Course Description

Geographic Information Systems (GIS) are becoming more and more popular, mainly due to the realization that many of the decisions we make depend in one way or another on geographic information. For example, fire trucks are sent by the fastest routes, in the study of diseases it is important to identify areas of prevalence and rate of spread, the choice of an appropriate site for a new plant often depends heavily on geographic information, etc. GIS is the response to this demand for geographic information.

Unlike other information systems, GIS is based on data with spatial reference points. This characteristic determines to a large extent the ways in which data is represented in GIS, as well as the specialized data structures and algorithms that are implemented in GIS.

The course offers a definition of GIS, surveys its various applications, focuses on its computational aspects such as different ways of representing data, efficient data structures and algorithms that are well suited for storing and supporting common queries (e.g., "what is the nearest post-office to the present address").

Bibliography

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