PHASE 2 : INNOVATION

WEBSITE TRAFFIC ANALYSIS

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Introduction:

Website traffic analysis is the process of collecting, examining, and interpreting data related to the visitors and interactions on a website. It provides invaluable insights into user behavior, preferences, and trends, helping organizations make informed decisions, optimize their online presence, and enhance user experiences.

Abstract:

This project aims to analyze website traffic data for insights into user behavior, popular pages, and traffic sources. It involves data collection, visualization using IBM Cognos, and Python for advanced analysis. The goal is to optimize user experiences and enhance website performance.

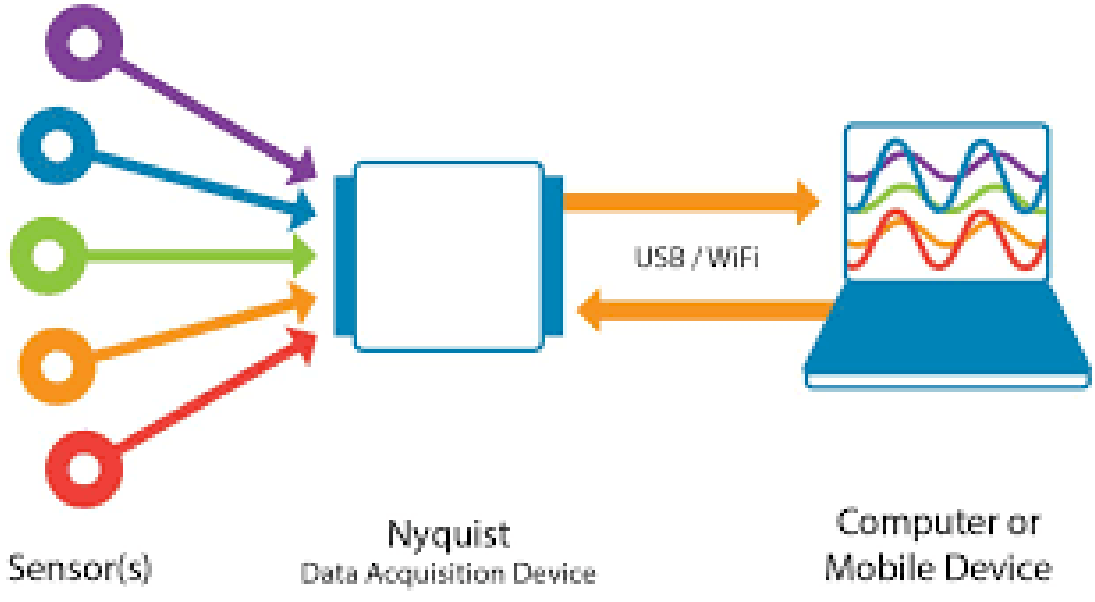
Problem Statement:

The problem of "Website Traffic Analysis" lies in the need for organizations to effectively understand and leverage user behavior on their websites

INNOVATION OBJECTIVES

Data Acquisition:

Download and import the "Daily Website Visitors" dataset from Kaggle into your analytics environment.



Exploratory Data Analysis (EDA):

Conduct EDA to understand the dataset's characteristics, patterns, and correlations. Visualize key metrics and trends in website traffic.

Analysing the Data:

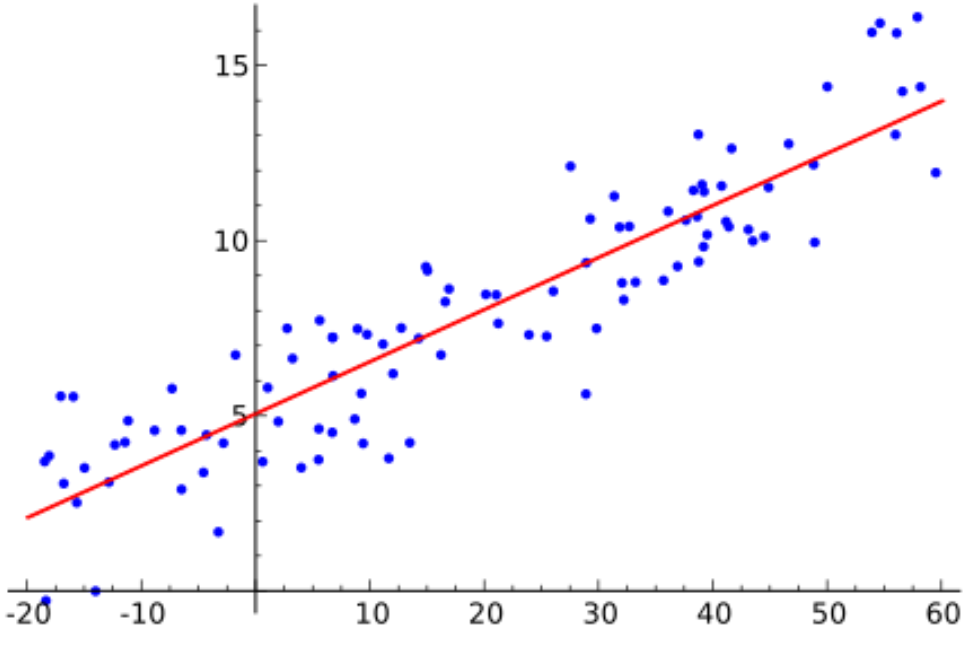
Regularly analyze data collected from the real-time analytics tools and experiments. Adjust strategies based on insights derived from the dataset.

Predicting accurate values using LSTM network:

Analyzing data in a dataset is a crucial step in extracting meaningful insights, patterns, and knowledge from the raw information contained within it

INCLUSION OF MACHINE LEARNING MODEL

- **Regression Analysis**: Linear regression or more advanced methods like polynomial regression can be used to model and predict traffic trends over time.



- **Time Series Analysis**: Techniques like ARIMA (AutoRegressive Integrated Moving Average) can help in forecasting website traffic based on historical data.

- **Classification Algorithms**: These can be used to categorize website visitors, such as decision trees, random forests, or support vector machines, to identify different user segments or traffic sources.

```
[21]: model = Sequential()
      model.add(Conv2D(32, (3, 3), input_shape=(224, 224,3)))
      model.add(Activation('relu'))
      model.add(MaxPooling2D(pool_size=(2, 2)))

      model.add(Conv2D(32, (3, 3)))
      model.add(Activation('relu'))
```

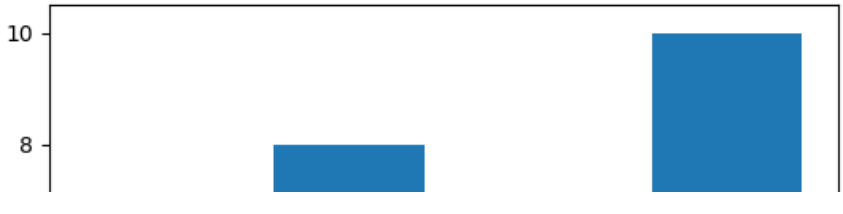
```
model.add(MaxPooling2D(pool_size=(2, 2)))

model.add(Conv2D(64, (3, 3)))
model.add(Activation('relu'))
model.add(MaxPooling2D(pool_size=(2, 2)))

model.add(Flatten())  # this converts our 3D feature maps to 1D feature vectors

model.add(Dense(64))
model.add(Activation('relu'))
model.add(Dense(2))
model.add(Activation('softmax'))
```

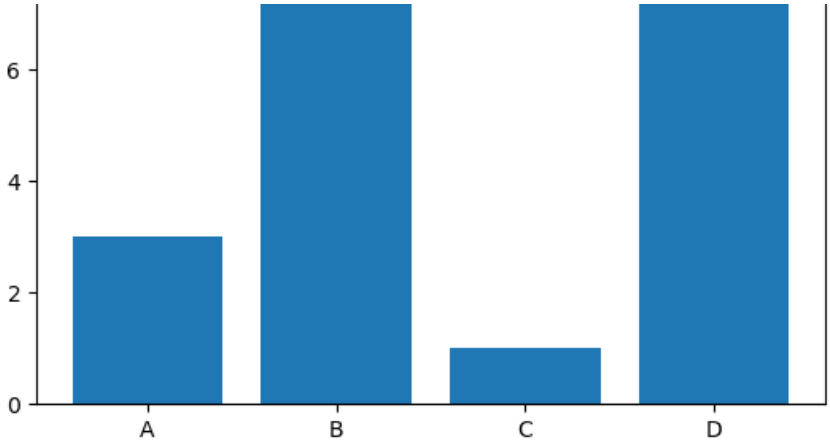
- **Recommendation Systems :** Collaborative filtering or content-based recommendation algorithms can be be used to suggest content to users based on their behavior.

- **Dimensionality Reduction :** Principal Component Analysis (PCA) or t-Distributed Stochastic Neighbor Embedding (t-SNE) can help reduce the dimensionality of data and visualize patterns in lower dimensions.

VISUALIZATION METHOD

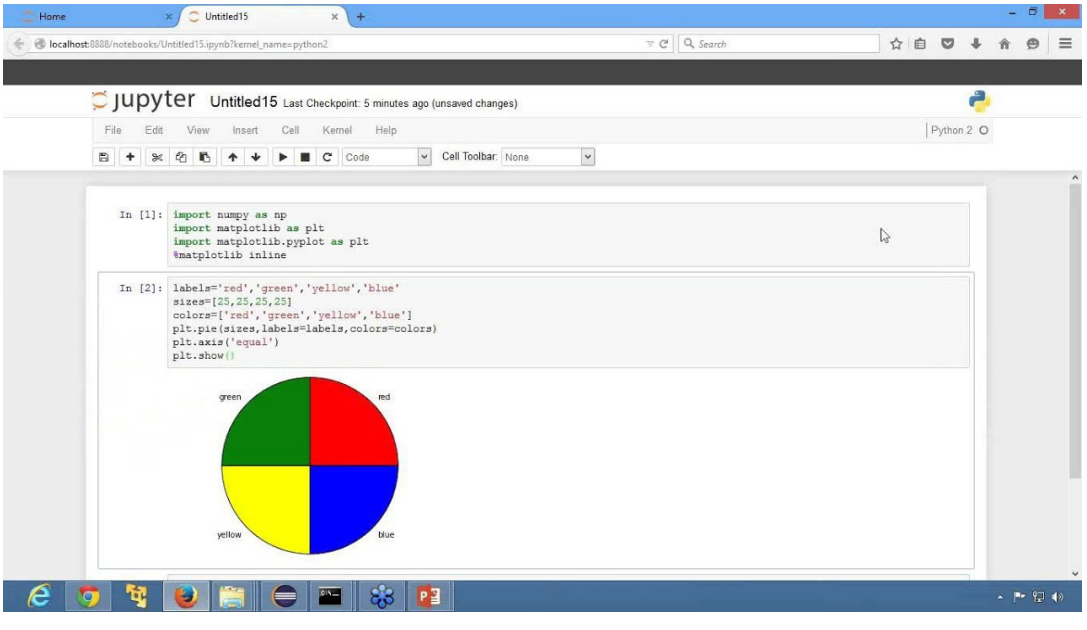
1. Bar Charts: Bar charts are useful for displaying metrics like the number of page views, unique visitors, or bounce rates over a specific time period. You can create bar charts to compare different time intervals or website sections.



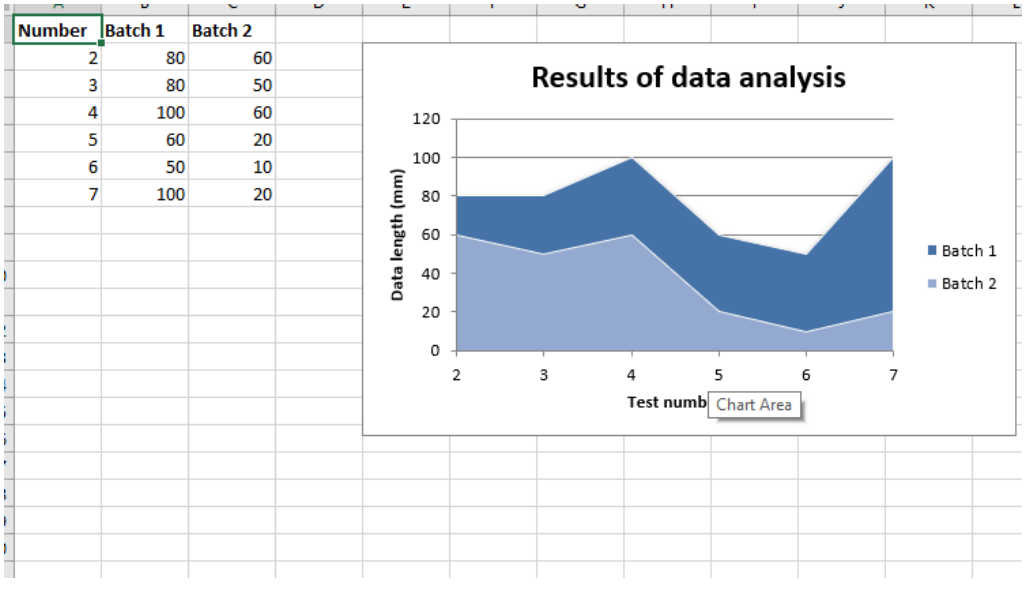


2. Line Charts: Line charts are effective for showing trends in website traffic data, such as changes in visitor numbers over time. They can help identify seasonal patterns and long-term trends.

3. Pie Charts: Pie charts can be used to represent the distribution of traffic sources, showing the percentage of traffic coming from direct visits, search engines, social media, etc.



4. Area Charts: Area charts are similar to line charts but can be used to display the cumulative effect of website traffic data over time. They are good for visualizing total page views or unique visitors.



5. Heat Maps: Heat maps can provide insights into user engagement by showing which parts of a webpage receive the most clicks or interaction. This helps in optimizing the website's layout.

Dashboards: Dashboards in IBM Cognos allow you to combine various visualizations and key metrics on a single screen, offering a comprehensive overview of website traffic.