TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
AN AUTONOMOUS INSTITUTION
Accredited by NBA and NAAC with 'A+' Grade.
(Sponsored by TKR Educational Society, Approved by AICTE, Affiliated to JNTU H)
Medbowli, Meerpet, Balapur, Hyderabad, Telangana – 500 097
Phone: 9100377790, email: info@tkrcet.ac.in, web site: www.tkrcet.ac.in

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE
ON
Business Intelligence in OLAP

B.Tech: **II &III** Semester: **II** Academic Year: **2023–24**

Course Objectives

1. To understand the concepts, evolution, and importance of Business Intelligence in organizational decision-making.
2. To learn BI tools, reporting techniques, OLAP, data mining, and forecasting methods for business analysis.
3. To develop skills in data visualization, performance management, KPI monitoring, and decision support systems.
4. To explore data warehousing, ETL processes, and predictive, descriptive, and prescriptive analytics techniques.
5. To apply Business Intelligence strategies and best practices to solve real-world business problems through case studies and projects.

SYLLABUS

Unit – I: Fundamentals of Business Intelligence
Introduction to Business Intelligence, History and Evolution of Business Intelligence, BI Questions and Decision-Making, Applications of Business Intelligence, Styles of Business Intelligence, Enterprise Reporting, OLAP and Cube Analysis, and Ad Hoc Query and Analysis.

Unit – II: Business Intelligence Tools and Techniques
Statistical Analysis and Data Mining, Alerting and Notifications, BI Tools Overview, Spreadsheets and Reporting Software, Online Analytical Processing (OLAP), Data Mining, Business Reporting, and Forecasting Techniques.

Unit – III: Data Analysis and Decision Support
Data Visualization, Decision Support Systems, Performance Management, Key Performance Indicators (KPIs), Dashboards and Scorecards, Business Analytics Fundamentals, and Descriptive Analytics.

Unit – IV: Data Warehousing and Advanced Analytics
Data Warehousing Concepts, Data Integration and ETL, Predictive Analytics, Prescriptive Analytics, Data Quality Management, and Advanced Business Analytics Techniques.

Unit – V: BI Implementation and Applications
BI Implementation Strategies, BI Best Practices, Business Intelligence Case Studies and Applications, Enterprise BI Solutions, Emerging Trends in Business Intelligence, and Project Presentation & Review.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE
ON
Re-Inforcement Learning with Python

B.Tech: **II & III** Semester: **I** Academic Year: **2023–24**

Course Objectives

1. To understand the fundamental concepts, principles, and algorithms of Reinforcement Learning.
2. To develop Python programming skills required for implementing Reinforcement Learning solutions.
3. To learn and apply key Reinforcement Learning techniques such as MDPs, Monte Carlo methods, TD learning, SARSA, and Q-Learning.
4. To explore advanced Reinforcement Learning methods including Deep Reinforcement Learning, DQN, and Policy Gradient algorithms.
5. To build and evaluate real-world Reinforcement Learning applications using popular libraries, tools, and environments.

Syllabus

Unit – I: Foundations of Reinforcement Learning and Python
Introduction and Basics of Reinforcement Learning, How Reinforcement Learning Works, Key Concepts in Reinforcement Learning, Develop Core Python Skills, Understand Data Structures, Master File Handling and I/O Operations, Build Problem-Solving Skills, and Learn Object-Oriented Programming (OOP).
Unit – II: Reinforcement Learning Fundamentals
Markov Decision Processes (MDP), Dynamic Programming for Reinforcement Learning, Monte Carlo Methods, Temporal Difference Learning, Introduction to Temporal Difference (TD) Learning, Exploration Techniques, SARSA (State-Action-Reward-State-Action), and Q-Learning in Practice.
Unit – III: Advanced Reinforcement Learning
Deep Reinforcement Learning (DRL), Deep Q-Network (DQN) Techniques, Policy Gradient Algorithms in Depth, Advanced Policy Optimization Algorithms, Hyperparameter Tuning and Experimentation, and Key Challenges in Reinforcement Learning.
Unit – IV: Tools, Libraries, and Applications
Work with Libraries and Modules, Develop Error Handling Skills, Understand and Use Python for Automation, Learn Basic Data Science and Web Development, Popular Reinforcement Learning Libraries, Using Popular RL Libraries and Environments, and Hands-On Projects and Real-World Applications.
Unit – V: Practical Development and Future Trends
Prepare for Real-World Application, Reinforcement Learning Project Development, Model Evaluation and Optimization, Industry Applications of Reinforcement Learning, Key Challenges and Future of Reinforcement Learning, and Project Presentation & Review.