Assignment - 1

1. Explain the types of Analytical statistics involved in Data anglisis.

There are four types of Ate Analytics and statistics involved in Data analytics. They are.

i) Descriptive analytics:
- Examines what happened in the past.
- Includes measures like mean, variance, mode, etc.
example: Calculating the avg income of a group of individuals or summarizing sales data by region falls under descriptive statistics.

ii) Predictive statistics.
- A form of advanced analytics that determines what is likely to happen based on historical data.
- Machine Learning models, time series forcasting and recommendation system falls under this statistics.
- For example, predicting ~~ces~~ customer churn or stock prices based on historical pattern.

iii) Diagnostic statistic
- It aims to understand why certain events occoured.
- It involves analyzing data to identify pattern or anomalies.
- example: Root cause analysis, troubleshoot & identifying bottlenecks.

iv) Perscriptive statistics.

- Recommends action to optimize outcome.
- It combines data analysis with optimization techniques. For instance, suggesting optimal price strategies for maximizing revenue or resource allocation in supply chain management.

Q). Compare and contrast the trade-off between exploration and exploitation in Reinforcement Learning.

-> Reinforcement Learning: is an area in ML which ~~forces~~ teaches us to take actions to maximize records in a particular situation. The trade-off between exploitation and exploration is a fundamental change in RL.

i) Exploration:

Exploration refers to the taking action that allows the agent to discover new features about the environment. It involves trying out different actions to gain enforce about their ~~action~~ outcomes. Exploration is esseintial because it haps the agent learn more about the en and discover optimal strategies. However, excessive explor can prove detrimental if it prevents the agent from exp its current knowledge effectively.

ii) Exploitation:
- Involves capitalizing on the knowledge already gained by the agent. It means choosing action based on the agent's current estimated value. (eg: selecting the action with highest expected reward).

3. What are the basic workflow/ processes in Machine learning project?
The machine learning model is a peice of code, an engineer or data scientist makes it smarter through traning with data. The basic workflow in a machine learning projects are:
1. Problem understanding
2) Data collection
3. Data preprocessing
4. Building Datasets
5. Model Training Selection.
6. Model Deployment
7) Prediction.
8. Monitoring Models
9. Maintainence, Diagnosis & retraining