IIT ROORKEE
Continuing Education Centre

6 nirf
Ranked in India for Engineering (NIRF 2025)

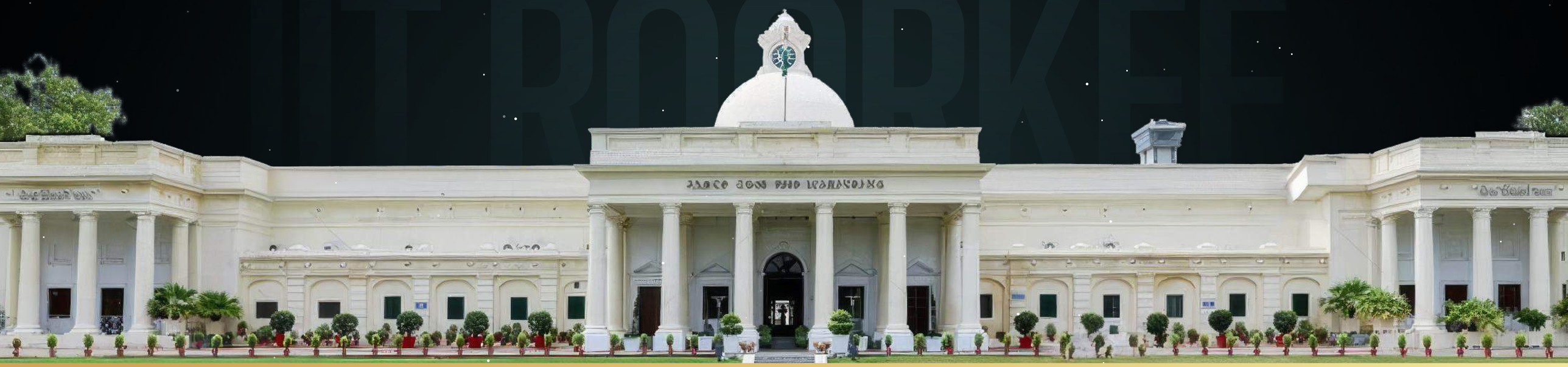
Industry, Admissions and Hospitality Partner
Futurense

PG Certificate Program in

FORWARD DEPLOYED AI ENGINEERING

The Hottest Job Role Top AI Companies are Hiring for in 2026

- IIT Roorkee Faculty + Industry Practitioners
- Learn the skills employers look for in FDEs
- 15+ GenAI and LLM-based tools and platforms
- 10+ prompt libraries and GenAI frameworks



12 Weeks • ~54 Hours • Weekend Live Online • Optional Campus Immersion

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About IIT Roorkee

The Indian Institute of Technology Roorkee (IIT Roorkee) was established in 1847, making it **One of the Oldest Technical Institutions in India**. Originally known as Thomason College of Civil Engineering, it became an IIT in 2001. IIT Roorkee is renowned for its well known for its technological education, research, and innovation, contributing significantly to the advancement of engineering and technology in **India and Globally**.

Spread across a sprawling **365-acre Campus**, IIT Roorkee is equipped with **Advanced Facilities** for both academic and research activities. The institute offers a **Multidisciplinary Approach to Education**, with academic programs organized through various departments and cutting-edge research conducted through Specialized Centers of Excellence. IIT Roorkee has consistently been at the forefront of technological development and has played a vital role in addressing societal challenges through research and innovation.

IIT Roorkee has been proactively offering Executive Education Programs Aimed at Working Professionals. These programs are designed to cater to the dynamic demands of the industry, providing participants with the skills and knowledge required to succeed in their careers. Leveraging its strong academic expertise and collaborations with Industry Leaders, IIT Roorkee offers a wide array of **High-Quality Programs, Combining Theoretical Knowledge with Practical Insights**.



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Continuing Education Centre (CEC)

Message from Coordinator

Prof. Kaushik Ghosh is a Distinguished Academician and a **Leading Researcher in Bioinorganic and Organometallic Chemistry.** As the Coordinator of the Continuing Education Centre (CEC) at IIT Roorkee and a Professor (HAG) in the **Department of Chemistry** and Joint Faculty in the **Department of Bio Sciences and Bio Engineering** at IIT Roorkee, he has been at the forefront of interdisciplinary research, **Bridging Fundamental Science with Real-world Applications**.

With expertise in **Bioinorganic Chemistry, Catalysis, and Metal Complexes in Protein Aggregation**, Prof. Ghosh has **Authored Over 130 Research Papers**, contributed to several book chapters, and **Secured Multiple Research Grants**. He is a **Fellow of the Royal Society of Chemistry (FRSC)** and his contributions have been recognized with prestigious accolades, including the **DST-SERC Fast Track Award for Young Scientists and the ICMR International Fellowship**.

The gap between AI demos and production deployment is where most organizations fail. This program exists to close that gap-not by teaching you to code, but by teaching you to think, evaluate, and lead AI initiatives that actually ship.

At IIT Roorkee, we've trained thousands of engineers. But the industry now needs a different skillset: professionals who can bridge technical possibility with business reality. Forward Deployed Engineers don't just understand AI-they deploy it.

PROF. KAUSHIK GHOSH

Coordinator, Center for Continuing Education, IIT Roorkee



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Who is a Forward Deployed AI Engineer?

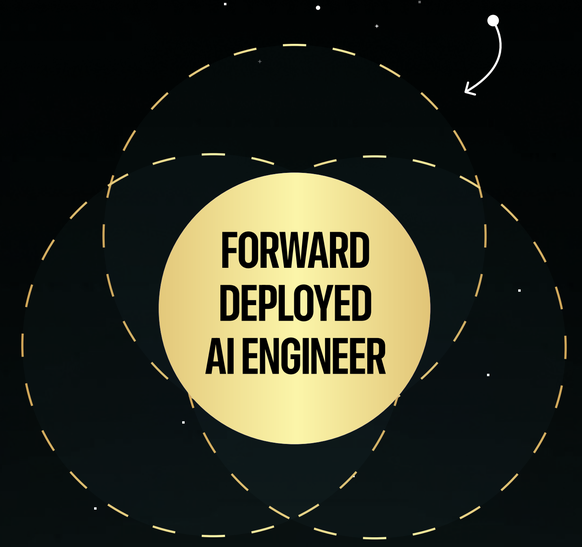
FDE is a client-facing AI engineer and horizontalist who works with customers directly to solve high-stakes, complex AI projects on the front lines and implement curated solutions with ROI.

Platform Engineer

Identify what should exist vs. what shouldn't

Software Engineer

Build production-grade code



Solutions Architect

Translate business needs into technical solutions

The FDE Sits at the Intersection of 3 Disciplines

"You'll be at the intersection of world-changing problems and impactful technology, shaping solutions where they matter most."

~ Palantir FDE Job Description

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Why FDE is in Demand?

As companies realize generic AI solutions fail in enterprise environments, they need FDEs to bridge the gap between potential and reality.

How FDE has Evolved

2003 — Palantir formalizes FDEs (FDSE / "Deltas")

2019-21 — Cloud platforms operationalize FDEs for production AI

2024 — 90%+ AI pilots fail at the last mile

2025 — FDEs become core to enterprise AI go-to-market

2026 — 800%+ spike in job postings globally.

The Rise of Forward Deployed Engineers in Applied AI

There's a quiet shift underway inside applied AI teams. As companies move past demo culture and start wiring AI agents into real business processes, a different kind of role is rising to prominence—part engineer, part field operator, part architect, part empath. For years, the function of a forward-deployed engineer (FDE) existed in different forms, useful mostly in tough government or industrial environments. But as AI agents begin speaking to customers, handling decisions and shaping frontline workflows, the need for engineers who understand the world outside the codebase has exploded. Now, across AI companies, this once-niche model is making a strong

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THE ECONOMIC TIMES | Prime

As Indian IT chases the hottest AI role, cost becomes a question.

The hottest job in AI right now isn't prompt engineer, model wrangler or some exotic "AI whisperer". It's the decidedly rather boring-sounding forward-deployed engineer (FDE) — a role venture firm a16z calls the most in-demand gig in artificial intelligence. Think of it as a software engineer who splits time between customer floors and core engineering rooms. Born at Palantir, now reborn in the GenAI

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What Skills Does an FDE Require?

What makes an FDE unique: **The Intersection of Technical Depth and Client-facing Acumen.**

FDEs are revenue multipliers. They're closest to the customer, hardest to automate, and most valuable in any downturn.

THE FDE INTERSECTION

Bridging the Gap, Delivering Solutions

Technical Depth

- aws
- python
- TensorFlow
- docker
- C++
- JS
- kubernetes
- Java
- SQL
- TS
- Azure
- PyTorch

Client-facing Acumen

- Customer Empathy
- Business Acumen
- Communication Clarity
- Comfort with Ambiguity
- Founder-like ownership

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Eligible Job Roles and Salary Ranges

Forward Deployed Engineer

₹18 - 32 LPA India Salary • **₹1.1 - 1.7 CR** Global Salary

Senior Forward Deployed Engineer

₹32 - 58 LPA India Salary • **₹1.7 - 2.7 CR** Global Salary

Forward Deployed AI Architect

₹48 - 78 LPA India Salary • **₹2.3 - 3.8 CR** Global Salary

Principal Forward Deployed Engineer

₹65 - 110 LPA India Salary • **₹2.9 - 4.6 CR** Global Salary

Forward Deployed Engineering Lead

₹85 - 140 LPA India Salary • **₹3.8 - 5.9 CR** Global Salary

Staff Forward Deployed Engineer

₹95 - 160 LPA India Salary • **₹4.2 - 6.7 CR** Global Salary



70% of GCCs in India are already investing in GenAI

75% aim to embed AI in daily operations within the year

The FDE revolution started in the US. We're bringing it to India. The demand is there; the deployment talent isn't. This is the gap FDEs fill. It's your chance to be a first-mover in this booming field.

Sources: LinkedIn and Naukrti Data, Dec 2025, TeamLease Digital FY25-26, NLB Services 2025



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Become The Engineer Who Makes AI Work Inside Client Stacks

Why This Program

- No structured academic program for FDEs exists anywhere-until now
- **800%+** job growth expected by 2026, with India still in the early adoption phase
- Complex AI products need human intervention
- **10×** your value by combining technical skills with business understanding



What You Get (For The First Time)

Dual-Track Architecture (Tech + Consulting)

Master both code and communication

RFP-Based Projects & Scenarios

Solve problems the way FDEs do in the field

Progressive Learning (No-Code → Low-Code → Full Code)

Build intuition first, then depth

Agile Sprint Simulations

What takes others 4-8 weeks, you'll learn to do in days

IIT Roorkee PG Certificate

Bona-fide certificate from CEC IIT Roorkee that you can put in your resume and LinkedIn

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Where this Program fits in your Learning Journey?

The FDE-readiness Stack

After this Program

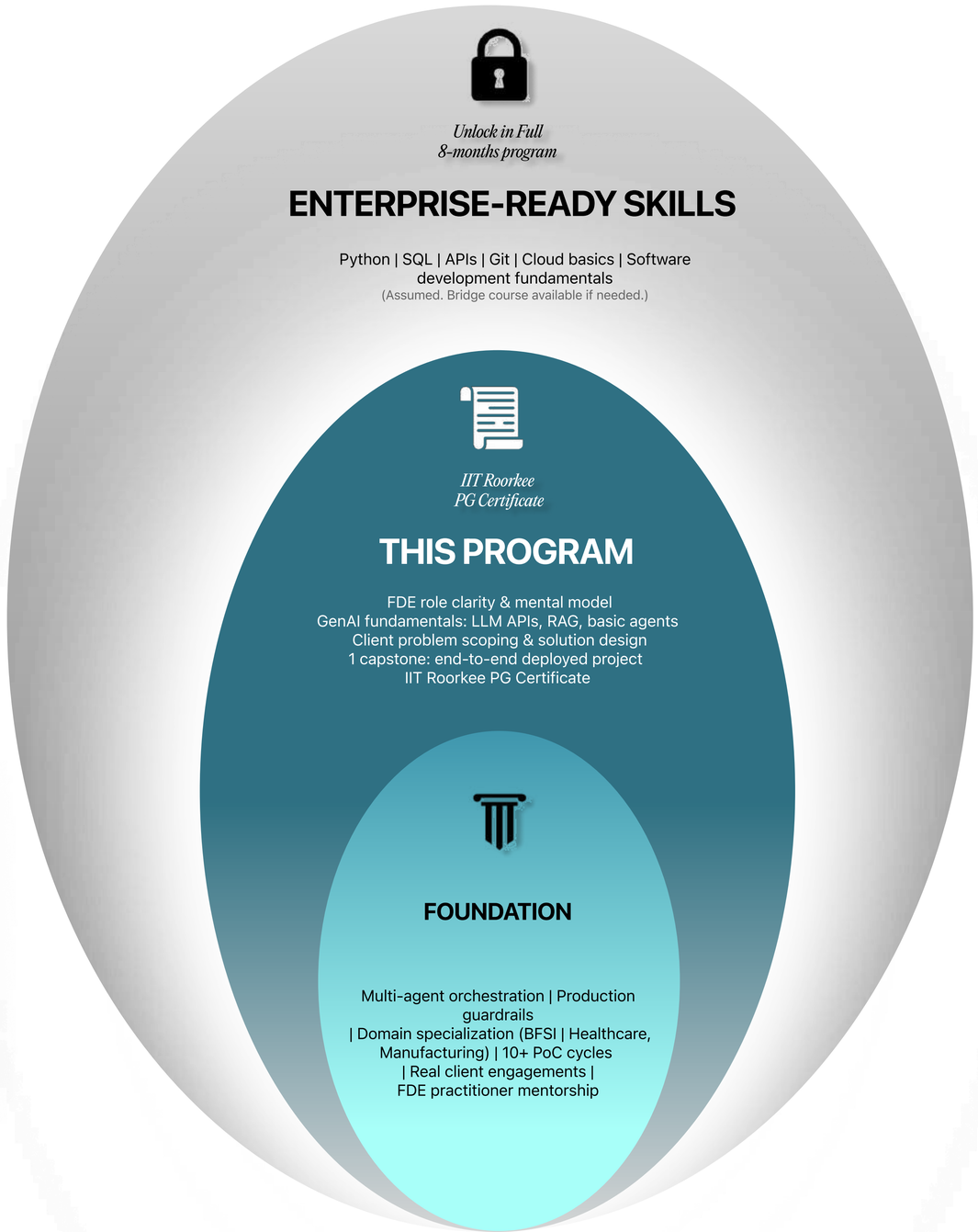
You understand the FDE role, can build GenAI applications, and have one solid project to show.

To be Deployment-Ready

You'll need more domain exposure, advanced architectures, and time spent alongside working FDEs.

This program is your entry point into the FDE world. Building enterprise-ready depth takes additional time, rigor, and real-world immersion.

Talk to us about what comes next.



Who Is This For?

Experience Level	Fresh Graduates, Entry - level (0-3 yrs), Mid- Level (3-8 yrs)
Why FDE is For You	New Role = Less Competition, Higher salary potential, Shorter, affordable program, First-mover advantage
Current Roles	Engineers, Developers, QA, PMs, Analysts, Consultants, Tech Leads, Architects

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What You Will Learn

A **12-week** intensive journey from AI fundamentals to deployment mastery

Phase	Learn	Apply	Skills Unlocked
01 W1-4	**AI Limitations & Agentic AI** AI vs GenAI, Data Pipelines, Transformers, LLM Basics	• Analyze how Palantir, OpenAI deploy AI in defense & enterprise • Map PoV→PoC→MVP strategies • Position yourself vs ML Engineers in job market	• AI Literacy • Data Fluency • Technical Communication
02 W5-7	**GenAI & RAG Foundations** Prompt Engineering, RAG Systems, Grounding & Retrieval	• Debug Prompts • Design RAG Architectures • Validate Grounding Quality	• Prompt Mastery • RAG Design • Hallucination Control
03 W8-10	**AI Limitations & Agentic AI** Adversarial Testing, LLMOps, Multi-Agent Orchestration	• Red-team AI Systems • Make Infra Decisions • Evaluate Vendor Agent Claims	• Risk Assessment • Ops Thinking • Agent Architecture
04 W11-12	**Strategy & Portfolio** Systems Thinking, Ethics, Case Labs, Documentation	• Create AI Roadmaps • Score Risks • Build Industry-ready Portfolio Artefacts	• Strategic Thinking • Governance • Portfolio Readiness

Weekly Commitment

5-6 Hours
Live Sessions (Weekends)

2-3 Hours
Self-Study Materials

2-3 Hours
· Build & Practice

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Detailed Curriculum

Phase 1: Enterprise AI Foundations

Weeks 1-4, ~21 Hours

Module	Key Topics	You Will Do
AI for Enterprises	▪ AI vs GenAI vs Agentic AI ▪ Use cases ▪ Adoption realities	▪ Analyze FDE case studies (Vannevar Labs, Palantir, Salesforce) ▪ Map deployment patterns (PoV→PoC→MVP) ▪ Identify FDE vs ML Engineer differences
Data Science for Managers	▪ Pipelines ▪ Data quality ▪ Metrics ▪ Visualization	▪ Master SQL skills that take bootcamp grads 6 months in 3 weeks. ▪ Build production data pipelines with Airflow (used by Airbnb, Netflix). ▪ Create data quality systems that prevent $M mistakes.
DL/NLP Foundations	▪ Embeddings ▪ Sequence models ▪ Transformers	▪ Build AI models from scratch, then fine-tune billion-parameter models (GPT, Llama) using LoRA ▪ The technique that lets startups compete with OpenAI on consumer GPUs
GenAI Foundations	▪ LLM vs ML ▪ Prompting basics ▪ Cross-functional workflows	▪ Master the same prompting techniques Anthropic's engineers use internally (CoT, ReAct, Constitutional AI). ▪ Build prompt libraries worth $50K+ to consultancies.

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Phase 2: GenAI & RAG Foundations

Weeks 5-7, ~21 Hours

Module	Key Topics	You Will Do
Prompt Engineering	▪ Role-task-context framework ▪ Chain-of-thought	▪ Build 20+ production prompts that pass enterprise security review. ▪ Master techniques from DeepMind (self-consistency) and OpenAI (ReAct) skills that command $150K+ salaries.
RAG Systems (3 parts)	▪ Embeddings ▪ Chunking ▪ Grounding ▪ Hallucination control ▪ Retrieval patterns	▪ Build the AI search technology powering ChatGPT, Perplexity, and enterprise copilots. ▪ Implement production RAG with LangChain/LlamaIndex go from idea to deployed search in days, not months.

Phase 3: AI Limitations & Agentic Concepts

Weeks 8-10, ~18 Hours

Module	Key Topics	You Will Do
AI Limitations	▪ Bias ▪ Adversarial prompts ▪ Attack/defense patterns	▪ Red-team AI like security researchers at OpenAI do. ▪ Build guardrails that prevent PR disasters and regulatory fines. ▪ The skillset that makes you invaluable when AI goes wrong.
LLMOps Primer	▪ Cloud basics ▪ Latency/cost tradeoffs	▪ Deploy AI to production using the same tools as Uber (MLflow) and Netflix (containerization). ▪ Master serverless deployment that scales to millions without DevOps teams.
Agentic AI	▪ Autonomy vs orchestration ▪ Multi-agent patterns	▪ Build AI agents that replace entire teams (not just tasks) using LangGraph, CrewAI, AutoGen. ▪ The skillset driving the 800%+ job growth in FDE roles because agents need deployers, not just builders.

Phase 4: Applied AI Strategy & Case Labs

Weeks 11-12, ~25 Hours

Module	Key Topics	You Will Do
Systems Thinking for AI	▪ Stakeholder mapping ▪ Org-level system design	▪ Think like McKinsey consultants but execute like engineers. ▪ Map enterprise AI systems, spot failure points before they cost millions, translate C-suite vision into deployable architecture.
Statistical Thinking	▪ Interpreting ML outputs ▪ Model evaluation	▪ Model evaluation interpretation exercise
Ethical AI & Governance	▪ Risk frameworks ▪ Safety policies	▪ Risk-scoring activity for AI deployment
AI Strategy for Functions	▪ Alignment with KPIs ▪ Cross-functional roadmaps	▪ Create AI roadmap for your function
Case Studies	▪ Cross-functional mini-cases from GCCs	▪ Run discovery like Palantir FDEs do. ▪ Build PoV/PoC/MVP strategies that win $500K+ enterprise deals. ▪ Present demos that don't crash and adoption plans that actually get AI used (not shelfware).
25+ Portfolio Artifacts	▪ Documentation ▪ Presentation ▪ Industry standards	▪ Build 25+ artifacts (vs 3-5 in most bootcamps) enough to fill your portfolio for the next 2 years. ▪ GitHub repos that get you interviews at Palantir, Databricks, OpenAI.

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Tools Exposure You Get

LLM Platforms

OpenAI ChatGPT4.0 · Claude · Gemini · Mistral AI

Extended Learning Path:

groq · cohere

RAG & Retrieval

LangChain · LlamaIndex · Chroma · Milvus

Extended Learning Path:

Pinecone · Weaviate · qdrant

Agent Frameworks

n8n · crewai

Extended Learning Path:

Autogen · Flowise · Custom Orchestration

Development & Deployment

python · git · Streamlit

Extended Learning Path:

docker · FastAPI · aws

Evaluation & Ops

Prompt Testing · Basic Evals

Extended Learning Path:

Guardrails AI · W&B · Cost Optimization

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What You Will Build

Category	Deliverables
Strategic Consulting Assets	• FDE Role Analysis (career positioning framework) • System Dependency Maps (enterprise complexity mapping) • Business-to-Tech Translation Frameworks
Production-Ready AI Models	• Trained Models with Performance Reports • CNN Image Classifiers (production-grade) • LoRA Fine-tuned LLMs (7B+ parameters) • Text Classification & RAG Search Systems
Deployment Blueprints	• RAG Architectures (with query rewriting + reranking) • 20+ Enterprise Prompt Templates • Multi-Agent Workflow Designs • Data Quality Frameworks • MLflow Experiment Tracking Systems
Go-to-Market Artifacts	• PoV/PoC/MVP Strategy Documents (enterprise sales-ready) • Demo Presentations (with failure backup plans) • Adoption Plans • Consulting Playbooks • Discovery Interview Frameworks
Data & ML Infrastructure	• Multi-Source ETL Pipelines (Airflow + dbt) • SQL Query Portfolio (50+ optimized queries) • Feature Engineering Pipelines • Operational Dashboards • End-to-End ML APIs (FastAPI + Docker)
Capstone	• End-to-end AI Implementation Plan for real business problem

What You Graduate With

25+
Portfolio Artifacts

20+
Prompt Templates

01
Capstone Project

4+
Case Solutions

25+ Portfolio Artifacts

Ready to showcase in interviews and performance reviews

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Program Coordinator

Prof. Gaurav Dixit is a Joint Faculty at the Mehta Family School of Data Science & AI and Core Faculty of Information Systems at DoMS, IIT Roorkee. His expertise spans Information Systems, Computational Social Science, and AI/ML for decision-making, with publications in top international journals and conferences. He has led multiple government and industry-funded projects and teaches Digital Transformation, AI/Data Science Programming, Artificial Intelligence, and Deep Learning.

Earlier, he worked at Hewlett-Packard (R&D) and Sharda University, bringing valuable industry experience to his teaching and research. He holds a Ph.D. in Information Systems from IIM Indore and a B.Tech. in CSE from IIT (BHU) Varanasi.



Prof. Gaurav Dixit (Ph.D., IIM Indore)

Associate Professor, Department of Management Studies (DoMS), IIT Roorkee

Faculty from IIT Roorkee bring deep academic rigor and research expertise. Industry practitioners from Futurense's network bring real-world deployment experience from Fortune 500 GCCs.

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IIT Roorkee - Campus Immersion

✦ A 2 Days Optional Campus Immersion at IIT Roorkee Provides:

- Expert live masterclass sessions led by esteemed faculty and industry leaders
- Network with peers and leading professionals in the AI and data science fields
- Explore the IIT Roorkee campus, gain access to exclusive labs and workshops, and get project feedback.

Note: A tentative additional fee of approximately ₹10,000 will be applicable, subject to the actual cost incurred. This will be collected separately before the immersion period. Accommodation may be provided either on campus or off campus, depending on the availability of facilities.

*Source of the photographs: IIT Roorkee website, DoMS IIT Roorkee Facebook and Instagram

















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Bridge Course: Your Head Start

Before the main program begins, every learner goes through a structured Bridge Course designed to level the playing field across backgrounds. This foundation ensures you start the FDE program ready to **Learn, Build, and Apply**.

2 Weeks. Self-paced. Starts the day you enroll.

Where you are now



What You'll Learn

AI Fundamentals

- How LLMs work (no code)
- Prompt basics
- AI capabilities vs limitations

Business Context

- Enterprise AI landscape
- Industry use-case overview
- Reading AI vendor claims

Tool Setup

- ChatGPT/Claude accounts
- Notion workspace
- Your toolkit, ready to go

Complete this before the program starts. Self-paced, accessible immediately upon enrollment.

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Futurense AI Clinic

Where Classroom Learning Meets Real-World Execution

The Futurense AI Clinic is a unique initiative that enables learners to immerse themselves and gain hands-on experience with AI-driven systems and tools. This approach is similar to how medical professionals develop real-world skills while working in a hospital or clinic.

What Happens Inside the AI Clinic?

Live Enterprise Projects

Work on real business challenges sourced from Futurense's industry network

AI Workflow Design

Learn to design, automate, and optimize AI-first business systems

Tool Mastery

Get hands-on with 30+ leading AI tools, from ChatGPT to LangChain

Guided Mentorship

Receive 1-on-1 feedback from industry mentors on your project's AI strategy and implementation



Your AI Clinic projects 2X your career portfolio

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Eligibility Criteria

Requirements

- **Bachelor's degree (minimum 3 years)** in Computer Science, IT, Engineering, Mathematics, or a related technical discipline OR MCA / M.Sc / M.Tech / MBA with exposure to technology, analytics, or systems. BCA candidates are also eligible.
- Minimum **50% marks or equivalent** CGPA in graduation.
- **Preferred Minimum 1–2 years of Experience in any of the following or similar areas:**
  - Data Science
  - AI Developer / Software Developer
  - Data Engineering
  - Business intelligence / functional analysts, junior data analysts
- Successful clearance of the pre-screen exam

Who Gets In?

This program is for those who are hungry to learn, ambitious about the FDE role, and ready to build deployment skills.

IDEAL FOR

- Fresh grads seeking high-growth career path
- Entry-level engineers wanting AI deployment skills
- Mid-level professionals pivoting to FDE role
- Those attracted by less competition, higher salary

REQUIREMENTS:

- Python fundamentals (required)
- Strong analytical thinking
- Excellent comprehension and team player skills

Open to: Fresh Graduates | Entry-Level (0-3 yrs) | Mid-Level (3-8 yrs)

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Application Process & Fees

Fee Structure

Program Fee	**₹45,000**
GST (18%)	Applicable on Program Fees
Registration Fee	**₹5,000***

*Non-refundable, adjusted in final fee

EMI options available through partner NBFCs

Admission Process

1. Apply online with basic details
2. Complete pre-screening assessment
3. Receive offer letter
4. Pay fee & begin Futurense Bridge Course

A non-refundable initial deposit of **INR 5,000/-** towards application processing fee must be paid at the time of application submission, which will be adjusted against the total course fee of INR 45K + 18% GST.

An optional 2-day Campus Immersion may be offered at an additional cost (conditions apply), which will also be charged separately.

In case of a dropout before the program start date, only the course fee will be refunded—excluding the application processing fee, GST, and any applicable subvention charges. No portion of the program fee will be refunded once the program has commenced.

Key Dates

Format	Duration	Schedule	Start Date	Certificate
Hybrid (Live Online + Campus Immersion)	**3 Months | ~85 Hours**	**Saturday & Sunday, 2-3 Hours Each**	**March 2026 (Tentative)**	**Issued by CEC IIT Roorkee**

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About Futurense

Futurense is **India's Fastest-growing AI-skilling Company**, dedicated to accelerating India's role in global AI development.

With projections from the **EY's "India@100"** report, indicating that **24.3% of the Incremental Global Workforce** over the next decade will be Indians by 2030, we are committed to positioning India at the forefront of AI evolution.

Our mission is to scientifically map AI talent demand and create scalable, industry-aligned upskilling models that equip Indian professionals with cutting-edge capabilities. By integrating real-world applications with academic excellence, we are building tomorrow's leaders across every possible funnel, shaping the talent that will define tomorrow.

Impact & Ecosystem

3M+
LEARNER COMMUNITY

70+
UNIVERSITY COLLABORATIONS

10+
IIT/IIM PARTNERSHIPS

540+
TRUSTED HIRING PARTNERS

100+
MENTORS & EXPERTS

25K+
CAREERS TRANSFORMED

400+
FUTURENSE TEAM STRENGTH

65+
ENTERPRISE CLIENTS ACROSS FORTUNE 500 AND GCCS

Our Four Verticals

Futurense.uni

Online degree and certificate programs in partnership with IITs and IIMs.

Futurense Global

First-of-its-kind study abroad and credit transfer programs with leading global universities.

Futurense SCHOOL OF AI

Co-branded AI-focused undergraduate programs for select universities, managed end-to-end.

Futurense.enterprise

Staffing and corporate reskilling solutions for Fortune 500 companies and global capability centers (GCCs).

IIT ROORKEE
Continuing Education Centre

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Industry, Admissions and Hospitality Partner
Futurense

Don't Just Learn AI
Bring It To Life

Apply Now

admissions@futurense.com

www.futurense.com

*Program completion requires 75% attendance and successful project submissions. PG Certificate awarded by CEC IIT Roorkee upon meeting criteria. Career outcomes vary by individual effort, market conditions, and prior experience. Futurense provides career support but does not guarantee employment. Based on LinkedIn and Naukri job posting analysis, December 2024-2025.

CEC, IIT Roorkee

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