Bhoj Reddy Engineering College for Women

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Department of Computer Science and Engineering

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Report on Guest Lecture: "Emerging Technology - Data Science" for II B Tech CSE A & B and CSM students.

Date: 18 November 2023

Event Venue: Seminar Hall (WB 402)

The CSE department has conducted Guest Lecture on "Emerging Technology - Data Science" for II B Tech CSE A & B and CSM students on 18 November 2023. A total of 207 students attended the guest lecture. The guest lecture was scheduled from 09:30 to 12:30 Hrs. The guest lecture was conducted by Brainovision, Hyderabad.

Figure 1: Banner of DS Guest Lecture

Welcome Address:

The session commenced with a warm Welcome Address, setting the tone for an engaging and informative guest lecture.

Address by HoD-CSE, Dr B Raveendranadh Singh:

Dr B Raveendranadh Singh provided insights into importance of embracing technological advancements and fostering an environment of continual learning and adaptability among the student community..

Address by Vice-Principal, Mr G Dayakar Reddy:

Mr G Dayakar Reddy emphasized the profound impact of data science in today's world, acknowledging its transformative power across industries and sectors.

Figure 2: Address by Vice-Principal, Mr G Dayakar Reddy

Address by Principal, Dr J Madhavan:

Dr J Madhavan highlighted the significance of such lectures, and articulated the college's commitment to providing students with exposure to cutting-edge fields like Data Science. Heemphasized the necessity of integrating interdisciplinary knowledge and practical application to prepare students for the challenges and opportunities of the data-driven era.

Figure 3: Address by Principal, Dr J Madhavan

Keynote Address by Chief Guest, Mr B Vijay Kumar:

Mr B Vijay Kumar delivered key areas within data science that are currently emerging or evolving. He emphasized current trends, challenges, and opportunities in the field.

Figure 4: Address by Chief Guest, Mr B Vijay Kumar

Topics Covered:

The guest lecture covered techniques, algorithms, and methodologies, each contributing uniquely to different aspects of technology. The following areas were discussed:

The field of data science is vast and interdisciplinary, drawing from computer science, statistics, mathematics, and domain expertise. Staying updated with these emerging trends and technologies is key for professionals in the field.

Explainable AI (XAI): With AI becoming more prevalent, there's a growing need to understand and interpret its decisions. XAI focuses on making AI and machine learning models more transparent and understandable to humans.

Federated Learning: This technique allows multiple parties to collaboratively train models across decentralized data sources without sharing raw data, preserving privacy while leveraging collective intelligence.

AutoML and Model Optimization: Automated machine learning tools aim to make model building more accessible to non-experts by automating the selection of algorithms, feature engineering, and hyperparameter tuning.

Ethical AI and Bias Mitigation: As AI systems impact decision-making in various domains, addressing biases and ensuring ethical use of AI becomes crucial. There's a growing emphasis on creating fair, unbiased models and algorithms.

Edge Computing and AI: Processing data and running AI algorithms directly on devices (like smartphones, IoT devices) at the edge of the network, reducing latency

Figure 5: Mr B Vijay Kumar is addressing the II CSE & CSM Students

Time Series Forecasting: With the increase in IoT devices and streaming data, improved techniques for forecasting and analyzing time series data are gaining significance.

Graph Analytics: Analyzing interconnected data structures like social networks or transportation systems using graph-based algorithms for better insights.

Natural Language Processing (NLP) Advancements: Advancements in language models, like transformers, for tasks such as language translation, sentiment analysis, and document summarization.

Demonstrations and Use Cases:

The lecture covered a broad range of topics to equip learners with the skills and knowledge needed in the field. Here are some common topics often included:

Introduction to Data Science: Basics of data science, its applications, and the role of a data scientist.

Statistics and Probability: Fundamentals like probability distributions, hypothesis testing, regression, and sampling methods.

Data Cleaning and Preprocessing: Techniques to handle missing data, outliers, and normalization.

Data Exploration and Visualization: Using tools like Python's matplotlib, seaborn, or R's ggplot for data visualization, and exploratory data analysis (EDA).

Machine Learning Algorithms: Supervised learning (classification, regression), unsupervised learning (clustering, dimensionality reduction), and semi-supervised/ reinforcement learning.

Model Evaluation and Validation: Techniques to assess model performance, cross-validation, and metrics like accuracy, precision, recall, and F1-score.

Big Data Handling: Technologies like Hadoop, Spark, and databases for managing and analyzing large datasets.

Deep Learning: Neural networks, deep neural networks, convolutional neural networks (CNNs), recurrent neural networks (RNNs), and their applications.

Natural Language Processing (NLP) and Text Analytics: Processing and analyzing textual data, sentiment analysis, named entity recognition, etc.

Ethics and Privacy in Data Science: Understanding the ethical implications, bias in data, and ensuring fairness in machine learning models.

Case Studies and Projects: Applying learned concepts to real-world problems through projects or case studies to gain practical experience.

Tools and Technologies: Learning programming languages like Python or R, libraries (Pandas, NumPy, Scikit-learn), and tools like Jupyter Notebook or RStudio.

Figure 6: II CSE & CSM Students doing an activity as instructed by Mr B Vijay Kumar

The guest lecture on data science has offered a wealth of insights and learning opportunities for students. Here are some key takeaways:

Practical Applications:

Real-World Examples: The practical experiences and case studies, showcasing how data science is applied in various industries like healthcare, finance, marketing, etc. was discussed

Problem-Solving Approaches: Methodologies and approaches used to solve complex problems using data-driven techniques were shared

Technical Skills:

Tools and Techniques: Explored different software, programming languages (like Python, R), and specific data science libraries (like TensorFlow, Pandas) that are relevant in the field.

Data Handling and Analysis: Explained how to collect, clean, and manipulate data for analysis.

Industry Insights:

Trends and Innovations: Students got to know about current trends, emerging technologies, and future predictions within the data science domain.

Challenges and Ethical Considerations: Discussed the ethical implications of handling data and the challenges faced in working with large datasets.

Networking and Career Opportunities:

Networking: Interaction with guest speaker has potentially opened doors for networking opportunities, internships, or even future job prospects.

Career Guidance: Gained insights into the diverse career paths within data science and understood what skills and experiences are valued in the industry.

Figure 7: II CSE & CSM Students Attending the Guest Lecture

Q & A Session:

An interactive Q&A session allowed students to engage with the speaker, seeking clarifications and gaining a deeper understanding of the discussed AI tools.

Vote of Thanks:

The session concluded with a Vote of Thanks, expressing gratitude to all the speakers, attendees, and those involved in organizing the event. Overall, the guest lecture provided a multifaceted view of data science, bridging the gap between theoretical learning and practical application while inspiring and guiding students toward a career in this dynamic field.

Figure 8: II CSM Students with CSE Staff and Mr B Vijay Kumar

Figure 9: II CSE A Students with CSE Staff and Mr B Vijay Kumar

Figure 10: II CSE B Students with CSE Staff and Mr B Vijay Kumar

Conclusion:

The Guest Lecture on "Emerging Technology - Data Science" adeptly navigated through practical applications, showcasing how data-driven methodologies are revolutionizing diverse industries. From illuminating case studies to demonstrating problem-solving approaches, the speaker effectively highlighted the significance of data in decision-making processes.

The Computer Science and Engineering Department expresses gratitude to the guest speaker(s) for sharing their expertise and looks forward to more such enlightening sessions in the future.

Dr P Deepthi
Seminars &
Workshops In-charge

Dr B Raveendranadh Singh
HoD-CSE