SPATIAL INFORMATICS

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PRE-REQUISITES :   Basic knowledge of Database Management

INTENDED AUDIENCE : CSE, ECE, EE and other Departments (working with Geo-spatial datasets/ applications)

INDUSTRY SUPPORT : IT industries in the dealing with Geo-Spatial applications/services [e.g. ESRI, Oracle-Spatial, ERDAS Imagine, RMSI, RSI Softech India Pvt. Ltd. etc.

COURSE OUTLINE :

Spatial Informatics is an emerging area of research with widespread applications in various decision support systems, natural resource management, smart city applications, public health, intelligent transportation, environment and climate change monitoring, development planning etc. It involves acquisition and analysis of data related to earth, commonly referred as geo-spatial datasets. It is a multi- disciplinary field and the computer science principles/algorithms are increasing applied to address various challenges/problems of these large scale spatial datasets. The course will cover different topics in spatial informatics, namely, spatial data models, spatial database, spatial computing and data analysis, spatial data mining, geographical information system (GIS), spatial web services etc. Few case studies will be also discussed to demonstrate the applicability of spatial informatics.

ABOUT INSTRUCTOR :

Prof. Soumya K. Ghosh received the Ph.D. and M.Tech. degrees from Department of Computer Science and Engineering, Indian Institute of Technology (IIT), Kharagpur, India. Presently, he is a Professor with Department of Computer Science and Engineering, IIT Kharagpur. Before joining IIT Kharagpur, he worked for the Indian Space Research Organization in the area of satellite remote sensing and geographic information systems. He has more than 200 research papers in reputed journals and conference proceedings. His research interests include spatial data science, spatial web services and cloud computing.

COURSE PLAN :

Week 1: Introduction to Spatial Informatics, Spatial Database, Spatial Data Models

Week 2: Spatial Query Processing

Week 3: Spatial Data Management

Week 4: Spatial Networks

Week 5: Spatial Computing, Spatial Analysis

Week 6: Remote Sensing & Geographical Information System (GIS)

Week 7: Spatial Web Services, GML, Spatial Data Infrastructure

Week 8: Geo-visualization, Spatial Cloud