PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF- PMRF-ISSS164/III/2024.

Algorithm Design Using Continuous Methods

Name of the PMRF student

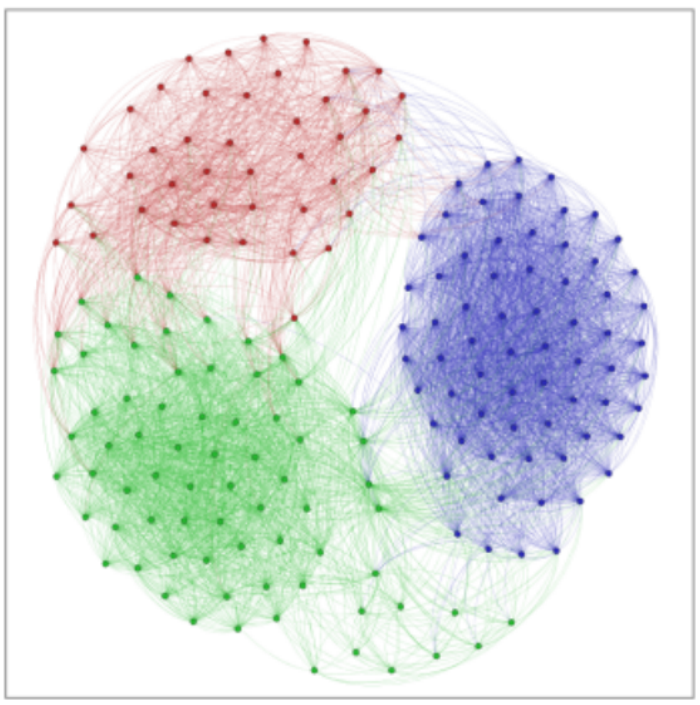
Rameesh Paul

Required background of the students taught

Knowledge of High School Maths
UG level Probability
Linear Algebra (will be reviewed)

Online session coordinator

Will be chosen from the list of registrants



Details of the content of the module

The course will focus on continuous methods for designing algorithms, particularly in the realm of graph algorithms. These techniques draw on concepts from mathematical fields such as Linear Algebra, Probability, and Geometry.

Below is a tentative schedule (subject to change as per the interest of participants).

Lec 1: Linear Programming (LP)

Lec 2: Graphs Cut Problems via LP

Lec 3-4: Metric Embeddings

Lec 5: Sparsest Cut Problem in Graphs

Lec 6: Review of Linear Algebra

Lec 7: Low Rank Approximation

Lec 8: Basics of Spectral Graph Theory

Lec 9: Cheeger's Inequality and Sparsest Cut

Lec 10: Last Eigenvalue and Maxcut Algorithm

Lec 11: Spectral Clustering Using Higher Eigenvalues

Lec 12: Expander Graphs

Schedule of the module

Course starts on: 12th October, 2024
Course ends on: 27th December, 2024
Classes on : Saturday (may be changed if required)
Timings: 15:30 – 17:00 hrs

Class duration is 75 mins and last 15 mins (or more if required) will be devoted purely for discussion.

Meeting link :https://shorturl.at/obPhW

Contact email ID: isss.forum@gmail.com

Registration link:
Click here to view registration form