

Commentary

Program for geographical locations on earth: Geographic Information System (GIS)

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ABOUT THE STUDY

A Geographic Information System (GIS) is a type of computer programme that gathers, saves, validates, and presents information about geographic locations on the surface of the Earth. GIS is capable of mapping a wide variety of data, such as roads, structures, and plants.

People can notice, evaluate, and understand patterns and relationships more readily as a result. By doing this, the framework for mapping and analysis is established, which is employed in research and virtually every sector. A user's location's context, relationships, and patterns may all be better understood with the help of GIS. To map a disease epidemic in the City of London in 1854, GIS was used for the first time. GIS enables contrasting and comparing a variety of data kinds. Data on people, like population, income, and level of education, can be added into the system. It could include details on the topography, including the locations of streams, different flora kinds, and different soil types. It could contain information on businesses, farms, and educational institutions as well as about storm drains, roads, and power lines.

The foundation of Geographic Information Systems (GIS) is comprised on four main ideas: To build a geographic database, to keep track of it in a database, to analyze and pattern-finding, to show a map of it. Because seeing and analyzing data on maps has an impact on our comprehension of data, a person may utilize GIS to make better judgements.

Format of data

GIS applications employ both hardware and software solutions. Spreadsheet data, digital data, photographic data, and cartographic data are a few examples of these uses.

- Map-based information such as the locations of rivers, roads, hills, and valleys may be found in cartographic data.
- GIS heavily relies on photographic interpretation. Photo interpretation requires analyzing aerial pictures and assessing the things that are visible.

- Digital data may also be entered into GIS. This kind of data includes, for instance, computer data collected by satellites.
- Remote sensing is a different technology that may be integrated with a GIS. Remote sensing makes use of imagery and other data from satellites, balloons, and drones.

Data types

Different types of data are used for GIS mapping. Vector and raster data are the two types of information used in GIS. For each kind of data, a certain format exists.

Vector data: Sites like Open Street Maps and Google Maps may contain vector data, a sort of geographic data. It contains polygons, lines, and points.

- Point data is frequently used to represent distinct data points or non-adjacent features. Because a point has no dimensions, you cannot calculate its length or surface area.
- Line data is often referred to as arc data. Linear characteristics include things like rivers, streets, and paths. Line data has a start and a finish since it only has one dimension.
- Towns, lakes, and woods are examples of locations that are frequently represented using polygons. Contrary to point and line data, polygons are two-dimensional and may be used to determine the perimeter or area of a geographic feature.

Raster data: Raster data, sometimes referred to as grid data, is made up of pixels, and each pixel carries a value. Anyone may find raster data on topographic maps, satellite images, and aerial surveys. The two forms of raster data are continuous and discrete.

- Grid cells that change over time are known as continuous rasters. Examples include aerial photography, height, and temperature. Raster surfaces that are continuous are produced using a fixed registration point.
- Each pixel in a discrete raster is given a specific theme or class. Contrary to continuous data, discrete data can only take specific values rather than values that fall within a range.

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