Data Science Domain in AI

The Data Science domain in AI means the area of AI that deals with collecting, cleaning, analyzing, and interpreting large amounts of data to make smart decisions.

* Key Points:

1. Data Collection – AI gathers data from different sources (text, images, sensors, internet).

Example: Online shopping apps collect data about what you buy.

2. Data Processing & Cleaning – Removing errors and arranging data properly.

Example: Removing duplicate entries in student records.

3. Data Analysis – Using statistical methods and AI algorithms to find patterns.

Example: Banks use data analysis to detect fraud.

4. Data Visualization – Showing data in charts, graphs, and dashboards for better understanding.

Example: COVID-19 daily cases graph.

5. Decision Making – AI uses analyzed data to predict and suggest solutions.

Example: Netflix recommending movies based on your past watch history.

Natural Language Processing (NLP) Domain in AI

Definition:
NLP is the **domain of AI** that helps computers understand, interpret, and respond to **human languages** (like English, Marathi, Hindi, etc.).

Key Functions of NLP

1. **Speech-to-Text** – Converting spoken words into written text.
    - Example: Voice typing in Google Docs.
2. **Text-to-Speech** – Converting written text into spoken voice.
    - Example: Google Assistant reading messages aloud.
3. **Language Translation** – Translating one language into another.
    - Example: Google Translate (English → Marathi).
4. **Chatbots & Virtual Assistants** – AI systems that understand questions and give answers.
    - Example: Siri, Alexa, ChatGPT.

Computer Vision (CV) in AI

Definition:

Computer Vision is the domain of AI that enables computers to see, understand, and interpret images and videos just like humans do.

Functions of Computer Vision

1. Image Recognition – Identifying objects in pictures.

Example: Facebook tagging faces in photos.

2. Facial Recognition – Detecting and recognizing human faces.

Example: Phone face unlock.

3. Object Detection – Finding and tracking objects in real-time.

Example: Self-driving cars detecting pedestrians and traffic lights.

4. Medical Imaging – Helping doctors detect diseases from X-rays, MRI scans.