Seminar on

Spatial Information Retrieval, Analysis, Reasoning and Modelling

Data related to various natural, anthropogenic and socio-economic phenomena are now available in numerous formats, most significant of which is spatial data that facilitate visualization at spatio-temporal intervals. Availability of such data from a wide range of sources in a variety of formats poses challenges to Geographic Information Science (GISci) community. The utility and application of such data could be substantially enhanced through developments in technologies related to:

- Retrieval: Retrieval of noise-free information in the forms of themes (layers) from data requires robust image processing, spatial information theory techniques.
- Analysis: Once theme-specific layered information is retrieved, techniques are required to analyse themes.
- Reasoning: Theme specific layered information need to be integrated via spatial relationships and reasoning. Certain map algebraic concepts are of use.
- Modelling: Spatio-temporal behaviour of a phenomenon needs to be visualized

Much success has been achieved in the proper usage of data by addressing the above four aspects by individual groups. It is now at understandable level and there are overlaps between the concepts that emerged from different fields to deal with the above four aspects. In light of these overlaps, there exist demands to choose appropriate mathematical techniques that can offer robust solutions. As it stands, there are various techniques (e.g. mathematical morphology, fuzzy set theory, rough set theory, granular computing, map algebra) to address the challenges.

The motivation stems from the following observation. For groups, which are familiar with both spatial information theory and theories involved in digital image processing and analysis, most of these ideas are quite familiar. But, surprisingly there has been little interaction between the groups respectively familiar with image processing and spatial information theory. This seminar is intended to serve as a forum for bringing together specialists in those two groups and facilitate interaction.

Papers Invited

Oral paper presentation sessions categorized under four tracks in the areas of, but not limited to, applications of advanced spatial techniques—mathematical morphology, rough set theory, fuzzy set theory, fractal geometry, data mining, evolutionary computing, digital image processing, granular computing, map algebra etc—in (i) information retrieval from spatial data (e.g. remotely sensed data, maps etc), (ii) analysis and characterization of retrieved information, (iii) reasoning of spatial information across spatial/spectral scales and also across temporal scales, and (iv) usage of noise-free layered information in spatio-temporal modelling.

Specific topics under these four tracks include: scaling and multiscaling, spatial information retrieval, feature detection and distribution, spatial complexity analysis, applications of mathematical morphology, fractal geometry, rough set theory, fuzzy set theory, evolutionary computing, and data mining concepts in spatial analysis, reasoning, theme extraction and classification/segmentation, multiscale convexity analysis for segmentation and spatial complexity analysis, shape description—complexity analysis, space decomposition, spatial interpolations and extrapolations, morphologic modelling and simulation, geodesic modelling—simulation and modelling, derivation of object properties, network pruning, map algebra, automatic zonation, conversion of clustered point data into spatial objects, generation of convex hulls for binary and greyscale objects and fields, multiscale convexity analysis, fractal and multifractal analysis, transformation of statistical summaries into visual fields/objects, uncertainty analysis, closing function to convert clustered points into zones, landscape simulations.

Instructions to Author

All accepted papers would be published in the (i) seminar proceedings, which will be made available during the seminar, and (ii) some high quality papers presented along with a few invited contributions will be considered for publication in a special issue of the International Journal of Remote Sensing (IJRS).

We will ask that all authors (contributing to DRTC-ISI Annual Seminar 2009) who are interested in submitting a full paper to the special issue notify Dr. Sagar at bsdsagar@isibang.ac.in as soon as possible. Full publication quality papers will need to be received by Dr. Sagar on or before 30th January 2009. Papers need to be sent to bsdsagar@isibang.ac.in. Please note that all submitted papers must conform to IJRS author guidelines. Based on the seminar theme and the quality of the collected papers, Dr Sagar will send a select number (20-25) of papers out for peer review to be included in the Special Issue of International Journal of Remote Sensing (IJRS).

Key Dates

- Deadline to receive manuscripts (by Dr Sagar) – January 30, 2009.
- Reviewer comments returned to Authors – February 18, 2009.
- Final revised versions should be received by 28th Feb'09.
- For the IJRS Special Issue, the manuscripts revised in the light of comments by Reviewers are to be returned to Guest Editor (Dr. Sagar) by 07th March, 2009. Final selected papers will be submitted to Editor-in-Chief by April 10, 2009.

Location: The seminar will be held in the Indian Statistical Institute-Bangalore Centre. It is about 55kms from Bangalore International Airport.

Indian Statistical Institute, 8th Mile, Mysore Road, RVCE Post, Bangalore 560 059.

Phone: 91 80 28483002/3/4/5/6, Fax: 91 80 28484265.

ISI-Bangalore Web Page : http://www.isibang.ac.in.

Seminar Website : www.isibang.ac.in/~sirarm

Seminar on

SPATIAL INFORMATION RETRIEVAL, ANALYSIS, REASONING AND MODELLING

18th–20th March 2009

Registration Form

1. Name _____
2. Designation and affiliation _____
3. Address _____
   _____
   _____
4. Telephone Number(s) _____
5. Demand Draft No, Name of the Bank and Date _____
6. Whether Accommodation is required? YES☐ NO☐

Advisory Committee Members/Inaugural/ Keynote/Invited Speaker(s)/Contributors under 'Invited Category'

Giles Foody, University Nottingham
Peter M Atkinson, University Southampton
Alan G Wilson, University College London
Jean Serra, Centre for Mathematical Morphology
Mike Worboys, University of Maine
Petros A Maragos, National Technical Univ. Athens
Vladimir I Nikora, University Aberdeen
C A Murthy, Indian Statistical Institute-Kolkata
Paul Longley, University College London
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Brian G Lees, The University of New South Wales
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B. S. Prakasa Rao, Andhra University
I.K. Ravichandra Rao, Indian Statistical Institute-Bangalore
KS Raghavan, Indian Statistical Institute-Bangalore
ARD Prasad, Indian Statistical Institute-Bangalore
Devika P Madalli, Indian Statistical Institute-Bangalore
CV Rajan, Indian Statistical Institute-Bangalore
B. S. Daya Sagar, Indian Statistical Institute-Bangalore
Onkar Dikshit, Indian Institute of Tech-Kanpur

(Other names would appear as their consents are awaited)

Registration Details

The number of participants will be restricted to 30 and admission to the Seminar will be strictly on a 'first-come-first-served' basis.

The **Seminar Speakers** will include experts from India and abroad and will be drawn from both the academia and industry.

The **Registration fee** for the seminar is Rs. 1500/-. The fee covers the cost of course material, lunch and tea. The fee should be paid in the form of a Crossed Demand Draft payable at Bangalore drawn in favour of the Indian Statistical Institute.

Accommodation at a nominal cost could be arranged for a limited number of participants on a 'first-come-first-served' basis in the Guesthouses attached to the Indian Statistical Institute.

For further details contact

B. S. Daya Sagar
DRTC, Indian Statistical Institute
8th Mile, Mysore Road, Bangalore 560 059, India
E-mail: bsdsagar@isibang.ac.in

N.B.: For up-to-date extended details, please browse through the seminar website at : www.isibang.ac.in/~sirarm

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March 18-20, 2009

STATISTICAL INDIAN INSTITUTE
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Indian Statistical Institute
Documentation Research & Training Centre
Bangalore–560059, India