PhD Position in CSE department, IIIT Delhi

Dr. Diptapriyo Majumdar
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Call for Applications - PhD

Overview: I am looking for a motivated PhD candidate in the research domain **Graph Theory and Algorithms**. I have **ONE** fully funded PhD position for the project "**Efficient Enumeration of the feasible solutions to Combinatorial Optimization Problems**" funded by **DST-SERB**. The candidate is expected to design fixed-parameter algorithms and polynomial-time preprocessing algorithms on NP-hard problems related to **graph theory** and **combinatorial optimization**.

Eligibility Criteria:
- B.E./B.Tech/M.Sc/M.Tech in Computer Science or MCA or
- M.Sc in Mathematics with some background in discrete mathematics and/or strong interest towards Graph Theory.
- Having a valid GATE score is desirable.

Principal Investigator: [Dr. Diptapriyo Majumdar](#)

Fellowship: Rs. 37000/- per month or higher as per the DST guidelines.

Duration: Normally, a PhD student at IIIT Delhi is expected to complete their PhD thesis work within 5 years, but the actual time can vary depending on the chosen research problems.

Essential requirements: Fundamentals of discrete mathematics that includes combinatorics, graph theory, proof by induction, proof by contradiction etc.

Desirable requirements: Fundamentals of data structures and algorithms.

Selection Procedure: After your application is received, your application will be scanned in detail and you may be initially given some written tasks with deadlines. The written tasks are some problems from some (not necessarily all) the topics mentioned below. After receiving the solutions of your problems to those written tasks, you will be called for an **interview** at IIIT Delhi campus. Depending on your background, you will be asked basic questions from some/all of the topics mentioned below.
- **Discrete Mathematics:** Recurrence relations, counting techniques, permutations and combinations with special focus on combinatorial arguments, graph theory, mathematical induction, relations and functions.
- **Algorithms and Data Structures:** Basics of algorithms including sorting, searching, knowledge of binary search tree, stacks, queues, linked list, divide and conquer, dynamic programming, basics of graph algorithms.
- **Automata Theory:** Regular languages, Context Free Languages.

How to apply: Send the scanned copies of the following documents to diptapriyo@iiitd.ac.in with subject line **PhD position in Theoretical Computer Science** on or before **15th January, 2024**.

- Your complete CV that contains the details of your education and work experience (if any).
- Scanned copies of B.E./B.Tech/B.Sc marksheets and certificate whichever is applicable.
- Scanned copies of M.E./M.Tech/MCA/M.Sc marksheets and certificates whichever is/are applicable.
- If you have a valid GATE score and/or certificate of CSIR/UGC-NET with JRF/Assistant-Professor qualification, please send that also.
- A short one-page *statement of purpose* that should explain
  (i) why you are interested in pursuing research in graph theory and/or algorithm design,
  (ii) what kind of skill-sets you have, e.g. knowledge of data structures, knowledge of discrete mathematics, knowledge of theory of computation, basic knowledge of algorithms etc (as applicable), and
  (iii) how those skill-sets are relevant with pursuing research in algorithm design.