Areas/Topics

- Geometric Algorithms
- Graph Theory & Algorithms
- Randomized Algorithms
- Approximation Algorithms
- Data Structures
- Algorithmic Techniques
- Computational Geometry
- Combinatorial Geometry
- Computer Graphics & Vision
- Discrete Mathematics
- Robotics

Speakers :

- Shariefuddin Pirzada, University of Kashmir
- Niranjan Balachandran, IIT, Bombay
- Sathish Govindarajan, IISc, Bangalore
- Subir Kumar Ghosh, TIFR, Mumbai
- Amitabha Mukerjee, IIT, Kanpur
- S. Kalyanasundaram, IIT, Hyderabad
- Partha P.Goswami, University of Calcutta
- Subhashis Banerjee, IIT, Delhi
- Sandip Das, ISI, Kolkata

Venue :

Seminar Hall, Department of Mathematics
University of Kashmir
Srinagar 190006

Sponsor :

The workshop is funded by the
National Board for Higher Mathematics.

Contact Information :

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Research Promotion Workshop on

Introduction to Graph and Geometric Algorithms

18 – 20 May 2015

Coordinators

Shariefuddin Pirzada, University of Kashmir
Subir Kumar Ghosh, TIFR, Mumbai
S. M. K. Quadri, University of Kashmir
Abhiram G. Ranade, IIT, Bombay

Jointly organised by

Department of Mathematics & Computer Science
University of Kashmir
Srinagar

School of Technology and Computer Science
Tata Institute of Fundamental Research
Mumbai

Background

The study of algorithms is at the very heart of computer science. In the last five decades, a number of significant advances have been made in the field of algorithms ranging from the development of faster algorithms to the startling discovery of some natural problems for which all algorithms are found to be inefficient. These results triggered considerable interest in the study of algorithms, and the area of algorithm design and analysis has evolved into a field of interest. Teaching and research in this foundational aspect of computing is therefore a natural and desirable thrust area. Hence, algorithmic studies form a major component of computer science programs in colleges and universities.

In the last four decades, graph and geometric problems have been studied by computer science researchers using the framework of analysis of algorithms. Graph theory is the study of the properties of graphs. Graph algorithms are one of the oldest classes of algorithms and they have been studied for almost 300 years. Graphs provide essential models for many applications areas of computer science, and at the same time, they are fascinating objects of study in pure and applied mathematics. There have been a number of exciting recent developments in graph theory that are important for designers of algorithms to know about.

Correspondingly, the algorithmic viewpoint of computer science has stimulated much research in graph theory. Graph theory and graph algorithms are inseparably intertwined subjects. On the other hand, the main impetus for the development of geometric algorithms came from the progress in computer graphics, computer-aided design and manufacturing

In addition, algorithms are also designed for geometric problems that are classical in nature. The success of the field can be explained from the beauty of the geometry problems studied, the solutions obtained, and by the many application domains- computer graphics, geographic information systems, robotics and others, in which geometric algorithms play a crucial role.

Objectives

Graph and geometric algorithms are at the heart of many computer applications. So, it is expected that computer scientists and professional programmers know frequently used algorithms and generic techniques for efficient organization and retrieval of data, modeling, understanding and solving graph and geometric problems. This introductory workshop provides an opportunity to the participants for getting exposed to the field of graph and geometric algorithms, which may help them in future in solving graph and geometric problems and designing new algorithms. With this objective, graph and geometric theory and algorithms for some problems will be presented in the workshop by a distinguished panel of speakers.

Participants

Teachers and students (undergraduate, post-graduate and doctoral) of Computer Science, Mathematics and Engineering are eligible to attend this workshop. Participants are expected to have taken introductory courses in Discrete Mathematics, Data Structures and Algorithms. Scientists and engineers working in research laboratories or industries with required background are also welcome to attend the workshop.

Benefits

Participants will be exposed to key tools and techniques in the field of graph and geometric algorithms. Speakers are key figures in their respective research areas, and the purpose of the workshop is to expose students, teachers, and computer professionals to various key developments in these research areas. This will benefit the participants in designing, analyzing and implementing complex software, especially arising in the field of robotics, geographical information systems, route planning, wireless and mobile networks. Workshop may lead to active collaboration between participants and resource persons in these areas. Participants will be issued certificates for attending the workshop.

Registration

1. There is no registration fee.
2. A limited number of travel support is available for outstation participants from Jammu & Kashmir.
3. Accommodation is available for outstation participants.
4. Maximum of 100 applications will be selected for the workshop.
5. Lunch will be provided free of cost to all participants at the workshop venue for all three days.