MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
BELAWADI, SRIRANGAPATNA TALUK, MANDYA-571477
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(DATA SCIENCE)

ONE-DAY WORKSHOP REPORT

BIG DATA ANALYTICS – HANDS-ON WORKSHOP

Summary

A one-day workshop on "Big Data Analytics – Hands-on Workshop" was conducted on 18 September 2026 from 9:00 AM to 4:00 PM at MIT Engineering College, Belavadi, Karnataka. The programme provided engineering students with practical exposure to Big Data concepts, tools and workflows.

The workshop combined concise conceptual explanations with demonstrations and guided laboratory exercises. Participants were introduced to the Big Data ecosystem, distributed storage, data processing and analytics workflows. The emphasis was on learning by doing: students executed commands, worked with datasets, performed processing tasks and interpreted outputs.

Purpose and Objectives

- Introduce the need for Big Data Analytics and distributed data processing.
- Familiarize students with the Hadoop ecosystem and large-scale data processing.
- Provide hands-on exposure to HDFS operations and data management.
- Demonstrate batch analytics, querying and MapReduce-style processing.
- Develop practical problem-solving, troubleshooting and result-interpretation skills.

Participants and Teaching Approach

The workshop was intended for undergraduate engineering students interested in Data Science, Big Data and Analytics. The sessions followed a faculty-led demonstration followed by guided hands-on practice, with faculty support for technical and conceptual issues.

Workshop Schedule

Time	Session	Major Activities
9:00 A.M.–10.00 A.M.	Registration & Inauguration Introduction to Big Data	Registration, introduction and briefing Characteristics, challenges, applications and workflow
10:00A.M.–11:00A.M.	Hadoop Ecosystem	HDFS, distributed storage, NameNode, DataNodes and processing
11:00 A.M.–11:25 A.M.	Break	Refreshment
11:25 A M –1:15 PM	HDFS Hands-on	Directories, upload/download, listing, copying and commands
01:15P M-2 PM	Lunch	Lunch break
2 PM -3 PM	Data Processing Big Data Analytics Lab	MapReduce workflow and practical example Dataset preparation, processing, aggregation and interpretation
3:15 P.M.–3.45 P.M.	Practical Exercise	Participant task and troubleshooting
3:45PM –4:00 P.M.	Valedictory & Feedback	Discussion, feedback and closing remarks

Session-wise Technical Coverage

The technical sessions introduced the characteristics of Big Data—volume, velocity, variety, veracity and value—and connected them with applications such as e-commerce, sensor systems, banking and education.

The Hadoop session covered distributed storage and processing, including the roles of NameNode and DataNodes, fault tolerance, data distribution and scalability. HDFS was explained as a distributed file system for storing large datasets.

The data-processing session demonstrated how a large analytical problem can be divided into processing stages, producing intermediate and final aggregated results. Participants were encouraged to verify whether the output was consistent with the input and analytical objective.

Hands-on Laboratory Activities

- Working with HDFS – create directories, list locations and verify the working environment.
- Uploading Data – transfer sample datasets into HDFS and verify successful storage.
- File Operations – list, copy, move, download and display files using HDFS commands.
- Distributed Data Processing – understand the flow from input data to processed output.
- Aggregation – perform representative operations such as record counts, totals and maximum/minimum values.
- Result Verification – compare input and output and identify errors or inconsistencies.

Typical Practical Workflow

Local Dataset → HDFS Storage → Data Verification → Processing Job → Aggregation → Output Generation → Result Interpretation

Faculty Facilitation and Participant Engagement

Faculty members coordinated the technical demonstrations, explained concepts in a student-friendly manner and supervised the hands-on activities. Their responsibilities included sequencing sessions, demonstrating procedures, providing datasets and problem statements, monitoring progress, resolving technical issues and discussing results.

Participants were encouraged to execute commands independently after demonstrations. The hands-on format promoted interaction between students and faculty, including discussion of errors, comparison of outputs and clarification of the processing workflow.

Workshop Coordinator

Prof. Chandrashekara M. S., Department of CSE – Data Science

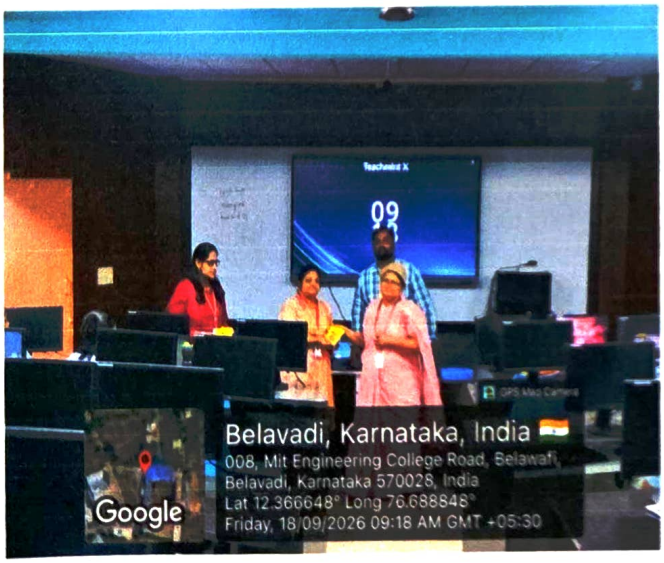
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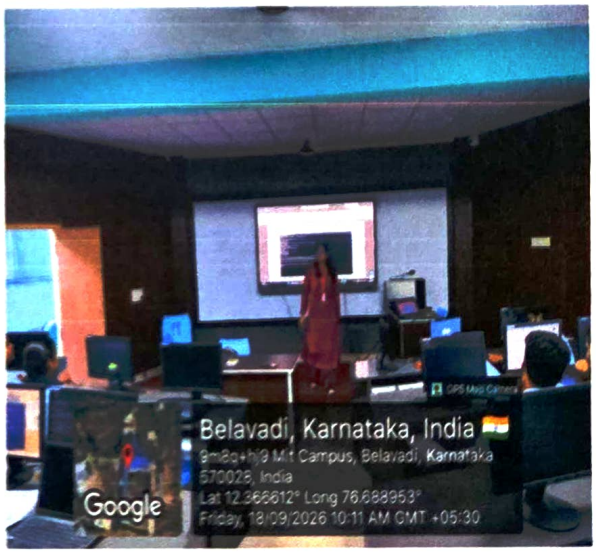
Department Of CSE – **Prof Manasa R** (Vidyavardhaka College of Engineering,Mysuru)

Department Of CSE – **Prof G.Sireesha** (Vidyavardhaka College of Engineering, Mysuru)

Photographic Documentation

The photograph documents faculty interaction and workshop activity during the Big Data Analytics hands-on session.





Faculty interaction and workshop activity during the hands-on session

Learning Outcomes and Assessment

- Explain the need for Big Data technologies in large-scale data processing.
- Describe the basic components of the Hadoop ecosystem.
- Perform fundamental HDFS file and directory operations.
- Follow a distributed data-processing workflow.
- Perform simple analytical operations on sample datasets.
- Interpret and validate the output generated by a Big Data task.
- Gain practical confidence in laboratory-oriented Big Data exercises.

Learning was assessed through observation of participant activities, completion of guided laboratory tasks, oral questioning and verification of command outputs.

Conclusion

The one-day workshop provided a structured blend of conceptual learning and practical laboratory exposure. The hands-on component helped participants understand how distributed storage and processing concepts are translated into actual data-processing tasks. The faculty-led approach supported active learning, troubleshooting and interpretation of results.

The programme may be extended through advanced sessions covering Hive, Pig, Spark, streaming analytics, NoSQL databases and real-time Big Data applications.

Acknowledgements:

We extend our gratitude to the speakers, participants, and organisers for making this session a success.

WORKSHOP CO-ORDINATOR SIGNATURE

H.O.D SIGNATURE

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