

A FIVE DAY ONLINE WORKSHOP ON
Recent Trends in Domination in Graphs:
Algorithms, Complexity and Applications
15th – 19th June, 2020



**(Under Center for Continuing Education
Programmes, NIT Warangal)**



Coordinators

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and

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Organized by

Department of Computer Science and Engineering
National Institute of Technology Warangal
Warangal- 506004, Telangana, INDIA

ABOUT THE WORKSHOP

Graph theory is playing an increasingly important role in the last decades by the growing influences from studies of large networks. Graph theory is a key approach in understanding and for leveraging big data. Importantly, the concept of domination in graphs has been an extensively researched topic and one of the fastest growing branches of graph theory. This is largely due to a variety of new concepts such as independent domination, connected domination, secure domination, restrained domination, liar's domination, roman domination, double roman domination, roman $\{2\}$ -domination, etc., that can be developed from the basic definition of domination. The theory of domination has many applications in real life, namely, computer communication networks, social network theory, wireless sensor networks, modeling biological networks, etc. It is also a natural model for many location problems like fire station problem.

Although most of the decision problems of domination variants are NP-complete for general graphs, these can be polynomial time solvable for specific graph classes. Several researchers have worked on variants of domination decision problems which are NP-complete and consequently suggested different approximation algorithms, parameterized algorithms and exact exponential algorithms. In recent past, approximation hardness of some domination parameters has been studied. Although the domination parameter and its variants have been studied over years still there are a plenty of open problems to work on.

This workshop would help participants to apply the concepts of variants of domination to the problems in the respective discipline; to get knowledge required to choose this leading domain as a research area, and the research directions for working with new variants of the domination in graphs.

TOPICS TO BE COVERED

- Asymptotic analysis of algorithms
- Complexity Classes : P, NP, NP-hard, NP-complete, APX-complete and W[2]-hard.
- Graph classes for modeling networks
- New variants of domination problems

The topics with special **emphasis on variants of domination problem** include:

- Bounds and exact values
- NP-completeness
- Polynomial time algorithms
- Approximation algorithms
- APX-hardness
- Parallel algorithms
- Applications
- Open problems in the domain

RESOURCE PERSONS

Eminent faculty from IITs, ISI, NITs and Universities who have the expertise in these areas will be delivering lectures.

Confirmed Resource Persons:

Prof. S. Arumugam, Amrita Viswa Vidyapeetham
Prof. B.S. Panda, IIT Delhi
Dr.T.Karthick, ISI Chennai
Dr.Dinabandhu Pradhan, IIT (ISM) Dhanbad

REGISTRATION FEE AND SELECTION

Registration fee is Rs. 500/- per participant. Number of participants is limited to fifty and the participants will be selected on first-come first-served basis. On receipt of the proof (Transaction ID) of online payment of registration fee, the applicants will be sent confirmation of their participation through Email immediately.

ELIGIBILITY

The program is open to all the faculty members, research scholars, and students of all educational/ research institutions.

HOW TO APPLY

One can register for the course by filling in the Google form available at the link given below

<https://forms.gle/rr2Ypz7JaUgu2Vhu8>

The registration link is active as long as the workshop participants limit is not reached.

IMPORTANT DATES

Last date of registration : **14th June 2020**

ABOUT WARANGAL

Warangal is the second largest city in the state of Telangana. It is historically known as Orugallu or Ekashila nagaram (city carved in single stone). It is a part of tri-cities along with Kazipet and Hanamkonda. Warangal is considered the cultural capital of Telangana with many historical monuments like Thousand Pillars Temple, Warangal Fort, Bhadrakali Temple, Ramappa Temple and Laknavaram Lake located in a radius of 30 kms.

ABOUT NIT WARANGAL

NIT Warangal, formerly known as Regional Engineering College (REC) was established in 1959. Over the years it has developed into a premier institute of higher learning in India. There are 14 Departments offering 8 undergraduate and 31 post-graduate programmes besides doctoral programmes. About 5000 students across the country and about 500 international students study in the campus. It is a fully residential campus sprawling over 250 acres with excellent infrastructure in the form of state of the art library, seminar halls, auditorium, guest houses and laboratories. Now NIT Warangal is celebrating Diamond Jubilee (1959- 2019).

The campus is situated at a distance of 140 km from the state capital Hyderabad (Nearest Airport). It is well connected by Rail (Kazipet Junction is two km away and Warangal Station is 12 km away) and by Road (NH 202).

ABOUT THE DEPARTMENT

The Department of Computer Science and Engineering (CSE) offers B.Tech. course in CSE, M.Tech courses in CSE, Computer Science and Information Security (CSIS) and Master of Computer Applications (MCA). The Department is supported by well experienced and qualified faculty members. The department focuses on imparting practical and project based training to students through competency based curriculum. The Department has liaison with reputed industries and R&D organizations like Microsoft, IBM, Oracle, Infosys, IDRBT and tie up with IISc in certain areas.

ACCOUNT DETAILS FOR ONLINE FEE PAYMENT

Account Name: **Center for Continuing Education NITW**
Name of the Bank: State Bank of India (SBI)
Account Number: 62403680215 (Savings Account)
IFSC Code: SBIN0020149
Branch: NIT Warangal

ADDRESS FOR CORRESPONDENCE

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FORMAT OF GOOGLE FORM

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1. Name :
2. Educational qualification :
3. Designation :
4. Experience :
5. Department :
6. Institution :
7. Mailing Address :
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