Unit - 5

Emerging Technologies

E-Governance (overview)

- Among the humongous list of government functions and responsibilities, implementation of evolving policies, passing files to various fronts, delivering services, enabling businesses to sustain, maintaining law & order, reducing the cost of living, etc., would be top priorities. The communication and interaction gap between government, the public, and business before enforcing a law, rule, or policy is the biggest barrier. e-governance refers to the strategic integration of intelligent systems to create a simple, moral, accountable, reasonable, responsive, and transparent environment that is comfortable and less costly for interaction between citizens, businesses, and government.

The role of AI in e-Governance?

1.It simplifies the process of gathering and accumulating government information regarding any department to the citizens and businesses.

2. It helps citizens and businesses to participate in the processes of decision-making, before developing or implementing any new law or policy.

3. It is the best way to eliminate corruption by automating the services and ensuring transparency in the information communicated and that it is easily accessible to the public.

4. Ease of availability of government services 24*7 for every citizen through online applications.

5. E-governance helps businesses access information that is important at a click away.

How can AI make a difference in the e-governance space?

- AI in e-governance can enhance a wide range of applications. And below mentioned are a few ways to show how technological advancements can modernize the antique applications in the existing system for the betterment of governance.
- 1. Law enforcement:
- Enforcing and regulating law is a prominent function in any governance architecture. Embedding AI systems can enhance and automate the existing functionalities, for better implication of law and order. Law enforcement, including facial recognition, speech recognition, drones, robocops, autonomous proto cars, predictive analytics, and cyber defense is emerging and providing delve knowledge about the law violations happening in the modern world. These systems are helping in enclosing and solving issues in less time.

The role of AI in e-Governance?

2. Automating routine tasks:

Most of the government systems in developing and underdeveloped countries carry paperwork as an integral part of their governance. Assigning, performing, and passing files between departments can be time-consuming, and at times, it could be nerve-wracking if it is crucial for making important decisions. Hence automating routine tasks reduces paperwork and improves query-response time and saves quality time for government officials to focus on other development issues.

3. Renovating privacy and security mechanism:

The government holds information about the public, government officials, businesses, etc. This information needs to be secured and protected from fraud committers to avoid malfunctions of private information. Integrating AI systems can help in automating and securing information through embedding machine learning algorithms that detect disruptions in the digital database and secure the information from cybercriminals.

The role of AI in e-Governance?

4. Rapid disaster response:

- Governments responding and enacting during emergencies (natural calamities or major industrial accidents) could be delayed due to their internal structural hierarchical procedures. With predictive analytics and AI automated systems, the government can forecast the weather and other parameters that help in taking prior action.

5. Maintaining public infrastructure:

- Maintaining and governing public infrastructure through digital platforms helps in effective and time-efficient operations. And it includes all those platforms created to address issues to build a better nation. And maintaining an AI-driven public platform has a few advantages at the core. It helps in solving public queries at rapid speed, access to information regarding every government service, people can request any service 24*7, and all the government services are a click away when they need it.

Block Chain in E- Governance

- In essence, a blockchain is a transparent distributed data base that records details on all transactions performed by the system's participants. In the context of electronic government, this means a technology that stores data on the results of all interactions between citizens and government agencies.
- Importantly, the data are interlinked, coded and stored by all members of the system, and are automatically updated to reflect the changes made. Users act as a collective notary that certifies the accuracy of the data in the system and guards against abuses and scheming attempts. Blockchain technology acts as a control on the egoistic motives that cause some people to engage in corrupt practices to the detriment of society and state sovereignty.
- It also creates a powerful incentive to abide by the rules that apply to all participants equally, thus creating a spirit of collective responsibility.

- Technically, blockchain is a technology that facilitates agreement among the participants on virtually any matter without the involvement of an intermediary; it thus creates a foundation for decentralised governance, promotes consensus-based social contracts and maintains a fair balance of interest beneficial to society.
- A registration system based on blockchain technology can enhance the safeguards normally offered by the traditional registries. The cost of transactions can be greatly reduced by eliminating the payment of state duties and intermediary fees, while the transactions themselves can become less time-consuming, and also more transparent and more secure.

characteristics of the blockchain technology:

1. It is autonomous. There is no central organisation or agency to administer the blockchain and hold the keys to correction of the data.

2. It operates continuously. Because the data from the system is simultaneously copied to thousand of computers, they will still be available even if 99% of the computers happen to go off-line, and will be updated automatically as soon as they are connected to the net. There is only one conceivable way to stop the system - by cutting power supply and the Internet on all computers throughout the world.

3. It is safe. The codes used in blockchain technology are open-source, and have never been compromised. The code supports cryptographic auditing, i.e. a mathematical test to determine if any changes had been made to the data.

4. The code supports development of new services, software and other products, is not the property of any particular agency or corporation, and is not protected by copyright.

Applications of blockchain technology

- Blockchain technology has demonstrated its feasibility and relevance in e-commerce. Its use is now being extended to new areas, related to electronic government.
- Blockchain technology is being introduced in many countries, for a variety of purposes, including: registration of movable and immovable assets, such as: intellectual property, wills, social protection, health care data, and pension systems. Tested blockchain solutions are available to conduct auctions, to promote transparency of the national and local budgets, to secure reliable vote counting in elections, to create crowdfunding platforms enabling investors to trace expenditures on their projects.
- In Belarus, studies are under way to explore uses of blockchain technology in e-commerce and banking, the first sectors to note its transformative potential and the capacity to automate provision of financial services and reduce their costs.

Applications of blockchain technology

- Given the indeterminate legal status of virtual currencies in Belarus (neither legal nor illegal, no official status and unregulated circulation), the status of the blockchain technology, too, is subject to considerable uncertainty. Unlike monetary circulation, where the issue of currency is the sole prerogative of the state, blockchain is a technology available to the state, as well as the citizen.
- By enabling conclusion of smart contracts, blockchain technology facilitates direct disbursement of microloans through a process that is effective and secure, and does not require the involvement of a traditional financial institution. This decentralised and autonomous procedure enables a greater level of financial and asset collaboration, in which blockchain technology may bring together: a group of investors, members of a transparent crowdsourcing platform, or users of an automatic facility for reporting to investors.

Applications of blockchain technology

- Blockchain technology has the capability to improve the operation of the property registry, which now contain records of over 7.4 million property objects and grows by an average of 100,000 new records of property transfers per month. These transactions often involve public notaries and real estate agents, and are validated only by the entry of the appropriate record in the registry conditional on the payment of a fee.
- Already, a contract between a seller and a buyer may be registered on blockchain, reserving for the other relevant parties (the state, banks, notaries, etc.) an oversight and observer role. The technology enables entry of all transaction data in a distributed data base available to all participants. Notaries and registrators will act as data miners and retain the authority to certify the transaction after payment of a sum equivalent to the state duty. All of these processes may be easily automated.

Applications of blockchain technology

- Furthermore, given the great amount of state property in Belarus, the Government's privatisation plans, and the high risks of corruption on the process, blockchain technology can bring more transparency by enabling electronic auctions based on other countries' experiences.
- Blockchain technology mat also be utilised during elections and referenda, as a medium for electronic or home-based voting. Citizens will be able to cast their votes into a virtual box designated by the Central Election Commission for each candidate or referendum choice, and each transaction will be certified by the system, acting as a collective notary.

IoT and Governance of a Smart City

- A smart city is a framework, predominantly composed of Information and Communication Technologies (ICT), to develop, deploy, and promote sustainable development practices to address growing urbanization challenges.
- A big part of this ICT framework is an intelligent network of connected objects and machines (also known as a digital city) transmitting data using wireless technology and the cloud.
- Cloud-based IoT applications receive, analyze, and manage data in real-time to help municipalities, enterprises, and citizens make better decisions that improve quality of life.
- Citizens engage with smart city ecosystems in various ways using smartphones and mobile devices and connected cars and homes. Pairing devices and data with a city’s physical infrastructure and services can cut costs and improve sustainability.
- Communities can improve energy distribution, streamline trash collection, decrease traffic congestion, and improve air quality with help from the IoT.

IoT and Governance of a Smart City

- Smart cities are examples of massive IoT use cases.
- For instance,
- Connected traffic lights receive data from sensors and cars adjusting light cadence and timing to respond to real-time traffic, reducing road congestion.
- Connected cars can communicate with parking meters and electric vehicle (EV)charging docks and direct drivers to the nearest available spot.
- Smart garbage cans automatically send data to waste management companies and schedule pick-up as needed versus a pre-planned schedule.
- And citizens' smartphone becomes their mobile driver's license and ID card with digital credentials, which speeds and simplifies access to the city and local government services.

Cloud Computing and Governance

- E-governance with cloud computing offers integration management with automated problem resolution, manages security end-to-end, and helps budget based on actual usage of data. At a global level, cloud architectures can benefit government to reduce duplicate efforts and increase utilisation of resources. This helps the government going green, reducing pollution and effective waste management.
- Enterprises and SMBs are already reaping the benefits of cloud by using the “pay-as-you-use” service model, its massive scalability and readily availability. Since government requires a massive infrastructure it is important for government to use cloud computing on long-term basis.
- No one should be deluded by the complexity and scale of services and hurdles to overcome to implement such a large-scale programme for a country like India because of its size and distribution. With proper planning, execution, training and good management could reduce overall costs to a great extent and help in more efficient utilisations of taxpayers’ money. Though there are initiatives already being planned but it is time for e-governance to take a giant leap.
- E-governance is a process of reform in the way governments work, share information, engage citizens and deliver services to external and internal clients for the benefit of both government and the clients that they serve. Government has innumerable applications that can be automated. Spending on IT would increase the productivity of the govrnment and help in decision-making and policy enforcement.