

About C-MInDS

At the Centre for Machine Intelligence and Data Science (C-MInDS), we are preparing the next generation of scientists, innovators and leaders in Machine learning and Artificial Intelligence. The centre is aimed at expanding the frontiers of AI and ML and their applications through cutting-edge research and advanced academic programs as well as strong industry collaborations.

New Delhi: The School of Artificial Intelligence (ScAI) at IIT Delhi will start a new post graduate programme focused on artificial intelligence. IIT Delhi's Senate, the faculty body responsible for taking all major educational decisions, has approved the proposed programme titled 'M.Tech in Machine Intelligence & Data Science (MINDS)'.

M. Tech in MINDS will be a flagship educational programme for the school and is expected to begin in July 2022. This will be the second degree offered by ScAI. Earlier, the school started a PhD in AI.

Prof. Mausam, the founding head of the school, said, "Our PhD programme has gathered a lot of interest in its first year. We had a 90% success rate in PhD students joining ScAI last semester, which is exceptional for a young academic unit like ours, as students generally prefer more established academic programmes. But they chose us, suggesting that we have put together a really strong faculty team in AI."

ScAI currently lists around 40 faculty members on its list, including adjunct faculty members from industry research centers like Microsoft Research, Google AI and IBM Research.

M.Tech in MINDS is planned as an industry-sponsored programme. The students will be expected to work on industry-relevant AI problems, since they will be co-advised by an IIT Delhi professor and a researcher from the sponsoring company. All students with an undergraduate degree in science or engineering will be eligible for the MINDS programme.

Prof. V. Ramgopal Rao, Director, IIT Delhi, said, "Academic institutions today cannot remain in silos. They must work closely with all stakeholders, including industry, non-profit, and governmental organizations. M.Tech programme in MINDS will energize academia-industry collaboration in AI."

The MINDS curriculum will include graduate-level courses in core AI technologies like deep learning and data mining, application-oriented courses like computer vision, natural language processing, and AI for healthcare, and also fundamental courses on mathematics underlying modern AI technologies.

The School of Artificial Intelligence was established last year with the aim of strengthening education, research, and applications of AI. It encourages multidisciplinary collaborations between AI and domain experts so that fundamental research impacting real applications could be pursued.

The school is making rapid strides since its inception in synergising AI activities across the Institute and in new faculty recruitments.

Are you looking to change from Mechanical Engineering to CSE and allied departments?

You will have the following best options open to you, after you give GATE in CSE and get a good score, even after doing btech in Mechanical Engg.

1. IISc, Computer Science & Engineering (CS)
2. IISc, Artificial Intelligence (AI)
3. IISc, Computational and Data Science (CP)
4. IISc, Robotics and Autonomous Systems (RAS)
5. IISc, Smart Manufacturing(SM)
6. IIT Madras, Mtech & MS in CSE
7. IIT Bombay, Mtech TA, CSE
8. IIT Bombay, Mtech RA, CSE
9. IIT Bombay, MSR, CSE
10. IIT Bombay,MSR, CMinDS (AI)
11. IIT Bombay, Mtech in Systems & Control Engineering
12. IIT Delhi, Mtech & MS, MiNDS (AI)
13. IIT Delhi, Mtech in Robotics
14. IIT Delhi, Mtech in Instrument Technology
15. IIT Kanpur, Mtech CSE
16. IIT Kanpur, MS in CSE
17. IIT Kanpur, Mtech in Cybersecurity
18. IIT Kanpur, MS in Cybersecurity
19. IIT Kanpur, Mtech & MS in Cognitive Science
20. IIT Kanpur, Mtech in UAV (Unmanned Arial Vehicle)
- ** . IIT Kanpur, Mtech in Robotics and Automation (comes under ME dept, but is interdisciplinary)
21. IIT Roorkee, Mtech in AI
22. IIT Roorkee, Mtech in Data Science
23. IIT Guwahati, Mtech in Robotics and Artificial Intelligence
24. IIT Guwahati, Mtech in Data Science

25. IIT BHU, Systems Engineering
26. IIT Hyd, CSE & NIS (Mtech & MS & Self Sponsored)
27. IIT Hyd, AI (Mtech & MS & Self Sponsored)
28. IIT Hyd, Smart Mobility
29. IIT Gandhinagar, CSE
30. IIT Mandi, Robotics (MS) & CSE (Mtech)
31. IIT Ropar, Mtech in CSE & AI
32. IIIT Hyd, mtech in CSE
33. IIIT Hyd, mtech in CSIS

** If you fill form in departments where you are not eligible, your form will be rejected after scrutiny, and there is no refund for same. (Happened with me, for IITG CSE, IITBHU CSE, & IITR M&C)
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After the GATE Exam, the war is not yet over.

You'll have to appear for interviews and coding rounds, for most of the disciplines. These interviews and exams may be online, but mostly are held offline at campus. Dates do collide sometimes, so do fill up all the forms and go for the tests. Do not take break of more than 20 days after GATE Exam.

These tests mostly requires in depth knowledge, so prefer NPTEL/MIT_OCW/3B1B videos to crack them.

A good collection of all previous interviews :

<https://lnkd.in/gBsv9xur>

Students with expected rank in the bracket of (450-1200), who are having the fear of missing mtech admissions at top 8 IIT's/IISc, these are the potential good MS-R/Mtech RA admissions for you at top 8 IIT's/IISc, so gear up once again to get your admit.

1. M. Tech. (Research) CDS, IISc [\approx 650 rank]
2. CMINDS, IIT Bombay [\approx 650 rank]
3. MINDS, IIT Delhi [\approx 550 rank]
4. MS, CSE, IIT Bombay [\approx 500 rank]

5. M. Tech. (RA), CSE, IIT Bombay [\approx 650 rank]
6. M.S-R, CSE, IIT Delhi
7. M.S-R, IT, CSE, IIT Delhi
8. M.S-R, CSE, IIT Kanpur [\approx 500 rank]
9. M.S-R, Cyber, IIT Kanpur [\approx 1200 rank]
10. M. Tech. (RA), CSE, IIT Hyd [\approx 1000 rank]
11. M.S, CSE, IIT Madras [\approx 550 rank]
12. M. Tech. (RA), NSIS, IIT Hyd [\approx 1000 rank]
13. M. Tech. (RA), AI, IIT Hyd [\approx 1000 rank]

14. Some important links

- * My CMINDS interview experience (<https://shorturl.at/esKTV>)
- * Year wise interview experience list (<https://rb.gy/lew8nt>)
- * MINDS & CMINDS [IMP interview experience]: (<https://shorturl.at/yAGLN>)
- * Probability MIT (Also solve 12th class NCERT): (<https://shorturl.at/gkz29>)
- * Gilbert Stang Linear Algebra: (<https://shorturl.at/nprEV>)
- * 3b1b Linear Algebra: (<https://shorturl.at/fzMX2>)
- * Coursera ML (<https://lnkd.in/gFDT8kEc>)
- * Calculus 3b1b (<https://shorturl.at/gkq12>)

IIT Bombay Syllabus and PYQ's: <https://lnkd.in/gDduKbqg>

IIT Kanpur Syllabus and PYQ's: <https://lnkd.in/g4vvqBTN>

IIT Madras Syllabus and PYQ's: <https://lnkd.in/gqS2SeyJ>

Exams may start as early as mid-April and go on upto early-July. There may be date clashes.

My detailed post on MS-R at IIT's (<https://lnkd.in/gmTMnCNp>)

15. Do check out old COAP responses of Rank vs Score Vs Seat Offered, (genuine, but not created or maintained by me)

2023(A): <https://shorturl.at/klxyB>

2023(B): <https://shorturl.at/cBGPW>

2022: <https://shorturl.at/tuwO9>

IIT Bombay & Delhi, MS interview Experience (MINDS & CMINDS)

Initially for MINDS(IITD) or CMINDS(IITB) there was a written test, if you qualify then you will proceed to the interview round.

You can follow the link given below for the syllabus. As both the written tests (no -ve marks) was more or less the same:

<https://bit.ly/3Or8Nrw> (IITB CMINDS)

In IITD there were 3 coding questions in addition to MCQs & MSQs and the test was conducted on HackerEarth platform.

IITD Interview Questions and Resources:

Around 40 people were shortlisted for the interview. The interview was conducted on 3rd June 2022 (Till that time 3 coap rounds were over). My interview was scheduled at 4pm on Microsoft Teams. In my panel there were 3 professors. Each professor asked me questions from different subjects (given below). And the interview lasted for around 40-50 mins.

General Questions:

Give a brief academic introduction about yourself.

Currently what offers do you have? If you get M.Tech will you consider it or stick to MS(R) program and Why?

What are your favorite subjects? (Best answer, Linear Algebra & Probability for AI and Data science profile interviews.)

Also go through basic AI/ML stuff. Resource: <https://bit.ly/3xy4tzO>

Linear Algebra:

Take an equation $Ax=B$

Explain the solution of the system of linear equations w.r.t column space?

When will the system have a solution?

If matrix A has full rank, then for what B vectors does the system have a solution?

If the B vector doesn't lie on the column space of A then how to get an approximate solution(projection concept)?

Resources:

<https://bit.ly/3Qza41C> (Must read upto 23rd video)

<https://bit.ly/3xlokMP> (Alternative to above resource)

Calculus:

What is a convex function?(Read thoroughly about concave & convex functions).

What is gradient?Give its geometrical significance.

What's a directional derivative?

Resources:

<https://bit.ly/3OdsK5h> (Must read Gradient section thoroughly)

<https://bit.ly/3zOvvpc>

Probability & Statistics:

What is covariance for 2 random variables x & y?

Proof that for independent random variables covariance is 0.

Prove $E(x+y)=E(x)+E(y)$ for both independent & dependent cases.

Prove $E(xy)=E(x)E(y)$ for an independent case.

A coin is tossed n times we define a random variable as follows, where x_i is i th coin toss, prob. of head in each toss is p (success):

Find $E(\bar{x})$ and $\text{Var}(\bar{x})$. (Use linearity of expectation concept)

Also do read thoroughly joint pdf, pmf, conditional expectation, total expectation, CDF etc.

Resources & Tips:

Keep handy all the distributions equations and graphs, specially normal distribution and approximation of poisson & binomial distributions using normal distribution.

Also go through proof of the memoryless property of geometrical & exponential distribution.

Recommended videos:

<https://bit.ly/3OtYFhK> (Must read upto 98th video)

<https://bit.ly/3OoqmbC> (Sampling distribution concept)

<https://bit.ly/3n1d499>

<https://bit.ly/3OaaZ6O>

<https://bit.ly/3HBPE3G> (Just go through week 3 important set of problems)

Algorithm:

Suppose you need to climb a stair of n steps and you can take at a time 1 step or extend your leg and take 2 steps or 3 steps at a time. Finds number of ways you can climb n steps.

(Hint: Take sol. as $T(n)$. For $T(n)$ we have 3 tree branches $T(n-1)$ (taking 1 step at a time) / $T(n-2)$ (taking 2 steps at a time) / $T(n-3)$ (taking 3 steps at time) then again solve the subproblems of size $(n-1)$ / $(n-2)$ / $(n-3)$)

Verdict: Selected (IITD)

Note:

If you have a 650+ Gate score(Gen) you should definitely prepare well ahead as you will most probably get a call. Applicable for all branches.

IITB focuses more on LA & Prob. (specially joint distribution which was not part of the GATE syllabus). You have to study beyond the GATE syllabus.

You should never go out of studies after GATE for a long time else it will be difficult for you to crack the interviews.

Must be prepared with the B.Tech final year project.

Best of Luck for your selection :)