

Department of Computer Science and Engineering

Indian Institute of Technology Madras

Nov, 2021

Procedure for Direct PhD interviews for Panel A: Theoretical Computer Science and Related Areas

The aim of the interview process for Direct PhD candidates is to assess the knowledge and problem solving ability of the candidate in subjects that are fundamental to Computer Science and Engineering, and to assess the independent thinking ability and research aptitude of the candidate.

During the interview, the candidate will be required to answer questions related to topics in **two subjects** chosen by the candidate from the list of the subjects given below. In addition to the primary subjects chosen by the candidate, the candidate may also be required to answer some basic questions in other subjects. The duration of the interview for a candidate may be about 40 minutes. You may find [this resource](#) on how to prepare for MS-PhD interviews from one of our faculty useful.

List of Subjects:

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

Department of Computer Science and Engineering

Indian Institute of Technology Madras

Nov, 2021

Procedure for Direct PhD interviews for Panel B: Computer Systems and Related Areas

The aim of the interview process for Direct PhD candidates is to assess the knowledge and problem solving ability of the candidate in subjects that are fundamental to Computer Science and Engineering, and to assess the independent thinking ability and research aptitude of the candidate.

During the interview, the candidate will be required to answer questions on programming, and questions related to topics in two subjects chosen by the candidate from the list of the subjects given below. In addition to the primary subjects chosen by the candidate, the candidate may also be required to answer some basic questions in other subjects. The duration of the interview for a candidate may be about 40 minutes. You may find [this resource](#) on how to prepare for MS-PhD interviews from one of our faculty useful.

List of Subjects:

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

Department of Computer Science and Engineering

Indian Institute of Technology Madras

Nov, 2021

Procedure for Direct PhD interviews for Panel C (AI, ML and Related Areas)

The aim of the interview process for Direct PhD candidates is to assess the knowledge and problem solving ability of the candidate in subjects that are fundamental to Computer Science and Engineering, and to assess the independent thinking ability and research aptitude of the candidate.

During the interview, the candidate will be required to answer questions on programming, and questions related to topics in two subjects chosen by the candidate from the list of the subjects given below. In addition to the primary subjects chosen by the candidate, the candidate may also be required to answer some basic questions in other subjects. The duration of the interview for a candidate may be about 40 minutes. You may find [this resource](#) on how to prepare for MS-PhD interviews from one of our faculty useful.

List of Subjects:

- ❖ Discrete Mathematics
- ❖ Data Structures
- ❖ Design and Analysis of Algorithms
- ❖ Linear Algebra
- ❖ Probability Theory