## R Geographic Information System

Ilham Ibrahim

A Geographic Information System (GIS) is an information system that allows for mapping, querying, modeling and analyzing of data based on location.





### What is GIS in simple words?

A geographic information system (GIS) is a framework for gathering, managing, and analyzing data. Rooted in the science of geography, **GIS** integrates many types of data. It analyzes spatial location and organizes layers of information into visualizations using maps and 3D scenes.

### GIS a good career?

GIS is an exciting and professional choice for people. If you are curious about exploring the world and knowing more about the environment, it is best to have a GIS career. You will be successful and will remain successful if you have a growth mindset and continue to learn and grow every day.

### Where did GIS come from?

First GIS. By the 1960s the nuclear arms program had given rise to hardware and mapping applications and the first operational GIS had been launched in Ottawa, Canada. This early iteration of GIS was developed to store, collate, and analyse data about land usage in Canada. May

### What are three types of GIS?

The three types of GIS data are; spatial, attribute and metadata.

- vector data.
- raster or grid data (matrices of numbers describing e.g., elevation, population, herbicide use, etc.
- images or pictures such as remote sensing data or scans of maps or other photos.

### What type of data is GIS?

### Types of GIS Data Explored: Vector and Raster

- What types of GIS Data are there? GIS data can be separated into two categories: spatially referenced data which is represented by vector and raster forms (including imagery) and attribute tables which is represented in tabular format.
  - Vector Data
  - Point Data
  - Line Data
  - Polygon Data
  - Raster Data

### What is the purpose of GIS? A **Geographic Information System (GIS)** is

an information system that allows for mapping, querying, modeling and analyzing of data based on location.

What is the purpose and function of GIS?

A geographic information system *(GIS)* is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. By relating seemingly unrelated data, GIS can help individuals and organizations better understand spatial patterns and relationships.

### Is GIS a good career?

GIS is an exciting and professional choice for people. If you are curious about exploring the world and knowing more about the environment, it is best to have a GIS career. You will be successful and will remain successful if you have a growth mindset and continue to learn and grow every day.

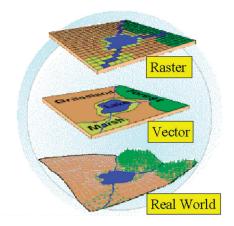
What are the elements of GIS?

# A working GIS integrates these five key components: hardware, software, data, people, and methods.

- Hardware. Hardware is the computer on which a GIS operates.
  - Software
  - People
  - Methods
  - Data
  - Space Segment
  - Control Segment
  - User Segment
  - Does GIS require a lot of math?
- Many GIS techs (likely at least half) don't actually do much if any statistical analysis. High school math will do just fine if you are interested in "making maps". Hate to break it to you, but there's a lot of math. GIS is more than making pretty maps, it's about data analysis, specifically spatial data.

### What jobs require GIS?

### Raster-Vector Data Model



## Here are eight (out of many) careers you can pursue with GIS experience.

- Developers in GIS create and modify GIS tools, applications, programs, and software
  - Conservationist
  - Law Enforcement
  - Cartographer
  - Health Geographer
  - Remote Sensing Analyst
  - Climate Scientist
  - City/Urban Planner

#### Who use GIS?

GIS software is being used widely in almost all fields. GIS softwares are used by individual people, communities, research institutions, environmental scientists, health organisations, land use planners, businesses, and government agencies at all levels.

### Roger F. Tomlinson

Roger F. Tomlinson who first coined the term geographic information system (GIS). He created the first computerized geographic information system in the 1960s while working for the Canadian government – a geographic database still used today by municipalities across Canada for land planning. What is meant by topology in GIS?

Today, topology in GIS is generally defined as the spatial relationships between adjacent or neighboring features. Mathematical topology assumes that geographic features occur on a two-dimensional plane. ... In GIS, topology is implemented through data structure.

### How GIS mapping is done?

A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. The key word to this technology is Geography – this means that some portion of the data is spatial.

### Why is GIS difficult to develop in the beginning?

GIS is difficult because users focus on data, while GIS software focuses on operations. GIS is typically described as a set of operations applied to data: overlying polygons, creating buffers, calculating viewshed. Most commonly-used GIS software is also organized around operations.