IITM PRAVARTAK
CATALYSING INNOVATION
Technology innovation Hub of
IIT Madras

Build Business Resilience with the **Data & GenAI Playbook**

Executive Certification in **Advanced Data Science & Gen AI for Managers**

Batch 03

IITM Pravartak
Technology Innovation Hub of IIT Madras

Marketing Partner
jaro education

Shape the Future: Lead with Data Mastery and GenAI Vision

US$ 422.37 billion by 2028 — Global AI market is projected to grow from **US$ 59.67 billion** in 2021 at a **CAGR of 39.4%.**

*IBEF – Future of Data Science and AI in India

80% of GenAI business applicationswill be built on existing data management platforms by 2028.

*Gartner

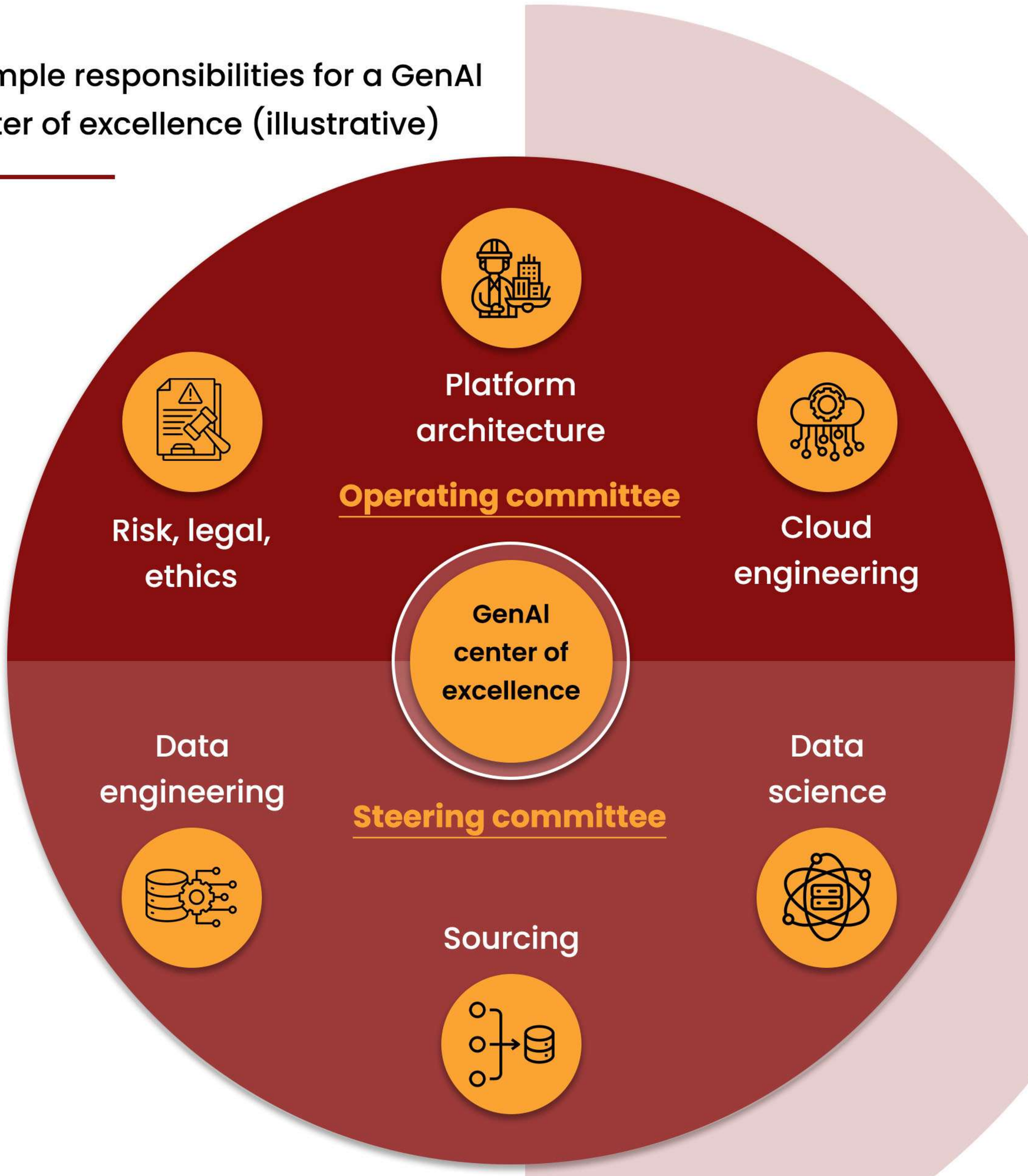
22% of global jobs are expected to face disruption by 2030, with AI, big data, and security management among the fastest-growing roles.

*World Economic Forum – Future of Jobs Report 2025

India is rapidly emerging as a pivotal hub for AI and data science innovation, driven by strong government initiatives, a burgeoning tech ecosystem, and increasing digital adoption across sectors. The country's vast pool of skilled professionals, coupled with investments in AI research and infrastructure, positions India to capitalize on the global AI market's exponential growth. As enterprises across industries such as healthcare, finance, manufacturing, and retail increasingly adopt AI-driven solutions, opportunities for AI-powered business applications are set to multiply, especially on established data management platforms. Additionally, the evolving job landscape reflects a rising demand for AI, big data, and cybersecurity experts, underscoring the need for workforce upskilling and new educational frameworks. With the Indian government's focus on digital transformation and innovation, the next decade offers immense potential for startups, enterprises, and professionals to participate in this growth journey, fueling economic development and creating a robust talent pipeline for the future of AI and data science.

GenAI Center of Excellence Drives Capability Building and Stakeholder Alignment

Example responsibilities for a GenAI center of excellence (illustrative)



Lead the development of coherent GenAI strategy
(eg, alignment, cross-functional collaboration)

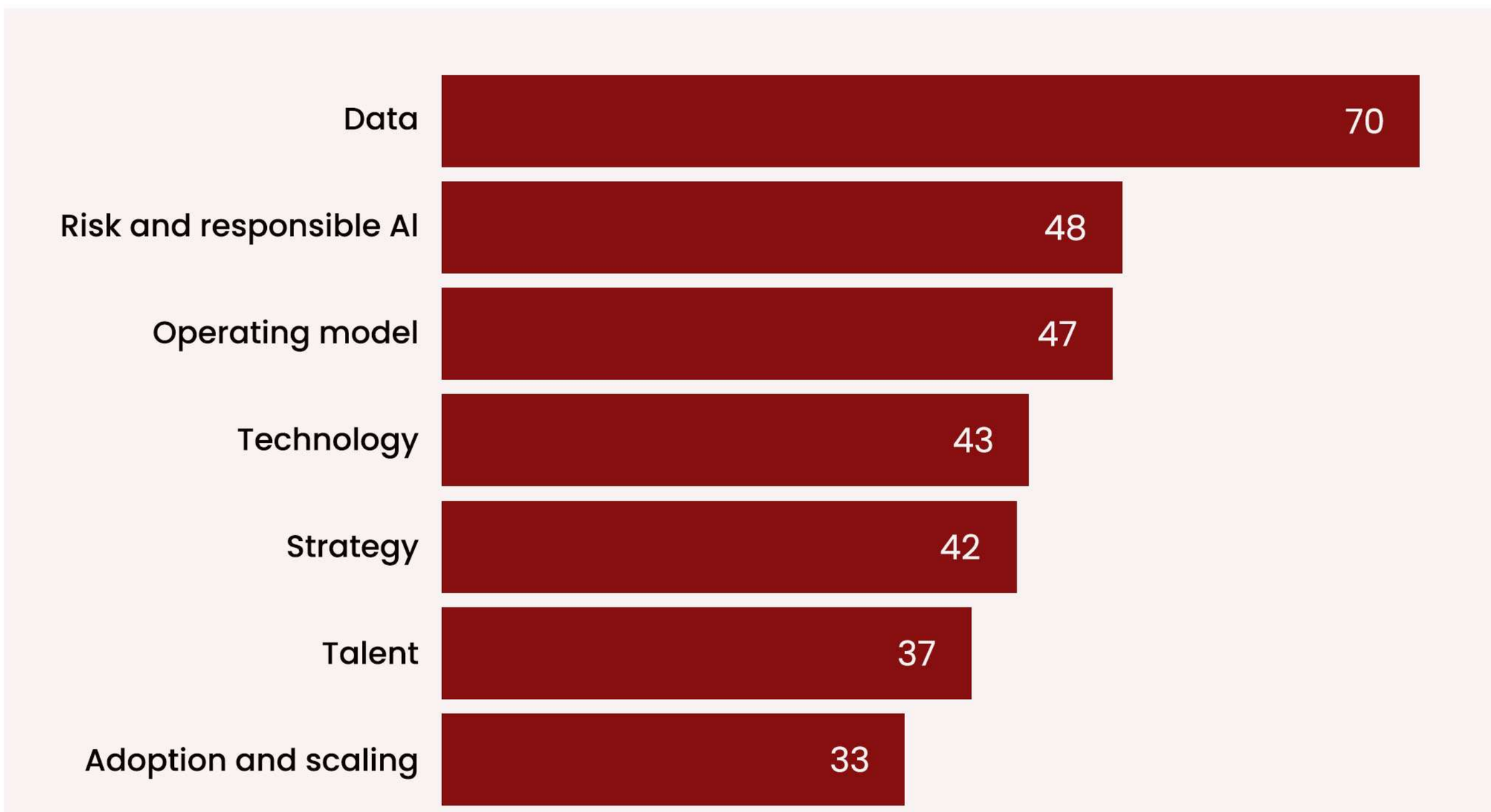
Develop GenAI infrastructure, tech, and foundational data capabilities
(eg, reusable components, plat-form architecture guidelines)

Provide collaborative governance for gen AI
(eg, funding process, risk guardrails)

*McKinsey & Company

For GenAI High Performers, Data Management Is the Biggest Hurdle to Capturing Value

Elements that have posed challenges in capturing value from generative AI, 1% of respondents



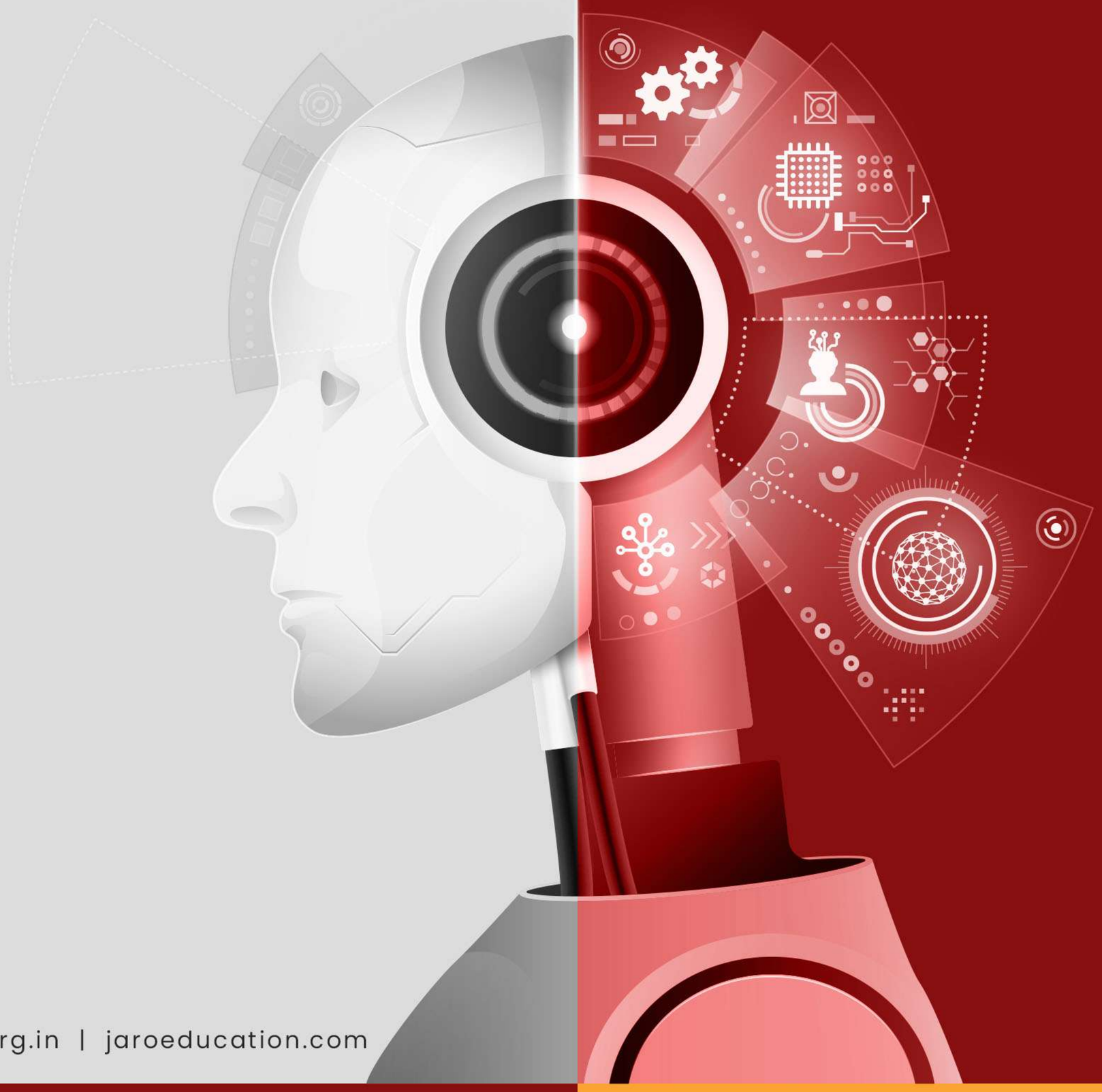
Note:

- Figures do not sum to 100% because respondents could choose multiple answer options. Respondents who selected "Don't know/Not applicable" are not shown.
- GenAI high performers are defined as respondents who reported that at least 11% of their organizations' 2023 EBIT was attributable to Gen AI use. For these respondents, n = 46.
- McKinsey Global Survey on AI; 1,363 participants across all organizational levels, conducted February 22–March 5, 2024.

Key Challenges, Strategic Imperatives, and the Way Forward for Data Science & GenAI Leaders

Strategic Imperatives	Key Challenges	Way Forward
Establish unified data governance	Poor Data Quality & Siloed Systems	Implement enterprise data lakes, lineage tools, and quality benchmarks
Build cross-functional AI teams & upskill workforce	Talent Shortage in AI/GenAI	Launch internal training, hire hybrid profiles (tech + domain), partner with academia
Integrate interpretable & transparent	Lack of Model Explainability	Adopt explainability tools (SHAP, LIME), maintain model documentation
Define ROI-focused AI roadmap	Misalignment with Business Objectives	Prioritize high-impact use cases, align with KPIs, involve business early
Build cost-efficient, scalable MLOps	High Infra & Compute Costs	Leverage cloud-native tools, optimize models, use managed services
Embed AI ethics & compliance by design	Data Privacy & Regulatory Compliance	Enforce role-based access, differential privacy, regular audits

Fast-Evolving Tech Stack	
Stay tech-agnostic & agile	Pilot new frameworks (e.g., RAG, agents), maintain modular architectures
Model Bias & Ethical Risks	
Operationalize Responsible AI	Set up internal AI ethics boards, fairness checks, bias mitigation routines
Scaling from PoC to Production	
Build repeatable deployment pipelines	Standardize CI/CD for models, use feature stores & monitoring tools
Low AI Literacy Among Stakeholders	
Lead AI change management & education	Run workshops, build GenAI sandboxes, enable informed decision-making



Programme Overview

Artificial Intelligence (AI), Deep Learning, and advanced Data Science are rapidly transforming how industries operate, make decisions, and solve complex problems. These technologies are no longer confined to tech-centric roles—they are now central to innovation across sectors such as software development, business analytics, scientific computing, healthcare, finance, and core engineering. As organizations become increasingly data-driven, professionals in managerial and mid-career roles must evolve to meet the demands of this shift.

The Executive Certification in Advanced Data Science & GenAI for Managers is designed to help professionals build a strong foundation in AI while developing hands-on expertise in its practical implementation. Developed by IITM Pravartak, a technology innovation hub of IIT Madras, this programme blends academic depth with industry relevance. It offers a comprehensive curriculum encompassing Python programming, machine learning, deep learning architectures, and generative AI models such as Transformers and GANs.

The pedagogy emphasizes mathematical rigor, computational thinking, and application-focused learning. Through real-world case studies, interactive labs, and faculty-led sessions, participants will gain the skills to design, interpret, and lead AI initiatives across business functions. The hybrid delivery format and weekend sessions ensure flexibility for working professionals, while the campus immersion provides valuable peer learning and faculty interaction.

Whether you are driving digital transformation, managing data science teams, or preparing for leadership in tech-enabled domains, this programme equips you to navigate the evolving AI landscape with confidence and clarity.

Programme Highlights

Highly recognized Certificate of Completion from IITM Pravartak

3 Immersive Learning Modules (2 Days Each)*

10+ Industry-specified Case Studies

Peer-to-peer learning and mentoring from industry experts

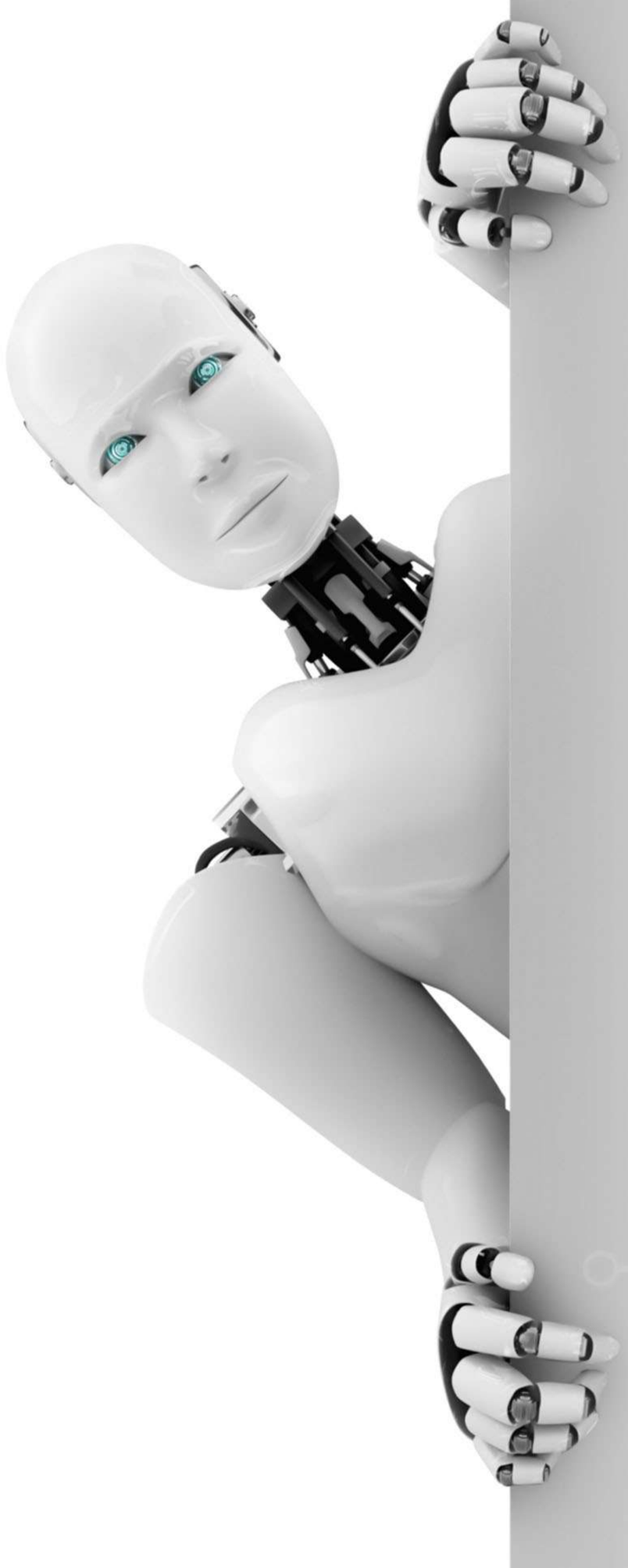
Live sessions led by IIT Madras faculty

Hands-On Learning: Projects, Cases & Applications

Note:

- Participants will have to manage their travel and stay on their own.
- IITM Pravatak shall take care of lunch, refreshments, logistics of arranging the lectures, interactions, and WiFi network.
- Participants who are unable to make it for campus immersion can join the class online.

Learning Outcomes



Achieve proficiency in understanding and utilization of the models behind applications like ChatGPT.

Attain proficiency in Python and its pivotal libraries, including NumPy, Pandas, and Matplotlib, to solidify your technical toolkit.

Secure foundational knowledge in leading Machine Learning frameworks such as scikit-learn, Pytorch, and TensorFlow.

Cultivate understanding of the latest paradigms shaping the Artificial Intelligence and Deep Learning landscapes.

Engineer and execute deep neural networks tailored for robust regression analyses, enhancing predictive accuracy.

Forge advanced models specialized in Image Processing and Computer Vision, pushing the boundaries of visual computing.

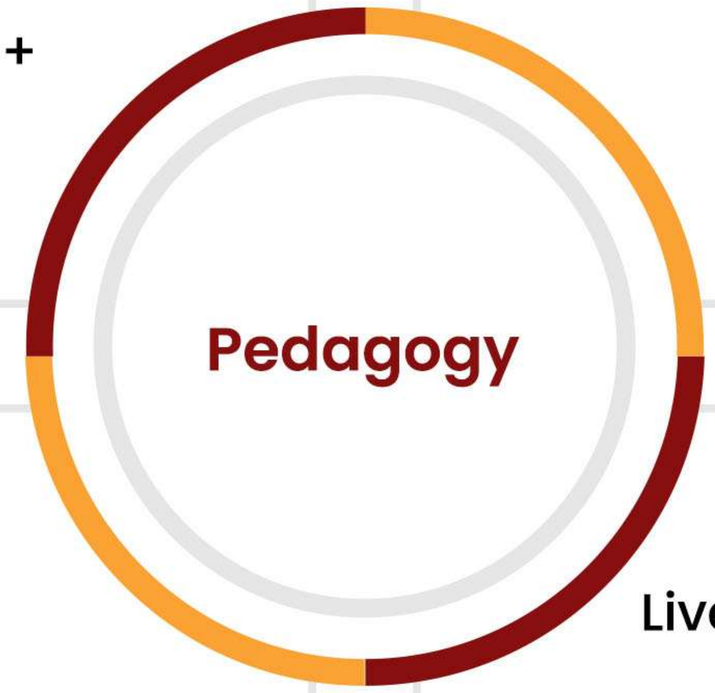
Hone predictive acumen through sophisticated time series analysis methods, sharpening your foresight in data trends.

A Programme Built for Real-World Impact

This programme goes beyond theory—it's a deep dive into the practical world of artificial intelligence and machine learning. Every module is designed to empower learners with the tools, frameworks, and thinking needed to lead AI-driven innovation.

Key Learning Features

- **Hands-On Learning:** Sessions seamlessly integrate theoretical concepts with coding demonstrations and implementation practices.
- **Fluency Through Practice:** Regular proficiency assessments ensure participants internalize key concepts and technical vocabulary with confidence.
- **Case-Based Integration:** Multiple high-impact case studies provide a realistic environment to apply both analytical thinking and coding skills.
- **Capstone Immersion:** The experience culminates with an on-campus capstone presentation, where participants demonstrate end-to-end AI application in front of faculty and peers.



Capstone Project

Apply AI/ML techniques in a final project

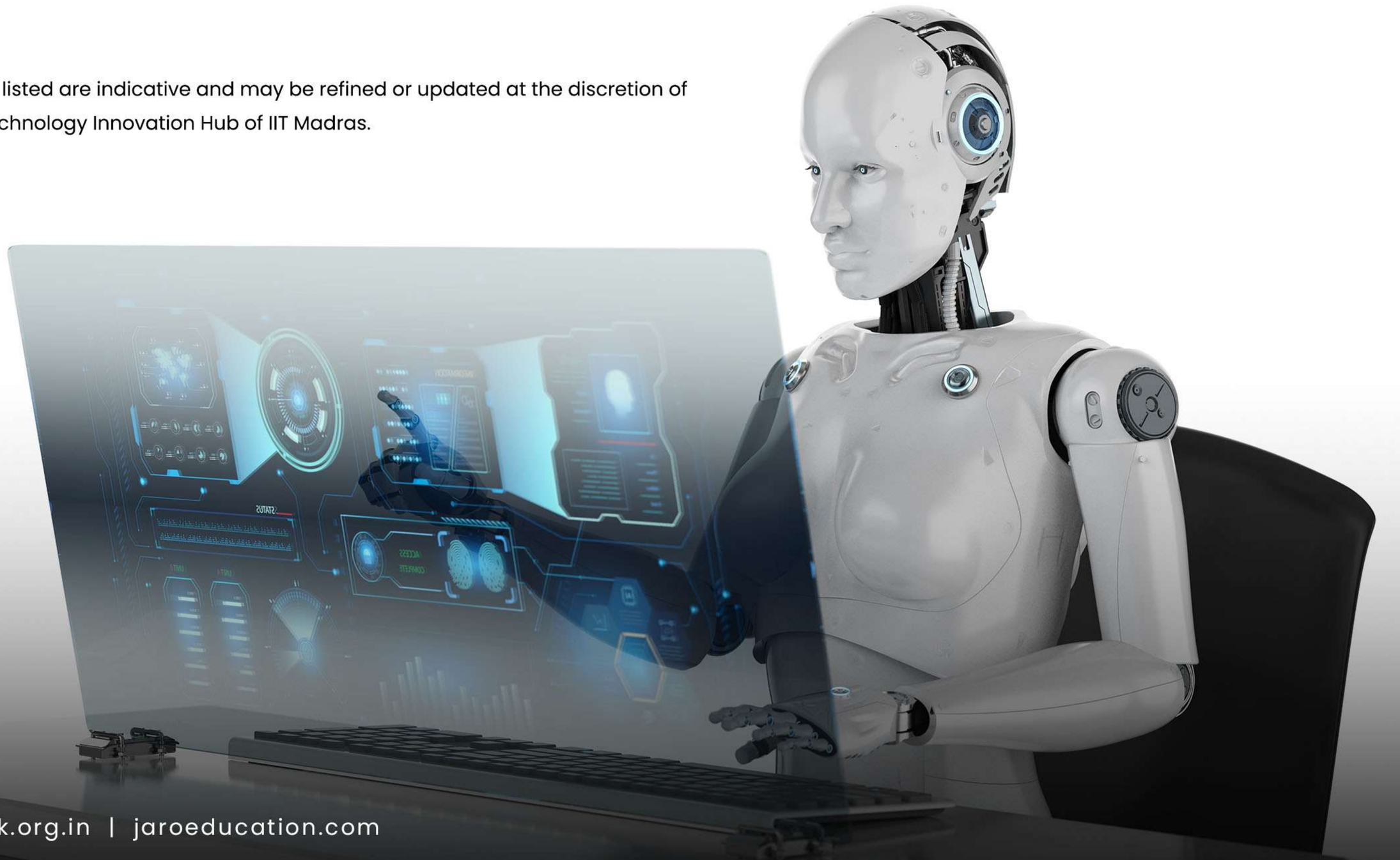
Present on-campus to IITM faculty

Case Studies: Real-World, Research-Informed, Impact-Oriented

Experience AI through real-world challenges across diverse domains. These case studies are designed to simulate industry-grade problems and build holistic capabilities.

Case Study	Focus Area
Predicting House Prices	Supervised Learning – Regression
Customer Churn Prediction	Supervised Learning – Classification
Handwritten Digit Recognition	Computer Vision – Intro to CNNs
Fashion Product Image Classification	Computer Vision – Advanced CNNs
Movie Review Sentiment Analysis	Natural Language Processing – Intro to RNNs/LSTMs
Stock Price Forecasting	Sequential Modelling – RNNs/LSTMs
Synthetic Handwriting Generation	Generative AI – Intro to GANs
Text Summarization	NLP – Transformer Architectures
Contextual Question Answering	NLP – Transformers & GPT Pipelines
Text-to-Image Generation	Multimodal AI – Diffusion & Transformer Models

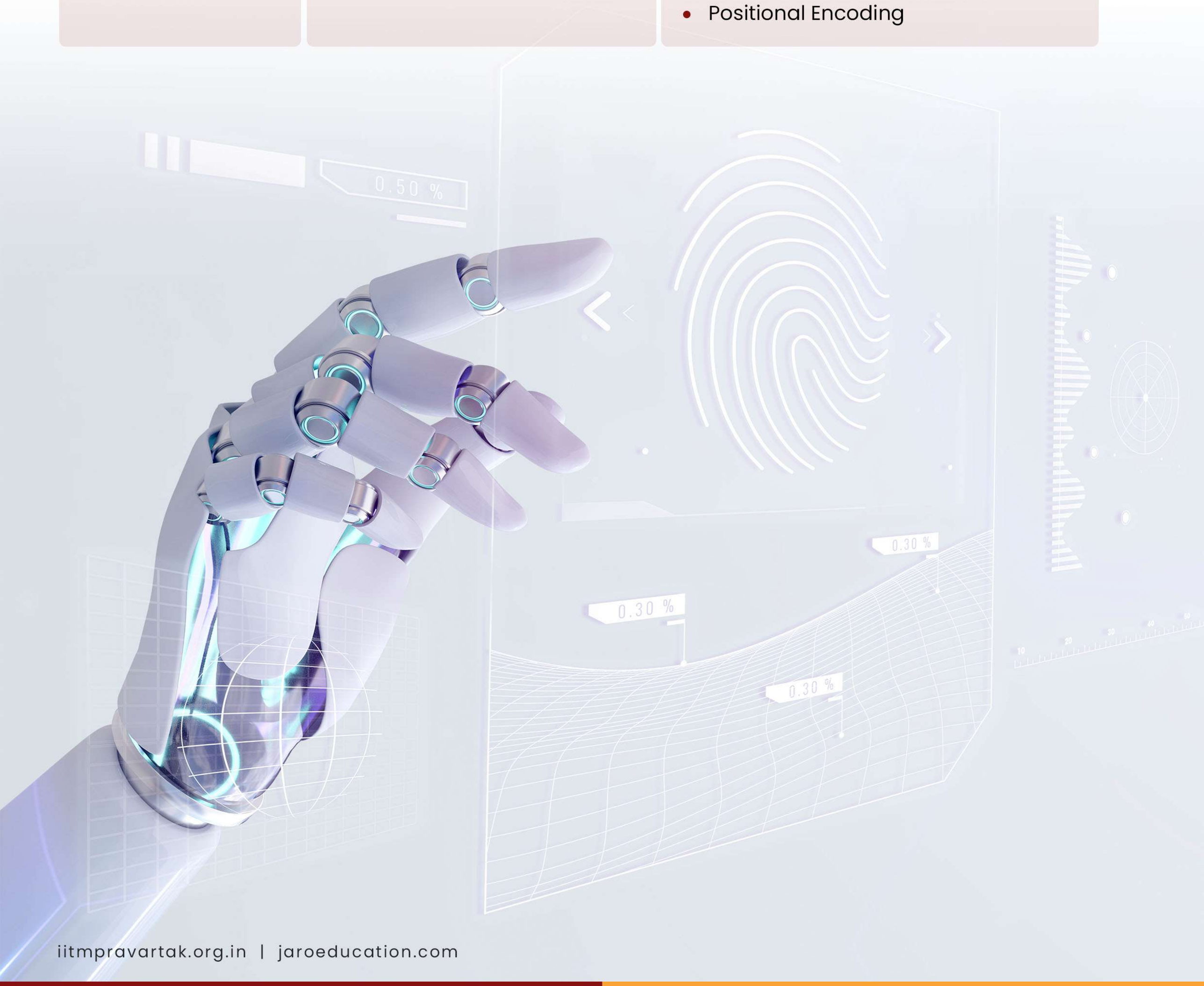
Disclaimer:
The case studies listed are indicative and may be refined or updated at the discretion of IITM Pravartak Technology Innovation Hub of IIT Madras.



Explore the Libraries of Tools, Technologies and Approaches

Category	Subcategory	Tools / Platforms
Tools & Platforms	Programming Language	• Python
	Libraries	• NumPy
		• Pandas
		• Matplotlib
	ML/DL Frameworks	• Scikit-learn
		• PyTorch
		• TensorFlow
	Cloud & Collaboration	• Google Colab
		• Google AI Studio
		• Google Drive
Techniques & Methods	Mathematical Foundations	• Linear Algebra
		• Probability & Statistics
		• Multivariable Calculus
		• Optimization Techniques
	Machine Learning	• Regression & Classification
		• Overfitting & Regularization
		• Model Evaluation Metrics
		• Time Series Forecasting

Techniques & Methods	Deep Learning	• Deep Neural Networks (DNNs)
		• Convolutional Neural Networks (CNNs)
		• Recurrent Neural Networks (RNNs) & LSTMs
	Generative AI	• Generative Adversarial Networks (GANs)
		• Transformers
		• Diffusion Models
	GPT-based Pipelines	• Tokenization
		• Embeddings
		• Positional Encoding



Programme Content

MODULE 1 — Online

- Computational Tools
  - Needs access to Google online platforms during class
    - Google Drive, Colab, Google AI Studio
- Python Programming
- Numpy, Matplotlib, Pandas
- Pytorch essentials
- Proficiency Exam

MODULE 2 — On Campus

- Mathematical Preliminaries
- Linear Algebra
- Probability
- Multivariable Calculus and Optimization
- Proficiency Exam

MODULE 3 — Online

- Machine Learning – Essentials
- Basic Regression
- Basic Classification
- Overfitting and Regularization
- Evaluation Metrics
- Proficiency Exam + Case Studies for submission

MODULE 4 — Online + On Campus

- Deep Learning AI Algorithms
- Deep Neural Networks – Basic architecture and backprop
- AI for Vision – Convolutional Neural Networks
- AI for sequence prediction – Recurrent Neural Networks
- Proficiency Exam + Case Studies for submission

MODULE 5 — Online + On Campus

- Generative AI
- Approaches to Gen-AI: GANs, Transformers, Diffusion
- Transformer Architecture – Various approaches
- GPT pipeline – Tokenization, embeddings, position-encoding, etc.
- Capstone Project (presentations on campus)
- Certificate presentation

Disclaimer:
The listed modules are indicative and may be refined or updated at the discretion of the IITM Pravartak Technology Innovation Hub of IIT Madras.

Programme Details

• Duration	10 Months | 100 Hours of Learning
• Mode of Engagement	Hybrid Mode
• Session Timings	Sunday, 1:00 pm to 4:00 pm

Application Last Date	|	Closing Soon
Technical Orientation Date	|	11th October 2025
Commencement Date	|	12th October 2025

On-Campus Module

Venue: Research Park, IIT Madras.

Duration: Three immersions, each spanning 2 days

- The first immersion will be held approximately 5 weeks after the commencement of classes.
- The second immersion will take place around 5 weeks after the first.
- The final immersion, marking the culmination of the program, is expected to be scheduled approximately 4 weeks after the second immersion.

Disclaimer:
Participants are expected to make their own travel arrangements. While the Institute will assist in identifying suitable lodging and boarding facilities, all associated expenses shall be borne by the participants.

Programme Fee Details

FEE STRUCTURE

Application Fee - INR 2,000/- + GST

Programme Fee
(Exclusive of Application Fee)

INR 1,80,000/- + GST

Instalment Pattern

Instalment 1: INR 80,000/- + GST
As mentioned in offer letter (latest by 5th October 2025)

Instalment 2: INR 50,000/- + GST
10th December 2025

Instalment 3: INR 50,000/- + GST
10th February 2026

EMI Options are Available.

Who Should Attend?

- **Mid to senior professionals** from IT, software development, engineering R&D, finance, and business analytics seeking to lead AI-driven initiatives within their domains.
- **Managers and decision-makers** aiming to interface effectively with technical teams and apply AI, data science, and deep learning in real-world business contexts.
- **Professionals transitioning into AI and data-driven roles,** looking to upskill with a robust foundation in modern AI techniques, tools, and real-world applications.
- **Leaders across sectors** eager to understand the capabilities, limitations, and strategic potential of GenAI and data science to drive innovation and efficiency.

Eligibility Criteria

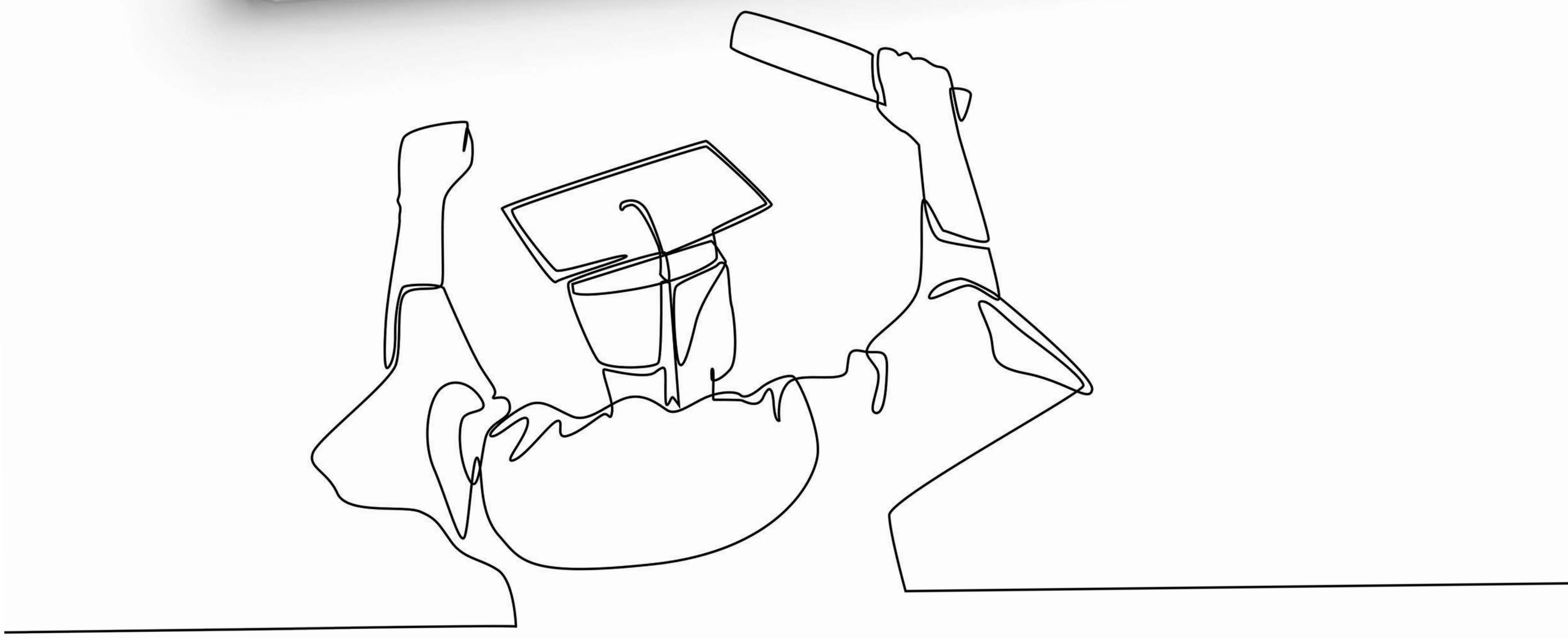
- **Qualification:** Graduate/4-year Engineering Degree/B.Sc./M.Sc. from a recognized university (UGC/AICTE/DEC/AIU/State Government/recognized international universities)
- **Minimum Experience:** 3 years, preferably in software engineering and/or other disciplines involving computational work. Comfort with basic mathematics is expected.
- **Preferred Industry Background:** IT, Software, Engineering Research, Business Analytics, Finance, etc.

Assessment and Certification Criteria

- Participants will be awarded a **Completion Certificate** upon fulfilling the following requirements:
  - Present the capstone project, achieving a score above 50%.
  - Attempt at least three proficiency exams and attain an average score exceeding 40%.
  - Submit a minimum of three case studies.
  - Attend at least one in-person immersion session and one online immersion session.
  - Maintain a minimum of 70% class attendance.
- **Participants who meet the following minimum criteria will be eligible for a Participation Certificate:**
  - Submit the capstone project.
  - Attempt at least two proficiency exams and attain an average score exceeding 30%.
  - Submit at least one case study.
  - Attend at least one online immersion session.
  - Maintain a minimum of 50% class attendance.

Programme Certification

- Participants who successfully meet the evaluation criteria and satisfy the requisite attendance criteria will be awarded a **'Certification of Completion'.**



Course Faculty

PROF. GANAPATHY KRISHNAMURTHI

Prof. Ganapathy Krishnamurthi is a faculty member in the Department of Engineering Design and an associate faculty at the Robert Bosch Center for Data Science and Artificial Intelligence at IIT Madras. He holds a Ph.D. from Purdue University and an M.Sc. in Physics from IIT Madras. He has also worked as a post-doctoral research fellow at Case Western Reserve University and the Mayo Clinic in the USA.

Prof. Krishnamurthi's research lies at the intersection of Machine Learning, Artificial Intelligence, and medical image analysis. His work focuses on computer vision, explainability and interpretability of deep learning models, and solving inverse problems in medical imaging and computer vision using deep learning techniques.

His current research extends to deep learning for time series data across business, engineering, and imaging applications. He has published extensively in areas related to Deep Learning, Machine Learning, and their applications in science, engineering, and technology.

About IITM Pravartak

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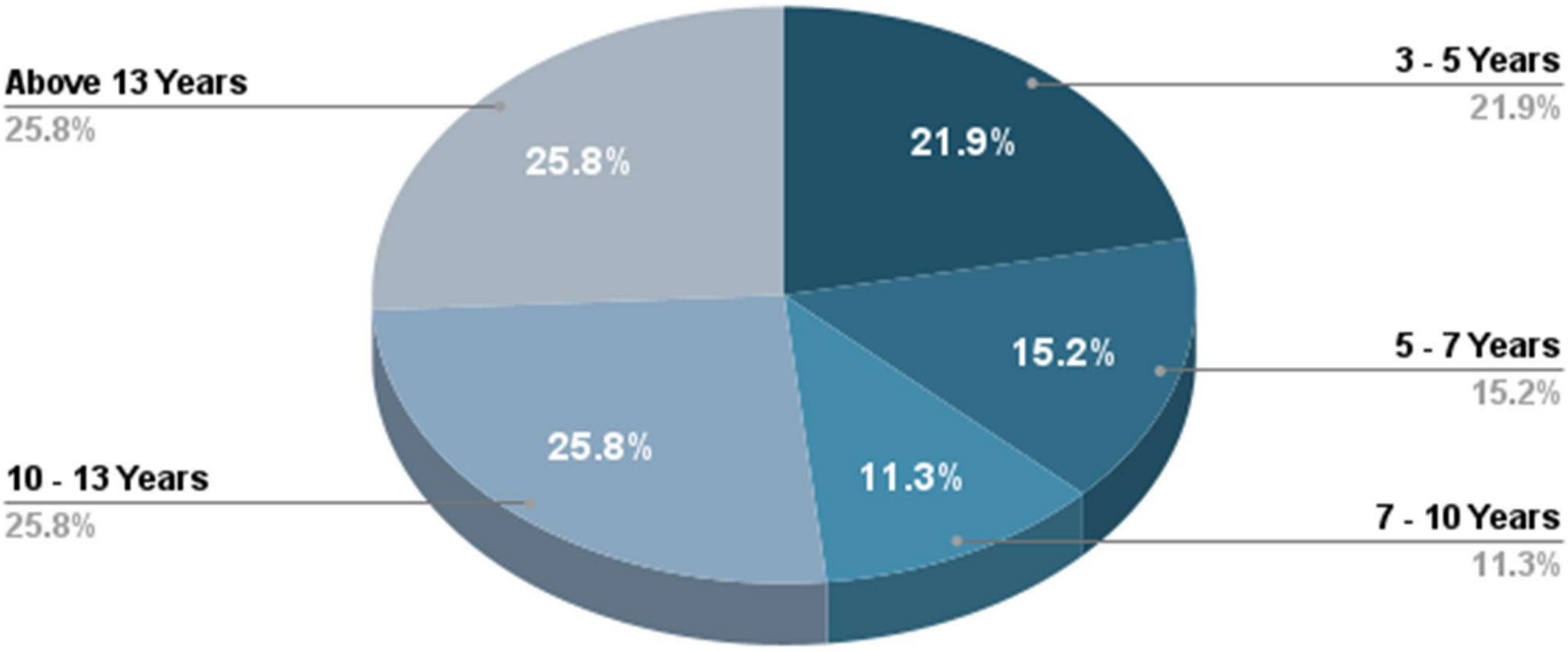
IITM Pravartak Technologies Foundation is a Section 8 company and the Technology Innovation Hub for Sensors, Networking, Actuators, and Control Systems (SNACS). Funded by the Department of Science and Technology, Government of India, under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), it is hosted at IIT Madras.

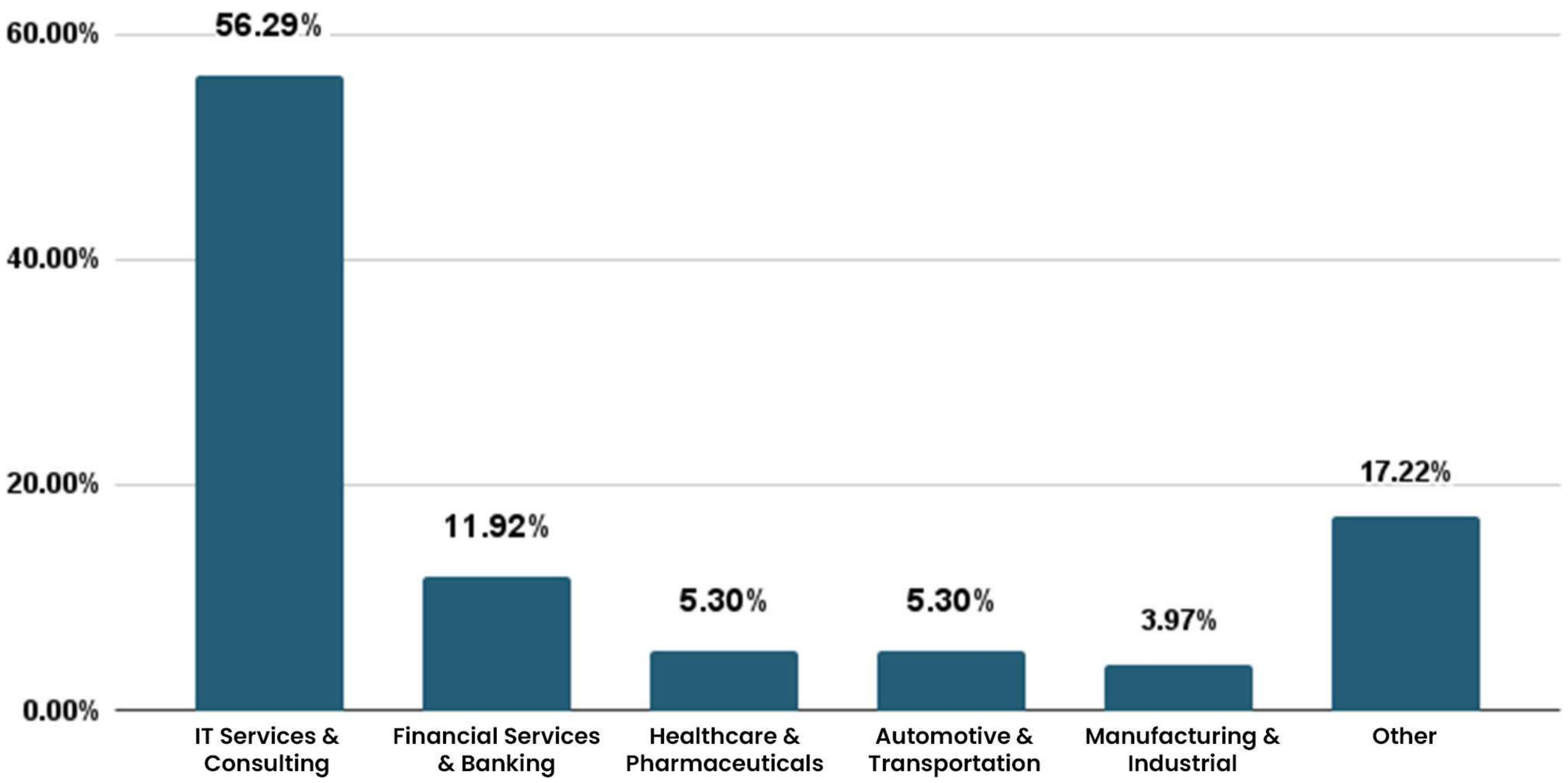
IITM Pravartak focuses on advancing knowledge and application-driven research in the SNACS domain. It is committed to preparing young India for the next generation of world-class technologies. The NM-ICPS initiative fosters collaboration across academia, industry, government, and international organizations to drive technological innovation and convergence.

Recent Batch Analysis

Work Experience



Industry Wise Bifurcation



Recent Batch Analysis

Top Companies Where Our Participants Are Working:

Top Profiles of Our Alumni:

Vice President	Sr. Business Analyst
Senior Director	Sr. Data Engineer
Senior Manager	Senior Software Engineer
Senior Technical Lead	Application Development Analyst

NOTE:

- Past performance records do not guarantee any future opportunities.
- All company names are trademarks or registered trademarks of their respective holders. Use of them does not imply any affiliation with or endorsement by them.
- The list is partial.

Hear from our Alumni

MOHAMMED SHAHID S.

Associate Data Scientist – Cognizant

"The Executive Certification in Advanced Data Science & Applications programme offered by the IIT Madras Pravartak has helped me enhance my skills and become an expert in the field of Data with prior work experience. The faculty's teaching methods are innovative and provide a practical and all-around understanding of concepts. The three specific features of this programme that have made a true difference to my career are the extensive curriculum, excellent faculties with unique learning pedagogy, and an association with esteemed institutes like IIT Madras. The support provided by the team Jaro Education is exceptional right from onboarding to lecture scheduling till completion of the course, the coordinators were always available to solve queries. Overall, this course is a great way to upskill and advance in the field of Data Science."

HARISUDHAN

Deputy QA Manager

"I enrolled in the Executive Certification Programme in Advanced Data Science & Applications offered by IITM Madras, motivated by its industry-relevant syllabus and course structure. With 8 years of experience as a Quality Assurance professional, I found this programme to align perfectly with my career aspirations. The programme, along with the support from Jaro, elevated my learning experience and equipped me with the necessary skills and perspectives to succeed. While anyone who is into data science or from the tech side can consider this programme for its comprehensive curriculum, live simulation projects, and unparalleled support and guidance from the esteemed IIT faculty and team Jaro Education."

Hear from our Alumni

SAGAYA RAJ G.

Manager – BNP Paribas

"I enrolled in the Executive Certification Programme in Advanced Data Science & Applications offered by IITM Madras. As a Business Manager at BNP Paribas with 11 years of overall experience, I wanted to further grow in my career. The programme has been exceptional, with excellent faculty and a focus on learning Python, which is directly applicable to my current job. Overall, my experience with Jaro has been great, with good support right from onboarding to course completion. While I'd recommend this programme to all future aspirants looking to advance their career in the field of Data science as the programme rightly ticks all the boxes."

BALACHANDRAN NATARAJAN

Lead Software Engineer – Northern Trust

"With over 12 years of experience in the IT industry, specializing in data migration and integration with ETL as the primary technology, I wanted to enhance my skills in the latest technology. The institute has provided excellent coordination, knowledgeable faculty, and a comprehensive course covering AI, ML models, and Python coding, which have been invaluable. Currently pursuing the course, I expect it to benefit my career as a data analyst. Jaro Education's consistent student support is commendable. I highly recommend this course for learning advanced data science concepts, whether for current roles or new career opportunities."

About Jaro Education

3,50,000+
Career Transformed

120+
Programs from Diverse Domains

30+
World's Leading Academic Partners

23+
Learning Centres across India, USA & Singapore

18+
Top NIRF Ranked Indian Institutes & Universities

10+
Top QS Ranked Global Institutes & Universities

e-India Awards
The Best ICT Enabled Higher Education Institute Award

Educational Excellence Awards
Most Innovation & Successful online MBA Program in India

MODI Awards
Outstanding Contribution in Online Education

ABP Education Awards
Best Digital Learning Innovation Award

World HRD Congress
National Best Employer Accolade

World HRD Congress
Edtech Leadership Awards

Outlook Business Icon Awards 2023
India's Most Trusted Online Higher Education Company

Jaro Education is an edtech pioneer and online higher education company that specializes in executive education, serving as a liaison between the world's leading universities and institutes to create online and technology-driven programmes. The company provides a quality bucket of online executive education programs catering to domains such as Doctorate & Ph.D, Analytics & Data Science, Management, Finance, etc., from renowned national and international institutions to meet the needs of working professionals. Our goal is to foster the growth of entrepreneurs and professionals at all levels, from entry-level to C-Suite, through world-class executive education programmes.

Career Assistance by Jaro Education

- **Resume Building**
  We create ATS-friendly resumes that highlight your skills and achievements.
- **Linkedin Optimization**
  Enhance visibility and connect with the industry leaders.
- **Career Sessions**
  Jaro Connect offers expert-led bootcamps on industry trends.

Note: IITM Pravartak and Jaro Education do not guarantee employment or career advancement; career services are provided solely by Jaro Education as guidance to help you manage your career proactively.

Connect With Us, Right Now!

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APPLY NOW!

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