

Practical 1
Big Data Analytics
2CS702

Mistry Unnat
20BCE515



Department of Computer Science and Engineering
Institute of Technology
Nirma University
Ahmedabad

AIM : Study and explore various applications of big data in different domains. Choose one of it and study in detail. Also write down the report on different types of digital data generated in selected application.

For example :

- Big Data in Retail
- Big Data in Healthcare
- Big Data in Education
- Big Data in E-commerce
- Big Data in Media and Entertainment
- Big Data in Finance
- Big Data in Travel Industry
- Big Data in Telecom
- Big Data in Automobile

Big Data in Government

Big data is a term widely used to describe the exponential growth of data, particularly the data flowing from ubiquitous mobile phones, satellites, ground sensors, vehicles and social media.

Government role as

1. Producer :

More than a million datasets from governments around the world are available online, from tax returns and unemployment claims to hospital funding and energy use.

2. Consumer :

Governments can use big data (both their own and from other sources) to promote responsive government.

3. Facilitator :

Governments should invest in big data research and stewardship, as well as establish robust legal and technical frameworks to ensure big data is accessible and responsibly used for public good.

Application of Big data in Government :

1. Public Utilities:

- Remote sensing data from satellites and ground-based sensors can provide a wealth of real-time or near-realtime information to monitor the provision and quality of public utilities such as water and energy.
- Solution Spotlight:
The India.Nightlights platform uses night light data from satellite images to monitor electricity provision over time to all 600,000 villages in India.

2. Education:

- Personal data from devices, exam data and other sources can be used in innovative ways to monitor student performance, better understand teaching practices, and help parents and students identify the best fit with a school.
- Solution Spotlight:
In Mexico, the ENOVA platform that uses data analytics and data from student interaction and feedback to continuously troubleshoot educational processes and improve learning tools.

3. Public Security:

- Police forces are drawing on big data and predictive analytics to make better policing decisions. Basic information such as crime type and location can help officers make smarter decisions on patrol.
- Solution Spotlight :
In Bogota, Colombia, World Bank researchers are using big data analytics and risk terrain modeling to understand relationships between crime and public infrastructure such as bus stations, public hospitals, schools and drugstores.

4. Employment Services:

- Government labour agencies are experimenting with big data to inform the most appropriate policies to help individuals back to work, such as tailoring training services for different segments of job seekers.
- Solution Spotlight :
LinkedIn is working with the Australian government to mine data from the LinkedIn economic graph to identify trends such as the increasing demand for technology workers to also possess soft skills.

5. Environmental Policy :

- Analysis of environmental and climate data from multiple sources is enabling authorities to understand environmental impacts and interventions, from regional, national and global perspectives.

- **Solution Spotlight:**
Microsoft's Madingley is a next-generation model of ecosystems and biodiversity across the globe. Madingley provides a working simulation of the global carbon cycle, and aims to model everything from deforestation to animal migration, pollution and overfishing, in a real-time "virtual biosphere."

6. Transport and Urban planning :

- Satellite imagery, cell phones, vehicle sensors, video feeds and social media are being used by policymakers and planners for traffic and urban planning.
- Remote sensing, mobile phone data and machine learning can provide policymakers and planners with much better understanding of urban mobility, land usage and urban change.
- **Solution Spotlight :**
In Seoul, South Korea, the OWL bus uses big data analytics to better serve the needs of night time travellers.
- Many more application like Procurement and Finance flows, Healthcare, Land Administration, Food Security.

Different Data Generated:

Structured	Un-structured	Semi-structured
Climate data Description : Climate data contains latitude, longitude, temperature, etc.	Satellite images Description : Images from satellites.	Mobile phone data Description : Mobile phone numbers and their owner's data in form of xml.
Aadhaar data Description : Person's name, birth date, surname, etc.	Crime data Description : Different crime records with location, images, convicts, victims data, etc.	
Banking/transaction data Description : Account numbers, account type, credit/debit data, account holder data : name/address/age/aadhar number/PAN number, etc.	Education data Description : Different and their syllabus offered by schools and colleges and their data.	
	Financial data Description : Foreign	

	exchanges data, government debt data, etc.	
	Poverty data Description : Consists of data of people below poverty line, schemes offered to them by government etc.	