

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

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Submitted,

Sub: **Report on guest lecture - NoSQL Databases and Big Data Storage Systems –Reg**

With respect to the above subject, Department of Artificial Intelligence and Machine Learning, Sri sairam college of Engineering, Bengaluru organized a guest lecture on NoSQL Databases and Big Data Storage Systems for 2nd year AIML students on 29th July 2024. The Resource person Mr. Raghu Prasad K S , CEO of Kaushalya Technical Training and Consultancy Services, Bangalore has provided the enriched knowledge about the distributed database, advanced topics in NOSQL database like CAP theorem ,Graph based database and Neo4J and also the students experienced the hands-on session on MongoDB CRUD operations. Mr.P.Ramkumar , Assistant Professor, Department of AIML delivered welcome address followed by student Ms. Samvida introduced the guest and Mrs. Tharani R , Asst.Professor of AIML delivered the vote of thanks .

Key Topics Covered

Introduction to NoSQL Databases

Definition and Purpose:

NoSQL databases are designed to handle large volumes of structured, semi-structured, and unstructured data, providing flexibility, scalability, and performance.

Types of NoSQL Databases:

- **Document Stores (e.g., MongoDB, CouchDB):** Store data in JSON-like documents.
- **Column-Family Stores (e.g., Cassandra, HBase):** Store data in columns, offering high write throughput and scalability.
- **Key-Value Stores (e.g., Redis, DynamoDB):** Store data as key-value pairs, optimized for simple lookups.
- **Graph Databases (e.g., Neo4j, ArangoDB):** Store data as nodes and edges, ideal for representing relationships.

Advantages of NoSQL Databases

- **Scalability:** Designed to scale out horizontally across many servers.
- **Flexibility:** Schema-less design allows for easy modifications and handling of varied data types.
- **Performance:** Optimized for specific use cases, offering high performance and low latency for read and write operations.

Challenges and Considerations

- **Data Consistency:** Many NoSQL databases use eventual consistency, which can be a challenge for applications requiring strict consistency.
- **Complexity of Queries:** SQL databases support complex joins and queries, which can be more difficult to achieve in NoSQL databases.

Big Data Storage Systems

- **Hadoop Ecosystem:** Overview of Hadoop Distributed File System (HDFS), MapReduce, and Hadoop YARN.
- **Data Lakes:** Explanation of the concept of data lakes and their role in storing large volumes of raw data.
- **NoSQL Databases for Big Data:** Examples of NoSQL databases optimized for Big Data, such as Cassandra and MongoDB.

The program was a resounding success, providing students with a deeper understanding of NOSQL datatbases and mongoDB and its versatile application. Moreover, the session has provided a platform for networking with the like-minded professionals and receiving constructive feedback from students. This interaction fosters personal growth and opens doors to potential collaboration opportunities.

We extend our gratitude to Mr. Raghu Prasad K S for his invaluable contributions and look forward to organizing similar sessions in the future to continue promoting knowledge and skill development.

Coordinator

R. Tharai

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Glimpse of Session Photos

