VALUE ADDED PROGRAM ON DATA SCIENCE

Event Details:

- Date: 14/09/2024 to 18/10/2024
- Venue:410 computer lab
- Participants: first-year BSc[EMCs] students of MSRCASC
- Resource: Technofly Solutions

Event Overview

Data science is an interdisciplinary field that draws knowledge and insights from data using scientific procedures, systems, algorithms, and methodologies. It analyzes big datasets and finds patterns, trends, and correlations using computer science, statistics, and domain knowledge. The area of data science is expanding quickly and has many uses. It provides intriguing potential for individuals interested in using data to solve practical issues and spur innovation.

In order to satisfy the unique needs of students, aspiring engineers, working professionals, and software projects for numerous sectors across all disciplines, TechnoFly Solutions has developed a simplified and customized platform. In addition to working on projects for industries where you can find the most recent resources, technical, electronics, and software projects, including the newest technologies like embedded systems, IOT, Python, web development, robotics, machine design, and machine learning, so technoFly solutions provide the platform to explore the ideas in young minds and leading training centre to bridge the industrial gap between academics and industrial requirements in the young generation.

Objectives of the event:

- Data collection: Compiling pertinent information from multiple sources, such as social media, databases, APIs, and sensors.
- Data preparation and cleaning: Preparing data for analysis by cleaning and altering it to guarantee its consistency and quality.
- Data analysis is the process of finding patterns, trends, and insights in data by using statistical methods and machine learning algorithms.

- Data visualization is the process of effectively communicating findings by creating visual representations of data.
- Data interpretation is the process of extrapolating significant findings and understandings from data analysis.

Event flow:

Day 1

Topic: Python & inbuilt library functions to handle data

Matplotlib is a popular and adaptable package for making static, animated, and interactive visualizations, and Python has emerged as a key language in the field of data science. When combined, they provide a potent tool for efficiently discovering, comprehending, and communicating data. Trainer also explains Trainer also explains important attributes and advantages of matplotlib library functions. Matplotlib provides a wide range of charting formats, such as bar charts, pie charts, histograms, scatter plots, line plots, and many more. You can visualize data in a variety of ways to meet your unique needs. Customization and Control to alter labels, titles, legends, axes, and other plot elements with Matplotlib's fine-grained control. With this customization, we can produce aesthetically pleasing and educational visualizations that effectively communicate the significance of our data.

Day 2

Topic: Open CV

One popular open-source library for computer vision tasks is called OpenCV (Open Computer Vision). It offers a wide range of tools and algorithms for processing images, detecting objects, extracting features, and more. Python, Java, MATLAB, and other programming languages have bindings for open CV, built-in with many libraries functions. Students work on the following fields

Image processing: The ability to read, write, display, and work with images. Algorithms for identifying edges, corners, and other characteristics in pictures feature detection algorithms. Techniques for locating and recognizing things in pictures or movies are known as object detection. Methods for monitoring things in video sequences over time are known as object tracking. Face identification and detection algorithms: methods for identifying and detecting human faces.

Augmented reality: Applications development tools for augmented reality. Combining machine learning with integration

Day 3

Topic: file handling and tkinter UI

Interacting with files whether by reading, writing, or changing their contents is frequently required while working with Python applications. The ability to develop user interfaces that let users interact with these files is provided by the well-known Python GUI toolkit Tkinter. UI Elements in Tkinter: Widgets: To construct numerous UI elements, like buttons, labels, text boxes, and file dialogs, Tkinter offers a variety of widgets.

Afternoon session trainer explained and gave hands-on session on below mentioned topics

Widgets: Tkinter provides various widgets to create different UI elements, such as buttons, labels, text boxes, and file dialogs. Layout Managers: Use layout managers like pack(), grid(), or place() to arrange widgets within the window. Create a Tkinter Window: Create a Tkinter window using tkinter.Tk(). Create UI Elements: Add widgets like buttons, labels, and text boxes to the window.

File Selection: Use the filedialog.askopenfilename() or filedialog.asksaveasfilename() functions to allow users to select files. File Operations: Open, read, write, or modify files based on user input. Update UI: Update the UI to reflect changes made to files (e.g., displaying file contents in a text box).

Day 4

Topic: Mini project implementation

Mini projects carried based on the following topics

Data Analysis and Visualization: Analyze historical stock data to identify trends, correlations, and potential investment opportunities. Behavior Analysis: Analyze customer data to understand purchasing patterns, preferences, and churn rates. Image Classification: Train a model to classify images into different categories.

Outcome of the course:

- To inspire innovation among young minds
- To upgrade the knowledge of data science among young minds
- To prepare students to handle the mini projects and self-phased development of working models of their interest using python programming language.

Photos of value-added course on "Data science"

HOD

Principal

Photos of value-added course on “Data science”