**FUNDAMENTALS OF AI**

**ASSIGNMENT NO 1**

Q1. Categorize the taking after beneath Information Sciences, Machine Learning, Computer Vision and NLP.

The most recent innovative progressions have made our lives convenient.

Google Domestic, Alexa and Siri have been a gigantic offer assistance to non-tech adroit individuals. Highlights like Facial acknowledgment and Facelock have included extra security to our contraptions. These headways have moreover contributed in making our needs more receptive and helpful. Presently you'll indeed check the costs with Cost comparison websites and arrange foodstuffs online with chatbots. Did you know that you simply can indeed discover how you're attending to see once you develop ancient? Faceapps and Snapchat channels have made this possible!

**Answer**:-

**Information Sciences** – Price comparison websites

**Machine Learning** – FaceApps (aging filters), Alexa, Siri, Google Home

**Computer Vision** – Facial recognition, Facelock

**NLP (Natural Language Processing)** – Chatbots, Alexa, Siri, Google Home

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Q2. Is information which is collected by different applications moral in nature? Legitimize your answer?

**Answer:-**

The information collected by different applications, like Google Home, Alexa, Siri, Facial Recognition, FaceApps, and Chatbots, can be **moral or immoral** based on how it is used.

**Moral Data Collection:** If these technologies **ask for user consent**, **protect privacy**, and **use data responsibly** (e.g., improving services), it is ethical.

**Immoral Data Collection:** If they **track users without permission**, **sell data**, or **misuse personal information**, it is unethical.

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Q3. Autonomous vehicles or self-driving cars are already a reality in some cities around the world. What was the reason behind this invention? What software logic and hardware are needed to allow these cars to drive without hitting pedestrians or other vehicles? What legislation had to be passed to allow these cars on the road? Are there any moral issues?

#### ****Positive Points:-****

**Reduces Accidents:** Minimizes human errors, which cause most road accidents.

**Convenience:** No need for a driver, reducing fatigue and stress.

**Helps Disabled & Elderly:** Provides mobility for people who cannot drive.

**Better Traffic Management:** AI can optimize routes and reduce congestion.

**Fuel Efficiency:** Smart driving reduces fuel consumption and pollution.

#### ****Negative Points:-****

**High Cost:** Expensive technology, making it unaffordable for many.

**Job Loss:** May replace human drivers, affecting employment.

**Ethical Dilemma:** In emergencies, who should the car prioritize—passenger or pedestrian?

**Security Risks:** Can be hacked, leading to safety concerns.

**Legal Issues:** Unclear laws on accident liability and insurance claims.

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Q4. Discuss the latest inventions w.r.t AI enabled machines in the following field of

Health Care

Environment

Agriculture

**Answer:-**

#### ****1. Health Care****

**a. AI in Disease Diagnosis** – AI tools like **Google’s DeepMind** help detect diseases like cancer and eye conditions early.

**b. Robot-Assisted Surgery** – **Da Vinci Surgical System** performs precise, minimally invasive surgeries.

**c. AI Chatbots & Virtual Doctors** – AI-powered apps like **Ada Health & Babylon Health** assist in diagnosis and consultations.

#### ****2. Environment****

**a. AI for Climate Prediction** – AI models like **IBM’s Weather AI** predict climate changes accurately.

**b. Waste Management** – AI-powered robots sort and recycle waste efficiently.

**c. AI in Renewable Energy** – Smart grids use AI to optimize power usage in solar and wind energy.

#### ****3. Agriculture****

**a. AI-Powered Drones** – Drones like **DJI Agras** monitor crops and spray pesticides.

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Q5. Consumers who bought this too bought this…’ we frequently see this when we shop on Amazon. What is the principle behind this phrase?

Answer:-

How It Works:

User Behavior Analysis – AI studies what users buy, view, or search for.

Pattern Recognition – Finds similarities between different users’ choices.

Predictive Suggestions – Recommends products based on what similar users purchased.

Example:

If many users who buy a mobile phone also buy a phone case, the system suggests a phone case to new mobile buyers.

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Q6. COMPLETE THE FOLLOWING

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **task environm.** | **Observable** | **determ./ stochastic** | **episodic/ sequential** | **static/ dynamic** | **discrete/ continuous** | **Agents** |
| **crossword puzzle** | |  | | --- | | Fully Observable |  |  | | --- | |  | | Deterministic | Sequential | Static | Discrete | Single  Agent |
| **chess with clock** | Fully Observable | Deterministic | Sequential | Static | Discrete | Multi  -Agent |
| **poker** | Partially Observable | Stochastic | Sequential | Static | Discrete | Multi  -Agent |
| **back gammon** | Fully Observable | Stochastic | Sequential | Static | Discrete | Multi  -Agent |
| **taxi driving** | |  | | --- | | Partially Observable |  |  | | --- | |  | | Stochastic | Sequential | Dynamic | Continuous | Multi  -Agent |
| **medical diagnosis** | |  | | --- | | Partially Observable |  |  | | --- | |  | | Stochastic | Sequential | Static | Discrete | Single  Agent |
| **image analysis** | Fully Observable | Deterministic | Episodic | Static | Continuous | Single  Agent |
| **partpicking robot** | |  | | --- | | Fully Observable |  |  | | --- | |  | | Deterministic | Sequential | Dynamic | Continuous | Single  Agent |
| **refinery controller** | |  | | --- | | Fully Observable |  |  | | --- | |  | | Deterministic | Sequential | Dynamic | Continuous | Single  Agent |