

# Procedure for PhD interviews for Panel A: Theoretical Computer Science and related areas

Department of Computer Science and Engineering, IIT Madras  
July 2025

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The aim of the interview process is to assess the knowledge and problem solving ability of the candidate in subjects that are fundamental to the research areas of the panel chosen by the candidate. The candidate will be required to choose two topics from the list given below to be interviewed on.

## **List of Topics**

- Discrete Mathematics (Logic, Proofs, Counting and Combinatorics, Sets, Relations, and Functions)
- Graph Theory
- Theory of Computation
- Data Structures and Algorithms
- Basics of Probability Theory
- Topics in Algorithms (any one or more of Graph-theoretic/Approximation/Distributed/Randomized/Parameterized)
- Basic Complexity Theory
- Basics of Cryptography

# **Procedure for PhD interviews for Panel B: Computer Systems and related areas**

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The aim of the interview process is to assess the knowledge and problem solving ability of the candidate in subjects that are fundamental to the research areas of the panel chosen by the candidate.

The candidate is required to select one subject from each of the two lists, List B1 and List B2, given below. The questions for the candidate during the interview will be related to these two subjects.

## **List of Topics**

### **List B1**

- Digital Logic Design
- Computer Organization and Architecture
- Compilers
- Operating Systems
- Computer Networks
- Database Management Systems

### **List B2**

- Advanced Operating Systems
- Advanced Computer Architecture
- Advanced Database Systems
- Distributed Systems
- Wireless Networks
- Parallel Processing
- Formal Methods
- Secure Systems
- Cloud Computing
- Theory of Programming Languages.
- Program Testing/Verification
- Program Analysis and Compiler Optimizations
- Any other Systems related courses

# Procedure for PhD interviews for Panel C: AI, ML and related areas

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The aim of the interview process is to assess the knowledge and problem solving ability of the candidate in subjects that are fundamental to the research areas of the panel chosen by the candidate.

The candidate is required to select one subject from each of the two lists, List C1 and List C2, given below. The questions for the candidate during the interview will be related to these two subjects.

## **List of Topics**

### **List C1**

- Programming and Data Structures
- Probability and Statistics
- Discrete Mathematics
- Linear Algebra

### **List C2:**

- Artificial Intelligence
- Machine Learning
- Natural Language Processing
- Computer Vision
- Speech Technology
- Computational Biology
- Computer Graphics