



## Welcome to CSA Research Interviews - 2012

Dear prospective research student,

It is our pleasure to invite you for an interview for a possible research student position in our department. Please fill up the attached *Option Form* and bring a hard-copy with you when you appear for the interview here. To learn more about our activities, please visit us at <http://www.csa.iisc.ernet.in>. Prepare well for the interview, on the lines suggested in the note that follows. Please email the admissions committee ([admissions@csa.iisc.ernet.in](mailto:admissions@csa.iisc.ernet.in)) if you have further questions.

Very best wishes,  
Sincerely,

Y. Narahari  
Chairman  
Computer Science and Automation  
Indian Institute of Science  
Bangalore - 560 012

### A Note on the CSA Research Interviews

- The interview is intended to be a test of the candidate's aptitude and suitability for research in the areas chosen by the candidate and his/her thoroughness of background in related basic subjects. The emphasis will be on testing the depth of candidate's understanding of fundamental concepts.
- The interview will be in two parts: a written test of 30 minutes duration on the day of the interview just before the interview session begins (9 AM and 2 PM on each day), followed by an oral interview. The written test will have 10 questions on the fundamentals of programming, data structures, algorithms, discrete mathematics, arithmetic, geometry, calculus, logic, probability, and linear algebra. You are expected to attempt all 10 questions.
- The oral interview will be in the basic subjects related to the research areas chosen by the candidate as explained in the Option Form and Table 1. This will be possibly followed by questions in the specific subject areas of research chosen by the candidate.

Table 1 provides a list of research areas where research student positions are currently available. From this table please choose up to three research areas, which are of interest to you. You will be examined first in the basic subjects (listed in column 3) against the chosen research areas. This may be followed by more questions related to the chosen research areas. **It is mandatory that you choose at least one research area.**

An Example: In case you choose Data Mining as the first preference, Game Theory as the second preference, and Cognitive Science as the third preference, then, you will be tested first in the basics of at least two subjects among Discrete mathematics, Linear Algebra, Probability Theory, and Optimization Theory. Other questions related to Data Mining, Game Theory, and Cognitive Science will follow, provided your performance in the above basic areas is satisfactory.

**Please note that, after admission, the choice of faculty advisor will be restricted to your choice of research areas and further on your performance during the interview in the three chosen areas.**



	Research Areas	Basic Subjects
1. 2. 3. 4. 5. 6. 7. 8.	Data mining Machine learning Pattern recognition, information retrieval Information theory and learning algorithms Reinforcement learning and stochastic control Vehicular traffic networks, communication networks Game theory and Mechanism Design NLP, Cognitive science	<i>Any two subjects out of:</i> Discrete mathematics, probability theory, linear algebra, optimization
9. 10. 11. 12. 13.	Complexity theory Graph theory Combinatorial geometry, computational geometry Cryptography Algorithmic algebra	Discrete mathematics, data structures, algorithms
14. 15.	Database systems Scientific visualization	Discrete mathematics, data structures, algorithms
16.	Software design, analysis, verification	Discrete mathematics, automata theory, data structures
17.	Compilers	Automata theory, data structures, algorithms
18. 19.	Computer architecture Parallel and high performance computing	Computer organization, data structures, algorithms
20. 21. 22. 23. 24.	Operating systems Systems security Storage systems Distributed systems Adhoc and sensor networks	<i>Any one subject out of:</i> Discrete mathematics, linear algebra, probability theory <i>Required:</i> Data structures, algorithms, operating systems

Table 1: List of current research areas where positions are available. List of representative books for the basic subjects is available at <http://www.csa.iisc.ernet.in/academics/academics-prospectivestudents-books.php>



Please fill up this form and bring this with you at the time of the interview.

1. Name of the Candidate:
2. Application No. :
3. Category: (SC/ST/OBC/GN):
4. Degree preference (M.Sc(Engg.) only / Ph.D only / Either):
5. Date of Interview:
6. Current Affiliation:
7. Highest Qualification and Year of Graduation:
8. Discipline of Highest Qualification:
9. Marks/Grade Secured in the Highest Qualification:
10. GATE Score (if applicable) with Discipline:
11. College and Place Where Studied:
12. Academic Achievements:
  
13. Preferences for Research Areas (select at least one of the 24 options from Table 1):  
**Preference 1:**  
**Preference 2:**  
**Preference 3:**
  
14. **Signature:**