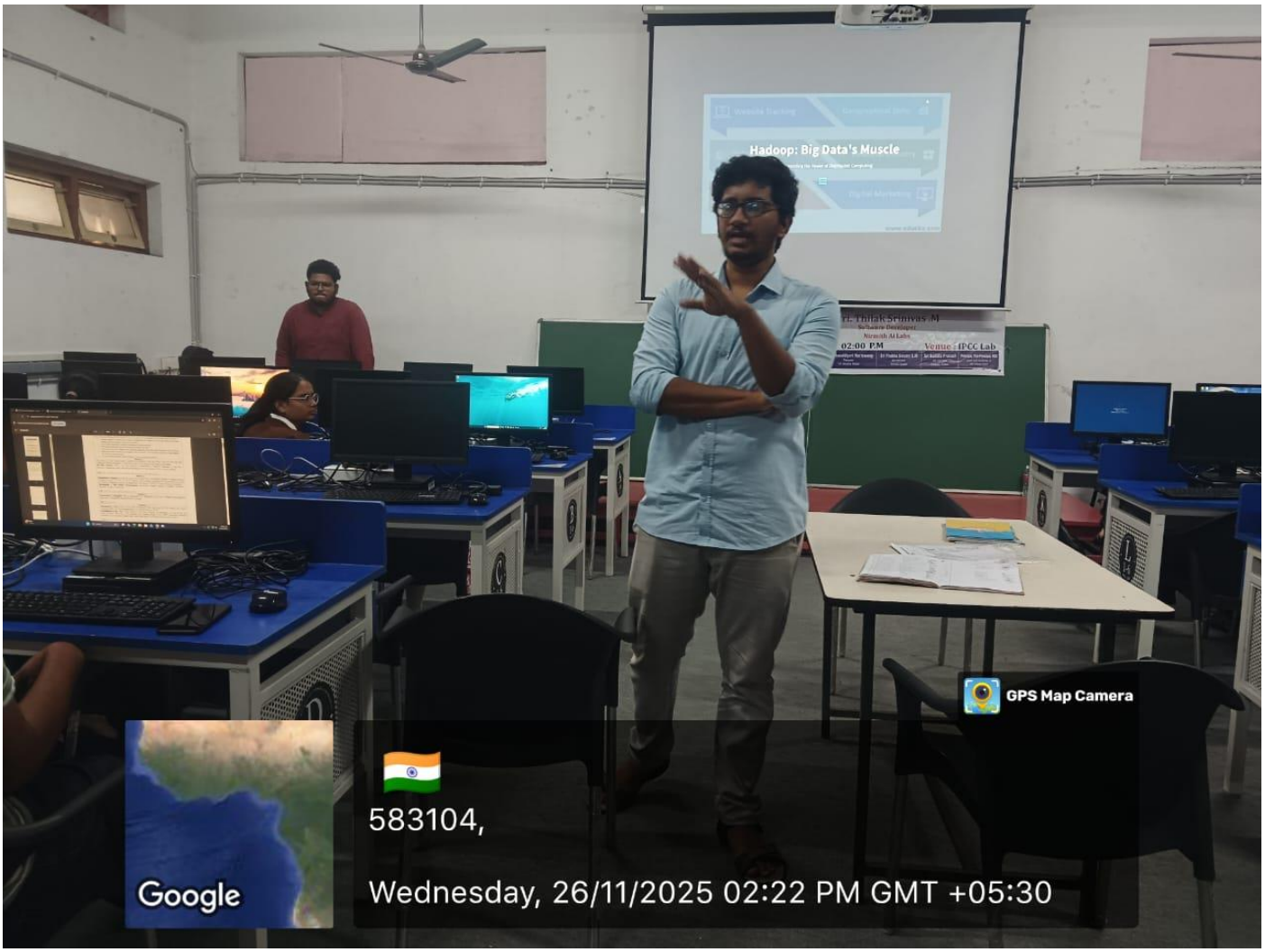
11. Conclusion

The **Innovation Driven Workshop on Big Data Analytics and Hadoop** was highly informative and impactful. It successfully met its objectives by providing participants with both theoretical understanding and practical exposure to Big Data technologies. The workshop played a significant role in preparing students for industry demands and encouraged innovation-driven learning.

Such workshops are essential in today's data-driven world and should be conducted regularly to keep students and faculty updated with emerging technologies.

12. Photos




Hadoop: Big Data's Muscle
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Venue : IPCC Lab
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