Pre-Symposium Tutorial on "Health GIS"
December 6, 2016

Abstract

GIS has been used in various field other than traditional one like surveying and mapping. Health and well-being of citizens is the most challenging task in front of developing countries. The first use of GIS in the field of health is found in the work of John Snow by mapping cholera cases in the London epidemic of 1854. It started with mapping and visual analysis of the maps. Now GIS is capable of doing various spatial analysis, automated pattern detection, cluster and anomaly identification and much more. Statisticians and epidemiologist started using GIS for complex analysis for understanding the diseases and their behavior. The spread of disease is not only mapped but they are geospatially modelled for future spread prediction.

This tutorial aims at motivating the geospatial professionals to the application of GIS in health domain with emphasis on FOSS4G (free and open source software for geospatial). The tutorial is organized in four sessions.

First session will be on overview of Health GIS to make participants aware about the field in breadth. Also session would include application of geospatial technology towards health showcasing Use case scenarios of a vector borne disease, utility of Web GIS and mobile based applications for immediate dissemination of information to masses. Some of the efforts made under Bhuvan Geoportal will also be shared.

Second session is dedicated for free and open source GIS tools available for use in this field. This will include full-fledged desktop GIS software such as QGIS to mobile based data collection tools for real time field data collection and dissemination.

Third session will be a hands-on-session. We would provide real health data along with the analysis tools. This session will include step by step instruction for doing real data analysis and geospatial visualization of final outcomes.

The final session is mostly interactive session wherein faculty, experts and the participants would discuss about the trends and challenges in this field. Participants would be made aware of Data Mining techniques and its recent advancement in the field of spatial and spatio-temporal analysis followed by discussion on possible uses of data mining in Health GIS.

Outline of the Tutorial

Coordinator: Dr. Sameer Saran **Speakers**: Dr. Sameer Saran, Mr. K. Shiva Reddy, Mr. Kapil Oberai, Mr. Prabhakar Alok Verma
Overview of Health GIS:

■ Overview of Health GIS   ■ Application of Geospatial Technology in Health: ○ Use Case Scenarios   ○ Web GIS and Location based applications   ○ Facility Mapping   ○ Overview of ISRO initiatives in the field of Health GIS
FOSS4G Tools for Health GIS   ■ QGIS , its plugins and other useful GIS tools for health professionals   ■ ODK and GeoODK based mobile data collection systems
GIS integrated SatScan Analysis   ■ Hands on Session on doing GIS integrated SatScan Analysis   ○ Using SatScan for Cluster analysis of health data   ○ Visualization of results in QGIS and further analysis
Recent Trends and Challenges in Health GIS   ■ Data Mining and its applications in Health GIS   ■ Challenges in Health GIS   ■ Discussion and participant feedback

Organizer and Speaker(s):

Dr. Sameer Saran

He is currently Head of the Geoinformatics Department at IIRS, Dehradun. His present area of interest is 3D CityModeling, Advanced Geospatial Modeling, Web GIS and Health GIS. He has published around 70 research papers in peer-reviewed national and international journals. He is the recipient of Indian National Geospatial Award from Indian Society of Remote Sensing, ISRO Team Excellence Award and ISRO ASI Team Award for his contribution in Bhuvan Web Application Development, and ESRI award. He holds Doctorate degree in Geoinformatics.

K. Shiva Reddy

He is faculty in Geoinformatics department of IIRS. He holds M.Tech in Geomatics and B.E in I.T from IIT Roorkee and Govt. Engg. College Bilaspur (C.G) respectively. His active research interest is in application of Spatial and Spatio-temporal data mining in Health GIS. Currently, he is pursuing PhD in the field of Data Mining in Health GIS from IIT Roorkee. He is an active member of github and contribute in the field of Geospatial technologies. His notable open source contributions are : 1. Trivim : a street view mapping software and 2. SatSViz a plugin for QGIS v 1.8 to for SatScan Analysis.

Shri. Kapil Oberai

Kapil Oberai did his M.Tech in Software Engineering from Kurukshetra University, India. His main research interest includes Web Technologies, WebGIS, Location Based Services and Spatial Database. He is currently working as Scientist/Engineer "SE" at Indian Institute of Remote Sensing, Indian Space Research Organisation, India.

Shri. Prabhakar Alok Verma

Mr. Prabhakar Alok Verma is scientist at Indian Institute of Remote Sensing since year 2013. He has done B. Tech. in Physical Sciences from Indian Institute of Space Science and Technology. He is working in the field of Geographic Information System, especially in the field of Geostatistics/ Spatial Interpolation, Open Source Programming/ Development. Also he has worked in ISRO-GBP project and Land Use Land Cover modelling. He has developed some python scripts to optimize GIS data processing.