# Welcome to CSA Research Interviews 2014

Dear prospective research student,

It is our pleasure to invite you for an interview for a research student position in our department. The interviews will be held during the week of June 2–6, 2014, in two sessions beginning at 9 am and 2 pm on each day. The exact date and session of your interview would have been communicated to you separately.

Our interview process consists of a *written test*, followed by an *oral interview* for candidates shortlisted in the written test. The attached note gives you more information about the interview process at CSA. Please use it to prepare well for the interview process.

Please print out and fill up the attached *Option Form*, and bring it with you when you arrive here for your interview.

To learn more about our activities, please visit `http://www.csa.iisc.ernet.in/research/research.php`
Feel free to email the admissions committee (admissions@csa.iisc.ernet.in) if you have further questions.

Very best wishes,
Sincerely,

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

# Research Interview Process at CSA

- A **written test** of 30 minutes duration will be conducted at the beginning of the interview session.

  (a) There will be 10 short answer questions.

  (b) The syllabus for the written test is the **GATE CS** syllabus for the following topics: Engineering Mathematics (all subtopics included), Programming and Data Structures, and Algorithms.

  (c) You are expected to attempt all 10 questions.

- Based on their performance in the written test, some candidates will be shortlisted to appear for an **oral interview** to be conducted in the same session.

- The **oral interview** is intended to test the candidate's aptitude and suitability for research in the areas chosen by the candidate, as well as their proficiency in the related background subjects. The emphasis will be on testing the candidate's understanding of fundamental concepts. The oral interview will be structured as follows:

(a) The candidates must consult Table 1 and indicate in their *Option Form* (Page 3 of this note) their choice of *one* Main Research Area and at most *two* corresponding Sub-Areas of research from Column 2, in which they would like to do research. They must also indicate *two* corresponding Background Subjects from Column 3 that they would like to be examined in. A list of representative books for these background subjects is available at

http://www.csa.iisc.ernet.in/academics/academics-prospectivestudents-books.php.

(b) The candidates will first be examined in the background subjects they have chosen.

(c) This may be followed by more questions related to the candidate's choice of sub-areas of research.

(d) For **External Registration Programme (ERP)** applicants, the oral interview will additionally include a *5 minute presentation* by the candidate on their proposed research area and problem (which would have already been discussed with designated faculty advisor here). In the interest of time, please keep your presentation short. Kindly note that projection facilities will not be available. You may bring along with you a one page writeup to be circulated to the committee members.

- Please submit the filled-in *Option Form* (Page 3 of this note) when you report to the department office at the beginning of your interview session.

- Please note that in case you are admitted to the research programme you will be expected to work on a research topic related to the sub-areas in which your interview performance is found satisfactory.

Table 1: Research areas where positions are available, and corresponding background subjects

| Main Research Area | Sub-Areas where positions are open | Background Subjects |
|---|---|---|
| *Theoretical Computer Science*<br><br>http://www.csa.iisc.ernet.in/research/ research-theory.php | Algorithmic Algebra, Algorithms, Complexity Theory, Combinatorial Geometry, Computational Geometry, Cryptography, Secure Distributed Computing, Sparse Approximation. | Data Structures and Algorithms, Discrete Mathematics, Linear Algebra, Theory of Computation. |
| *Computer Systems and Software*<br><br>http://www.csa.iisc.ernet.in/research/ research-compsystems.php | Ad-hoc/Sensor Networks, Compiler Design, Computer Architecture, Distributed Computing, High Performance Computing, Operating Systems, Power-Aware and Real-Time Software, Programming Languages, Scientific Visualization, Software Engineering, Systems Security. | Computer Organisation, Data Structures and Algorithms, Engineering Mathematics (including Discrete Math, Linear Algebra, and Probability), Programming. |
| *Intelligent Systems*<br><br>http://www.csa.iisc.ernet.in/research/ research-intellisystems.php | Data Mining, Game Theory & Mechanism Design, Machine Learning, Learning Theory, Pattern Recognition, Reinforcement Learning, Stochastic Optimization, Wireless and Vehicular Networks. | Data Structures and Algorithms, Discrete Mathematics, Linear Algebra, Probability Theory. |

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 Applied for (M.Sc(Engg.) only / Ph.D only / Both):

5. Date of Interview:

6. Current Affiliation:

7. Highest Qualification:

8. Discipline of Highest Qualification:

9. Name of Institution where studied:

10. Marks/Grade Secured in the Highest Qualification:

11. GATE Score and Rank with Discipline and Year (if applicable):

12. Performance in other Examinations (JEST, NBHM, NET, JRF, etc):

13. Academic Achievements (*include research publications; write overleaf if necessary*):

14. Preference for research areas and background subjects:

| Main Reasearch Area (*Tick only one*) | Sub-Areas | Background Subjects |
|---|---|---|
| ☐ Theoretical Computer Science ☐ Computer Systems and Software ☐ Intelligent Systems | 1. 2. | 1. 2. |

15. **Signature**: