



# ELITE AI MASTERY PLAN v2.0

## FINAL EDITION — BEATS IITGN-CDF PG DIPLOMA

**Built from the Exact Brochure Curriculum • Current 2026 Industry Standards • Job-Ready for ML Engineer, Data Scientist & AI Engineer**

🎯 Primary Target Role	ML Engineer—₹12–40 LPA, 60–73% demand-supply gap
🏅 Secondary Target Role	Data Scientist — ₹10–30 LPA, 84,000+ open jobs in India
🥇 Tertiary Target Role	AI Engineer / GenAI Specialist — ₹14–25 LPA (fastest growing)
⌚ Program Duration	6 Months   600+ Hours (150 Learn + 200 Apply + 150 Execute + 100 Evidence)
💰 Cost vs IITGN-CDF	₹0—₹18,000 vs ₹628,000 (fee + GST) — 35x cheaper
🏆 Outcome Edge	Global certs + 15-20 deployed projects + public GitHub + 300+ LeetCode solved

NASSCOM: India needs 1 million AI/ML professionals by 2027. Fresher AI hiring up 22% YoY. Proof of skill beats academic prestige.

# 01. 2026 Market Intelligence — Why These 3 Roles Win

Before building your plan, understand exactly what the industry demands, where the money is, and what skills are non-negotiable vs optional. This intelligence drives every resource and project choice below.

## 1.1 Salary Reality (India, 2026)

Role	Fresh (0-1 yr)	Mid (2-4 yr)	Senior (5+ yr)	Top GCC/Startup
ML Engineer	₹12–18 LPA	₹22–32 LPA	₹40+ LPA	₹50–80 LPA
Data Scientist	₹8–15 LPA	₹18–28 LPA	₹30+ LPA	₹40–65 LPA
AI Engineer	₹10–14 LPA	₹18–25 LPA	₹35+ LPA	₹45–70 LPA
GenAI Specialist	₹12–20 LPA	₹25–35 LPA	₹40+ LPA	₹50+ LPA (fastest rise)

## 1.2 What Employers Actually Look For in 2026 (Based on 1000+ Job Postings)

### ● ML ENGINEER — Core Must-Haves:

- Python (expert) + PyTorch / TensorFlow
- Model training, eval, deployment, serving
- FastAPI / REST API development
- Docker + Git (non-negotiable)
- AWS or GCP (1 in 3 postings require AWS)
- MLflow / experiment tracking
- SQL + feature engineering
- LeetCode 150-250 medium problems
- System design for ML (model serving, pipelines)

57.7% of ML Engineer roles prefer DOMAIN EXPERTS over generalists — go deep, not wide.

23.9% of listings don't require a degree.

Your portfolio IS your degree.

### ● DATA SCIENTIST — Core Must-Haves:

- Python + SQL (advanced — joins, CTEs, windows)
- Statistics, A/B testing, hypothesis testing
- EDA, feature engineering, pandas
- Scikit-learn + XGBoost + LightGBM
- Data visualization (matplotlib/seaborn/Plotly)
- Business communication + stakeholder mgmt
- ML model lifecycle: train → eval → deploy
- Cloud data platforms (BigQuery/Redshift)

Data Scientist roles value VERSATILE GENERALISTS who speak both business and code.

SQL depth is the most common interview filter.

84,000+ jobs listed in India right now.

### ● AI ENGINEER — Core Must-Haves:

- LLMs: fine-tuning, RAG, prompt engineering
- LangChain / LlamaIndex / LangGraph
- Vector databases (Qdrant / FAISS / Pinecone)
- HuggingFace ecosystem (end to end)
- FastAPI + deployment (Docker/Render/HF Spaces)

### ● TOP HIRING SECTORS & COMPANIES:

- BFSI (29% growth): HDFC, Razorpay, Zerodha, CRED
- E-commerce (18%): Amazon, Flipkart, Zomato, Swiggy
- GCCs: Microsoft, Google, Walmart, Target, Wells Fargo

- Multi-agent systems (CrewAI / AutoGen)
- Evaluation frameworks (LLM evals, RAGAS)

GenAI + LLMs top every recruiter list in 2025.  
70% more AI engineer jobs YoY on LinkedIn.  
Bangalore hosts 3,000+ open AI engineer roles.

- Healthcare: Apollo, Siemens Healthineers
- Consulting: McKinsey, BCG, Deloitte, PwC, Accenture
- Startups: Nykaa, IndiGo, OYO, Delhivery, CRED

Demand-supply gap for ML Engineers: 60–73%  
meaning there are FAR more jobs than  
candidates.

Key cities: Bangalore > Hyderabad > Pune >  
Mumbai

## 02. The Direct Comparison — IITGN-CDF vs You

Now with the full brochure, here is the exact side-by-side comparison. Their real advantage is the environment and mentors. Your real advantages are depth, certs, and global visibility.

Dimension	IITGN-CDF Program (₹6.28 lakh)	Your Elite Self-Plan (₹0–18K)
Duration & Format	6 months, residential, IIT Gandhinagar campus	6 months, self-directed, remote/local
Hours Breakdown	600h: 150 Learn + 200 Apply + 150 Execute + 100 Evidence	700h+: You go beyond. 150+220+180+150
Learning Quality	Industry mentors—Futurense Leadership Council (~40 leaders)	Andrej Karpathy, Stanford Profs, MIT OCW, Official LangChain/Hugging Face teams
Projects	15–20 deployed, live projects (strong!)	15–20 public GitHub projects with real users, stars, and contributions
Coding Practice	300+ ML coding problems, 15+ mock interviews	400+ LeetCode, Kaggle, and Pramp mock interviews
Credentials	IITGN PG Diploma + Executive Alumni Status	AWS SAA + GCP ACE + Terraform + 5 DL.AI certs + LangChain Academy
Tools Covered	PyTorch, LangChain, Airflow, Kafka, Spark, K8s, Terraform, W&B	All of the above + Unslot LoRA, LangGraph, RAGAS, Pydantic, CrewAI v2
Network	60 cohort peers + Futurense alumni + IIT faculty	Global: Hugging Face Discord, LangChain Discord, LinkedIn (1000+), arXiv community
Placement Support	100% placement support (7.0+ CGPA condition)	Self-driven: portfolio + certs + hackathons — no CGPA condition
Interview Prep	Month 5 dedicated (ML coding + system design + mock interviews)	Month 5 dedicated to additional mock interview tools (Pramp, interviewing.io)
Research Exposure	None (AI Clinic has real problems but no research)	1 arXiv paper/week, 20+ papers read and implemented
AI Clinic Equivalent	Real enterprise AI problems via Futurense network	YOUR equivalent: contribute to open-source real-world freelance/hackathon problems
Cost	₹5L tuition + ₹1.25L hostel/ops + ₹3K application fee	₹0 resources (mostly free) + ₹15-18K for AWS/GCP exam + optional Colab Pro
Brand	IITGN name — very valuable in India	GitHub stars + global certs + Hugging Face downloads = globally valuable



### THE ONE REAL IITGN ADVANTAGE YOU MUST REPLICATE

Their BIGGEST structural advantage is not the curriculum — it's the ENVIRONMENT:

- Daily accountability: squad syncs at 8:30 AM, competitive coding hours at 7:30 PM
- Social pressure: 59 other driven peers around you every day

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| • AI Clinic: real enterprise problems assigned to you — no choice but to execute |
| • All-nighter sprints, weekly coding tournaments, demo days — maximum intensity  |
|  |
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**YOUR REPLICATION STRATEGY:**

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|--|
| 1. Find 1-3 accountability partners (Discord, LinkedIn, local meetup)—check in daily |
| 2. Join Kaggle competitions on a DEADLINE—simulates the AI Clinic forcing function   |
| 3. Book AWS exam 3 months out — non-refundable. Now you MUST prepare                 |
| 4. Post publicly on LinkedIn every Sunday: 'Week X done—here's what I built.'        |
| 5. Apply to lablab.ai hackathons—48-72h sprints with real teams and deadlines        |

## 03. Your 700-Hour Elite Framework (Beats Their 600h)

IITGN-CDF structures 600 hours into 4 buckets. You'll do 700+ in the same 6 months by eliminating dead time. Here's how each hour maps to ML Engineer / Data Scientist / AI Engineer skills.

Bucket	IITGN Hours	Your Hours	What You Do	Role Relevance
 LEARN	150h	150 h	Video lectures, papers, books. Deep conceptual understanding. No passive watching—take notes, flashcards (Anki).	All three roles
 APPLY	200h	220h	Code every concept from scratch. Solve problems. Debug real errors. Complete guided projects with extensions.	ML Eng + Data Sci
 EXECUTE	150h	180 hr	Build and deploy original projects. No tutorials — blank repo, real problem, real deployment. Capstone here.	All three roles
 EVIDENCE	100h	150 h	LeetCode, mock interviews, SQL challenges, system design, LinkedIn posts, blog writing, GitHub polish.	Interview-critical
TOTAL	600h	700 hr	6 months × 26 weeks × ~4.5h/day average deep work	Beats cohort pace

## 04. The 6-Month Master Curriculum

This mirrors the EXACT IITGN-CDF curriculum (read from their brochure) but goes deeper, adds industry-demanded skills they miss, and is mapped to real job requirements. Every week has a non-negotiable deliverable.

### MONTH 1 — ML / DS Engineering Foundations [Weeks 1–4] +150 Hours

IITGN-CDF Month 1 covers: Python for ML | Statistics | ML Fundamentals | Neural Networks | PyTorch | pandas | NumPy | TF | Jupyter | W&B | MLflow. You will do the same but deepen Python to the production level and add SQL, which they miss until the month. 3.

Week	Topic	Primary Resource (Free)	Deliverable	Role Tag
1	Python to Production Level + Git + Linux	Automate Boring Stuff (free) + MIT Missing Semester + Real Python	CLI data processing script + GitHub profile initialized	ML Eng, DS
2	Statistics & Probability for ML	CS229 Probability Review + Khan Academy Stats + Think Stats (free PDF)	Statistical analysis notebook with hypothesis tests	DS (critical), ML Eng
3	Core ML Algorithms from Scratch	CS229 Notes (free) + Andrej Karpathy Neural Nets Zero to Hero (YouTube)	Linear regression, logistic regression, decision trees—ALL from scratch	ML Eng, DS
4	PyTorch + scikit-learn + MLflow + W&B	PyTorch official tutorials, Hands-on ML Ch 1-5, and W&B quick start	End-to-end ML pipeline: data → train → eval → MLflow tracked	ML Eng (critical)
DSA	LeetCode Arrays, Strings, HashMaps (75 Easy)	Neetcode.io Roadmap (free videos) + LeetCode free tier	75 problems solved—log in a sheet	Interview-critical
SQL	SQL Foundations — SELECT, JOIN, subqueries, CTEs	Mode Analytics SQL tutorial (free) + SQLZoo + HackerRank SQL	50 SQL problems on HackerRank solved	DS (critical)

### MONTH 2 — Deep Learning + NLP + Agentic AI [Weeks 5–8] + 150 Hours

IITGN-CDF Month 2 covers deep learning & vision, NLP & transformers, agentic AI, MLOps, LangChain, LlamaIndex, Pinecone, OpenAI, HuggingFace, and BERT/GPT fine-tuning. You will match this AND add formal evaluation frameworks they lack.

Week	Topic	Primary Resource (Free)	Deliverable	Role Tag
5	Deep Learning: CNNs, RNNs, Transformers Internals	Fast.ai Lessons 1-5 + Andrej Karpathy's Makemore series (YouTube)	Image classifier (ResNet fine-tuned) deployed to Hugging Face Spaces	ML Eng

6	NLP: BERT fine-tuning, Tokenization, Hugging Face	CS224n Lectures 1-8 (free) + Hugging Face NLP Course Ch1-4 (free)	Text sentiment classifier fine-tuned + model card on HuggingFace	ML Eng, AI Eng
7	LLM Internals + RAG Pipelines + Vector DBs	Karpathy: Let's Build GPT (YouTube) + LangChain RAG docs + Qdrant free tier	RAG chatbot on uploaded PDFs — deployed on HuggingFace Spaces	AI Eng (core)
8	LLM Fine-tuning (LoRA/QLoRA) + Evaluation	HuggingFace PEFT docs + Unslotted docs (free) + RAGAS framework	Fine-tuned LLaMA-3 8B on custom dataset via Colab + eval report	AI Eng, ML Eng
DSA	LeetCode Two Pointers, Sliding Window, Binary Search (50 Med)	Neetcode.io + Striver A-Z sheet (takeuforward.org)	50 medium problems — understand every pattern	Interview-critical
SQL	Advanced SQL: window functions, GROUP BY, aggregations, indexing	Mode SQL Advanced (free) + LeetCode SQL 50 problems	LeetCode SQL 50 — all solved	DS (critical)

### MONTH 3 — Production ML + MLOps + Cloud [Weeks 9–13] + 150 Hours

IITGN-CDF Months 3-4 covers Cloud & Infra | MLOps & Deployment, System Design, SageMaker, Azure ML, Vertex AI, CrewAI, FastAPI, Redis, Grafana, Prometheus, K8s, and Terraform. You will be certified on AWS in this phase—their students do not.

Week	Topic	Primary Resource (Free)	Deliverable	Role Tag
9	FastAPI + Docker + REST API design	FastAPI official docs, Docker official docs, and testdriven.io tutorials	ML model served as FastAPI endpoint, containerized with Docker	ML Eng (critical)
10	MLOps: MLflow + DVC + CI/CD GitHub Actions	Made With ML (madewithml.com, free) + MLOps Zoomcamp Wk 1-3	Automated training pipeline with MLflow tracking + GitHub Actions CI	ML Eng (critical)
11	Cloud: AWS fundamentals + SageMaker + S3/EC2	AWS CCP study path (free tier) + SageMaker Studio Lab (free)	ML model trained and deployed on SageMaker — live endpoint	ML Eng, AI Eng
12	Kubernetes + Prometheus + Grafana monitoring	DevOpsWithDocker.com (free) + K8s official docs + Grafana tutorials	ML API deployed on K8s (Minikube) with full monitoring dashboard	ML Eng, AI Eng
13	AWS Certification Prep (CCP + SAA-C03)	AWS Skill Builder (free) + Stephane Maarek SAA (Udemy ~₹499)	BOOK the AWS SAA exam—take it end of month 4. Non-refundable.	All roles
DSA	LeetCode Trees, Graphs, DP basics (60 Med)	Neetcode.io Advanced + Striver Graph Series (YouTube)	60 medium problems — especially trees and graphs for ML interviews	Interview-critical

## MONTH 4 — Data Engineering + Agentic AI Systems [Weeks 14–17 ] +100 Hours

The IITGN-CDF Data Science track (months 3-4) covers Big Data, Spark, Kafka, Airflow, dbt, BigQuery, Databricks, and Streamlit. Their AI-ML track covers CrewAI and multi-agent systems. You do BOTH in one month—because many ML engineer JDs now require data pipeline fluency.

Week	Topic	Primary Resource (Free)	Deliverable	Role Tag
14	LangGraph + Multi-Agent Systems (LangChain, CrewAI, AutoGen)	LangChain Academy (free) + DL.AI Multi-Agent course (free audit) + CrewAI docs	5-agent research assistant (web search → analysis → report generation) deployed	AI Eng (core), ML Eng
15	Data Pipelines: Airflow + dbt + BigQuery	Data Eng Zoomcamp Wk1-4 (free GitHub) + dbt Learn official (free)	ELT pipeline: CSV source → Airflow DAG → BigQuery → dbt transform → dashboard	DS (critical for senior roles)
16	Spark + Kafka Streaming basics	Taming Big Data with Spark (Udemy ~₹499) + Kafka Quickstart (free)	Kafka consumer → Spark streaming → processed output pipeline	DS, ML Eng (data-heavy roles)
17	System Design for ML + Capstone Architecture Planning	System Design Interview (Alex Xu book) + Google SRE Book Ch 1-5 (free)	System design document for your capstone — architecture, data flow, SLAs	ML Eng (interviews), DS
DSA	LeetCode Dynamic Programming and Backtracking (50 Med-Hard)	Neetcode DP course + Striver DP series (YouTube)	50 medium-hard DP problems — most common FAANG filter	Interview-critical
SQL	SQL for ML: feature stores, window functions for time series, BigQuery ML	BigQuery sandbox (free) + BigQuery ML official docs (free)	Feature engineering pipeline in SQL for a classification problem	DS + ML Eng

## MONTH 5 — Interview Excellence + Capstone Build [Weeks 18–21 ] +100 Hours

IITGN-CDF Month 5 is ENTIRELY dedicated to interview prep: 300+ ML coding problems, algo implementation, system design for ML, 15+ mock interviews using LeetCode, Kaggle, and Pramp. You do the same — AND build your capstone simultaneously.

Week	Topic / Activity	Resources	Deliverable / Target
18	ML Interview Theory: 100 Core ML Questions	Chip Huyen's ML Interviews book (free PDF) + ML Interview Questions repo (GitHub)	Answer 100 ML theory questions in writing—bias-variance, regularization, ensembles, backprop, transformers
19	System Design for ML (2 full designs/week)	Designing ML Systems (Chip Huyen, O'Reilly) + educative.io SD for ML	Design: (1) Real-time fraud detection ML system (2) LLM-powered search at scale
20	Mock Interviews — 15 Sessions (Code + Behavioral)	Pramp.com (free) + interviewing.io (free trial) + LeetCode interview sim	15 mock interviews: 8 coding, 4 ML theory, 3 behavioral—LOG all feedback
21	Kaggle Competition Sprint + AWS SAA Exam	Kaggle: pick any active competition + AWS Skill Builder practice exams	Submit to Kaggle competition (top 30% target) + <input checked="" type="checkbox"/> TAKE AWS SAA EXAM
Capstone	Start building capstone (20 h/week).	All prior resources + build in public on GitHub	Capstone: 50% complete — backend + ML model deployed

### ⌚ THE 300+ PROBLEM STRATEGY (Exactly Matching IITGN-CDF)

Target: 350+ total by end of Month 5. Breakdown below:

- Month 1: 75 Easy (arrays, strings, hashmaps) — build speed and confidence
- Month 2: 50 Medium (two pointers, sliding window, binary search) — pattern recognition
- Month 3: 60 Medium (trees, graphs, BFS/DFS) — MOST common in ML engineer interviews
- Month 4: 50 Medium-Hard (DP, backtracking) — differentiator for FAANG/GCC roles
- Month 5: 65 Medium-Hard (mixed review + contest participation) — interview simulation
- Month 6: 50 Hard (for ML Eng roles at top companies) — optional but powerful

Platform priority: LeetCode > HackerRank SQL > Codeforces (for competitive edge)

CRITICAL: After every problem you fail, write the solution explanation in YOUR OWN WORDS

## MONTH 6 — Capstone + Portfolio Blitz + Career Launch [Weeks 22–26 ] +50 Hours

IITGN-CDF ends with a capstone, demo day, placement support, and GitHub portfolio building. You do the same, but your work is PUBLIC and globally visible. Their demo day is for 60 peers. Your demo is the entire internet.

Week	Activity	Outcome
22	Capstone finalization — core build complete	All features working, tested, monitored with Prometheus/Grafana

23	Capstone frontend + demo app (Streamlit/Gradio/React)	Live demo URL—HuggingFace Spaces or Vercel
24	Technical blog post + architecture walkthrough + README	Published on Medium/Substack + shared on LinkedIn (target: 2000 views)
25	Portfolio polish: GitHub profile, LinkedIn optimization, resume	GitHub profile README with project showcase + ATS-optimized resume
26	Career launch: 100 job applications + GCP ACE exam prep begins	100 applications sent — ML Eng (60%), DS (30%), AI Eng (10%)

## 05. Role-Specific Master Resource List

Every resource below is specifically chosen for ML Engineer (primary), Data Scientist (secondary), and AI Engineer (tertiary) job requirements. Quality > quantity. These beat any classroom.

### 5.1 ML Engineer Priority Resources

Resource	Type	Why Critical for ML Eng	Access
Andrej Karpathy: Neural Networks Zero to Hero	YouTube (Free)	Best PyTorch intuition + builds GPT from scratch. No classroom matches this.	<a href="https://youtube.com/@andrejkarpathy">youtube.com/@andrejkarpathy</a>
Made With ML (Goku Mohandas)	Course (Free)	End-to-end ML engineering — design to production. MLOps mindset from Day 1.	<a href="https://madewithml.com">madewithml.com</a>
Full Stack Deep Learning 2022	Course (Free)	Production ML systems — tooling, testing, deployment, infrastructure.	<a href="https://fullstackdeeplearning.com">fullstackdeeplearning.com</a>
FastAPI Official Docs + testdriven.io	Docs/Tutorial (Free)	FastAPI is the default ML serving framework — every ML Eng JD mentions it.	<a href="https://fastapi.tiangolo.com">fastapi.tiangolo.com</a>
MLOps Zoomcamp (DataTalks.Club)	Course (Free)	9-week free MLOps course — MLflow, Prefect, Docker, Grafana, monitoring.	<a href="https://github.com/DataTalksClub">github.com/DataTalksClub</a>
CS229 Machine Learning (Stanford)	Course (Free)	Theory foundation — backprop, regularization, SVMs. Read before interviews.	<a href="https://cs229.stanford.edu">cs229.stanford.edu</a>
Designing Machine Learning Systems (Chip Huyen)	Book	Industry-standard ML system design book. Required reading for senior roles.	O'Reilly (~₹1,500 or library)
Hands-on ML with Scikit-Learn (Aurélien Géron)	Book	Best practical ML book — chapters 1-12 cover 80% of ML interview questions.	GitHub preview + O'Reilly
AWS Solutions Architect SAA-C03 (Stephane Maarek)	Course	Cloud fluency — 1 in 3 ML Engineer postings require AWS explicitly.	Udemy (~₹499 on sale)
Chip Huyen: ML Interviews (free PDF)	Book (Free)	100+ ML interview questions with detailed answers — the interview bible.	<a href="https://huyenchip.com/ml-interviews-book">huyenchip.com/ml-interviews-book</a>

### 5.2 Data Scientist Priority Resources

Resource	Type	Why Critical for Data Science	Access
Mode Analytics SQL Tutorial	Tutorial (Free)	Best SQL resource for data science — practical queries on real datasets.	<a href="https://mode.com/sql-tutorial">mode.com/sql-tutorial</a>

Statistics for Data Scientists (50 Essential Concepts)	Book	Core stats—probability, distributions, hypothesis testing, and A/B testing.	Amazon (~₹800)
Stanford CS229 + Think Stats (Allen Downey)	Book/Course (Free)	Dual approach: theory (CS229) + practical Python stats (Think Stats PDF).	greenteapress.com
Kaggle: Pandas, Data Visualization, Feature Engineering	Micro-courses (Free)	3 hours each. Best practical DS skills — EDA, pandas, feature engineering.	kaggle.com/learn
Python for Data Analysis (Wes McKinney)	Book	The pandas bible—written by the creator of pandas. Covers 100% of DS EDA work.	O'Reilly preview + Amazon
XGBoost / LightGBM Documentation + Papers	Docs (Free)	Gradient boosting wins Kaggle competitions and DS role interviews.	xgboost.readthedocs.io
Business Case Interview Frameworks	Free Resources	McKinsey-style case thinking + product metrics—DS roles require business thinking.	CaseCoach (free) + Victor Cheng
Tableau / Looker Studio / Power BI (free tier)	Tools (Free)	Visualization tools — DS roles in non-pure-tech companies heavily use these.	tableau.com public / Looker Studio
Time Series Analysis (Rob Hyndman, free online book)	Book (Free)	Time series forecasting is the #1 DS use case in fintech and e-commerce.	otexts.com/fpp3
LeetCode SQL 50 + HackerRank SQL	Platform (Free)	SQL filters are the #1 DS interview screener. Do all 50 LeetCode SQL problems.	leetcode.com/studyplan/top-sql-50

### 5.3 AI Engineer Priority Resources

Resource	Type	Why Critical for AI Eng	Access
LangChain Academy: Intro to LangGraph	Course (Free)	Official curriculum from the LangChain team—the definitive agentic AI course.	academy.langchain.com
HuggingFace Courses (NLP + Diffusion + Agents)	Course (Free)	Official HF curriculum—covers 100% of what AI Eng roles expect from HF.	huggingface.co/learn
Deep learning. AI Short Courses (LangChain, RAG, AutoGen, CrewAI)	Courses (Free)	Co-created with tool creators. Each is 1-2 hours and laser-focused.	learn.deeplearning.ai
Unsloth + QLoRA + PEFT (HuggingFace)	Docs (Free)	Fine-tuning LLMs in Colab for free — Unsloth makes it 2-5x faster.	unsloth.ai + huggingface.co/docs/peft
RAGAS Framework for RAG Evaluation	Docs (Free)	Evaluating RAG pipelines is critical for production AI engineering roles.	docs.ragas.io

Illustrated Transformer + GPT (Jay Alammar)	Blog (Free)	Best visual explanation of transformer architecture — memorize this.	<a href="https://jalammar.github.io">jalammar.github.io</a>
Prompt Engineering Guide (DAIR.AI)	Docs (Free)	Comprehensive prompt engineering covers CoT, RAG prompting, and structured outputs.	<a href="https://promptingguide.ai">promptingguide.ai</a>
LLM Evaluation (LMSYS, Eval by OpenAI)	Papers/Docs (Free)	How to evaluate LLMs in production—an AI Eng interview favorite topic.	<a href="https://lmsys.org">lmsys.org</a> + <a href="https://github.com/openai/evals">github.com/openai/evals</a>
Vector Database Docs: Qdrant, FAISS, Pinecone	Docs (Free)	Qdrant has the best free tier and the best Python SDK. FAISS is for local use.	<a href="https://qdrant.tech">qdrant.tech</a> + <a href="https://faiss.ai">faiss.ai</a>
Groq API (free) + Ollama (local) + Together AI	Tools (Free)	Free LLM inference for all your projects — no OpenAI costs needed.	<a href="https://console.groq.com/ollama.ai">console.groq.com/ollama.ai</a>

## 06. The 15-20 Project Portfolio Strategy

IITGN-CDF graduates with 15-20 deployed, live projects. This is their strongest asset. You must match this—but ALL yours are public on GitHub with real users and verifiable metrics. Here's the exact project list mapped to job roles.

#	Project Name	Stack	Target Role	Impact Metric
P 1	GPT-2 Mini: Built From Scratch	PyTorch, NumPy, Jupyter	ML Eng	GitHub repo — target 200+ stars. Shows deep DL knowledge.
P 2	End-to-end ML Pipeline with MLflow + FastAPI	sklearn, MLflow, FastAPI, Docker	ML Eng	Live API endpoint + MLflow dashboard — deploy on Render (free)
P 3	Text Classifier: BERT Fine-tuned on Custom Data	Hugging Face, PyTorch, PEFT	ML Eng + AI	Hugging Face model card — target 300+ downloads
P 4	RAG Chatbot on PDF Knowledge Base	LangChain, FAISS, Gradio, HF	AI Eng	HuggingFace Space — 500+ users, demonstrates RAG mastery
P 5	Fine-tuned LLaMA-3 8B on Indian domain.	Unsloth, QLoRA, LLaMA-3, HF	AI Eng	Hugging Face model with benchmarks—differentiated regionally
P 6	Multi-Agent Research Assistant (5 agents)	LangGraph, CrewAI, Serper, Tavily	AI Eng	Blog post + demo — shows agentic AI mastery
P 7	Fraud Detection ML System (real-time)	XGBoost, Kafka, FastAPI, Grafana	DS + ML Eng	System design doc + code—mirrors real BFSI use-case
P 8	Sales Forecasting Dashboard (Time Series)	ARIMA, Prophet, Streamlit, Plotly	DS	Deployed Streamlit app with interactive forecasts
P 9	A/B Testing Statistical Framework	Python, scipy, statsmodels	DS	Reusable library on GitHub—shows stats depth
P 10	ELT Data Pipeline (Airflow + dbt + BigQuery)	Airflow, dbt, BigQuery, Looker Studio	DS + ML Eng	End-to-end pipeline with data quality checks + dashboard
P 11	ML API with K8s + Prometheus + Grafana	FastAPI, Docker, K8s, Prometheus	ML Eng	Production-grade monitoring — rare in fresh graduate portfolios
P 12	AI-powered SaaS App (Full-Stack)	FastAPI, Next.js, Postgres, LLM API	AI Eng	Deployed on Vercel + Render — real users, shows business thinking
P 13	Kaggle Competition Solution (top 20%)	XGBoost, feature engineering, CV	DS + ML Eng	Kaggle notebook with detailed writeup—100+ upvotes target
P 14	arXiv Paper Implementation	PyTorch, custom dataset	ML Eng	GitHub repo implementing a 2024-25 SOTA paper — shows research ability
P 15	Capstone: Production AI Product	Full stack from above	All three	FLAGSHIP — hackathon submission + conference talk proposal



## 07. Certification Battle Plan (They Have None; You Have 7+)

IITGN-CDF graduates with a PG Diploma and IIT Executive Alumni Status. These have brand value in India but zero global recognition. Your certifications are globally recognized and directly map to ML Engineer and Data Scientist JD requirements.

Certification	Month	Cost (approx)	Role Impact	Study Resource
Deep learning, AI ML Specialization (5 certs)	Month 1-2	Free (audit) or ₹2,000/mo	DS + ML Eng foundation—Andrew Ng's stamp	coursera.org/specializations/machine-learning-introduction
Hugging Face Certified (NLP + Agents courses)	Month 2-3	Free	AI Eng — official HF credential	huggingface.co/learn
LangChain Academy Completion Certificate	Month 4	Free	AI Eng—shows LangGraph + agentic AI mastery	academy.langchain.com
AWS Cloud Practitioner (CLF-C02)	Month 3	~₹7,000 exam fee	All roles — cloud foundation, lowest barrier	AWS Skill Builder (free)
AWS Solutions Architect — Associate (SAA-C03)	Month 4-5	~₹14,000 exam fee	ML Eng—1 in 3 JDs require AWS. This is the must-have cert.	Stephane Maarek, Udemy (~₹499)
Google Cloud Associate Cloud Engineer	Month 6	~₹14,000 exam fee	ML Eng + DS—GCP BigQuery/Vertex AI very common in DS roles	cloud.google.com/learn/training (free codelabs)
Terraform Associate (HashiCorp)	Month 5	~₹11,000 exam fee	ML Eng (MLOps-heavy roles)—IaC is becoming table stakes	HashiCorp tutorials (free)

**💡 EXAM BOOKING STRATEGY:** Book the exam 6 weeks before you plan to take it. The ₹14,000 non-refundable fee is the most powerful motivator you have. This is exactly what IITGN-CDF's residential environment does—creates accountability through commitment.

**💰 TOTAL CERT COST:** ~₹46,000–₹50,000 (mostly AWS/GCP exam fees). This is 10x cheaper than a single month of IITGN-CDF hostel fees. And these certs are globally valid for 3 years.

## 08. Daily Schedule — Mirrors IITGN-CDF Intensity

IITGN-CDF's daily structure: 8:30 AM Squad Sync → 9:00-10:30 Concepts → 10:45-1:00 Hands-on → Lunch → 2:00-3:30 Applied → 4:00-6:00 Execute → 7:30-9:00 Competitive Coding. You replicate this minus the campus but GAIN 90 minutes of recovered commute time.

Time	Activity	IITGN Equivalent	Notes
06:00–06:30	Morning review: yesterday's concepts (active recall)	Squad Sync / Review	Write 5 key ideas from yesterday WITHOUT looking at notes
06:30–08:00	DSA / LeetCode (1-2 problems)	Daily competitive coding practice	Neetcode + Striver sheet—strict 45 min per problem, then review solution
08:00–08:30	Breakfast + break	—	
08:30–10:30	DEEP WORK BLOCK 1: Learning (video/reading + notes)	Concepts Drilldown (9:00–10:30)	PHONE IN ANOTHER ROOM. Take handwritten notes. Build Anki cards.
10:30–10:45	Break	Short break	Walk, stretch, water
10:45–13:15	DEEP WORK BLOCK 2: Coding / Hands-on Application	Hands-On Sessions: Apply (10:45–1:00)	No tutorials. Build from a blank file. Break things, fix things.
13:15–14:00	Lunch + decompress	Lunch and decompress	
14:00–16:00	DEEP WORK BLOCK 3: Project Work / Build	Applied Concepts + Build Harder (2:00–6:00)	Work on weekly project deliverables—make meaningful progress
16:00–17:00	Paper reading or advanced topics or SQL practice	Build Something Harder: Execute	1 arXiv abstract/summary per day, 1 full paper + implementation per week
17:00–18:00	Exercise — NON-NEGOTIABLE	Sports Time (IITGN campus)	Run, go to the gym, walk. This is what makes the rest of the day work.
18:00–19:00	Review + Plan + Anki flashcard review	Daily Wrap	Review what you built, plan tomorrow, 15 min Anki
19:00–20:00	Community: Discord, LinkedIn post (2x/week), Twitter/X	Friday Social Nights / Industry Sessions	Post progress publicly. This is the compounding asset.
20:00–21:00	Mock interview prep OR certification study	Competitive Coding Hour (7:30–9:00)	Rotate daily: ML theory, behavioral prep, cert flashcards
21:00+	Wind down, SLEEP by 22:30 — 7.5 hours minimum	Hostel / Your Choice (9PM+)	Elite performance requires elite recovery. Non-negotiable.

### WEEKLY RHYTHM—mirrors their 'Other Events in a Typical Week.'

MONDAY: Start new week's learning module—set 3 non-negotiable deliverables for the week

TUESDAY: Deep coding day—build project feature. Minimum 4h of project code written

WEDNESDAY: Mock interview or system design session (Pramp.com—1 session)

THURSDAY: Paper reading day—read 1 arXiv paper, write 3-bullet summary on LinkedIn

FRIDAY: Code review + GitHub polish + document what you built this week

SATURDAY: 8-hour SPRINT — simulate an IITGN all-nighter. Finish the week's deliverable.

SUNDAY: Review KPIs (see Section 10), plan next week, community time, rest

## 09. Your AI Clinic Equivalent—Real Business Problems

IITGN-CDF's AI Clinic is their most unique feature: real enterprise problems from Futurense's industry network (marketing automation, financial forecasting, and workflow transformation) are assigned to you with guided mentorship. Here is how you replicate this — and go further.

 <b>IITGN AI CLINIC PROVIDES:</b> <ul style="list-style-type: none"> <li>• Real business challenges from Futurense's 65+ enterprise clients</li> <li>• One-on-one feedback from industry mentors</li> <li>• Tool mastery: ChatGPT, Claude, LangChain, Zapier, Looker</li> <li>• AI Workflow Design and Implementation Roadmaps</li> <li>• Ideas Lab: pitch startup ideas to VCs + founders</li> <li>• Certificate: 'Advanced Certificate in GenAI for Business'</li> </ul> <p><b>VALUE:</b> Forces you to work on REAL problems under REAL constraints with REAL feedback.</p>	<b>⚡ YOUR AI CLINIC EQUIVALENTS:</b> <ol style="list-style-type: none"> <li>1. Kaggle competitions — real data, real leaderboard, community feedback</li> <li>2. lablab.ai hackathons — 48-72h real enterprise AI challenges, with teams</li> <li>3. DevPost AI hackathons — companies post real problems with prize money</li> <li>4. Open-source contributions to LangChain, LlamaIndex, or HuggingFace</li> <li>5. Build AI tools for local SMEs (a CA firm, a clinic, a D2C brand)</li> <li>6. Futurense.uni free sessions (they're open to the public on YouTube)</li> </ol> <p><b>ADVANTAGE:</b> Your work is VISIBLE and CREDITED publicly.</p>
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### Your 3 Real Business Challenge Targets (One Per Month, Months 2-4)

Month	Challenge Type	Business Domain	Your Output
Month 2	Kaggle Competition: Tabular classification/regression	Any industry with labeled data	Top 20% ranking + detailed writeup on Kaggle
Month 3	lablab.ai or DevPost AI Hackathon	Real enterprise problem posted by sponsor	Deployed demo + pitch deck + GitHub
Month 4	Build an AI tool for a local business	Specific: CA firm (document analysis), clinic (symptom triage), D2C brand (customer support)	A live deployed tool with a real user—THE most powerful portfolio item

# 10. KPIs, Visibility Strategy & Placement Prep

## 10.1 Weekly KPI Tracker (Review Every Sunday)

KPI	Month 2 Target	Month 4 Target	Month 6 Target	Role
LeetCode problems solved	100	250	400+	All interview filters
SQL problems solved	50	100	150	DS—often first screener
GitHub public repos	5	10	15+	All — portfolio signal
GitHub total commits	100	200+	350+	Matches IITGN's 200+ target
HuggingFace models/spaces	2	5	8+	ML Eng + AI Eng
Deployed live projects	3	8	15+	Matches IITGN's 15-20 target
Certifications earned	2 (DL.AI)	3 (+ AWS CCP + LangChain)	6+ (+ AWS SAA + GCP ACE)	All
LinkedIn followers	200	500	1,200+	Visibility → referrals
Blog posts / LinkedIn articles	3	8	15+	Thought leadership
arXiv papers read + summarized	5	12	24+	ML Eng (research credibility)
Mock interviews completed	2	8	20+	Interview-critical
Kaggle/hackathon participations	1	3	5+	AI Clinic equivalent

## 10.2 LinkedIn + Visibility Strategy

CONTENT STRATEGY (2x per week minimum)
POST TYPE 1 — 'What I built this week' (every Sunday or Monday)
Template: Week X of 26. This week I built [X]. Here's what I learned + a GitHub link.'
Add a screenshot, architecture diagram, or code snippet. 3-5 sentences max.

POST TYPE 2 — Paper summary (every Thursday)
Template: I read [Paper Name] this week. Here's what it does in 3 bullets + why it matters.'
Tag: relevant people/companies. Use relevant hashtags: #MachineLearning #MLOps #GenAI
POST TYPE 3 — Monthly long-form article (once per month)
Full technical walkthrough: how I built X, what went wrong, what I learned.
Target: 1,000+ views, 50+ likes, 10+ comments — this is what hiring managers notice.
ENGAGEMENT: Comment thoughtfully on posts from AI researchers and ML engineers daily.
Connect with 15 ML/DS professionals per week—always send a personalized note.

### 10.3 Job Application Strategy (Month 6 — 100 Applications)

Application Category	% of Applications	Target Companies	Role Applied For
GCCs (Global Capability Centers)	30 applications	Microsoft, Amazon, Google, Walmart GCC, Wells Fargo, Target	ML Engineer / Applied Scientist
Indian Product Companies	25 applications	Razorpay, Zerodha, CRED, Swiggy, Zomato, IndiGo, Nykaa	ML Engineer / Data Scientist
Consulting + Services	15 applications	Accenture AI, Deloitte AI, TCS AI, Wipro AI Labs	Data Scientist / AI Engineer
AI-first Startups	20 applications	Bangalore/Hyderabad AI startups — use LinkedIn Jobs + AngelList	ML Engineer / AI Engineer
International Remote	10 applications	LinkedIn / Wellfound remote ML roles — apply to US/EU companies	ML Eng / Data Sci (remote, ₹30-60L equiv)

## 11. Complete Free Toolset (Beats IITGN Labs)

Category	Tools	Cost
GPU / Compute	Google Colab (free T4) + Kaggle Notebooks (free P100) + SageMaker Studio Lab (free) + Lightning.ai (free tier)	Free (Colab Pro ₹900/mo optional for 6-month deadline)
LLM Inference	Groq (free API, 300 req/day, blazing fast) + Ollama (run LLaMA locally). + Together AI (free credits) + Gemini API (free tier)	Free
Cloud Credits	AWS Free Tier (12 months) + GCP \$300 free credits + Azure \$200 credits + GitHub Student Developer Pack (₹30,000+ worth)	Free
Vector Databases	Qdrant Cloud (1GB free) + FAISS (local, free) + Chroma (local, free) + Pinecone (free tier)	Free
MLOps	MLflow (open-source) + DVC (open-source) + GitHub Actions CI/CD + Weights & Biases (free academic tier)	Free
Data Engineering	Airflow (Docker local), dbt Core (open-source), Apache Kafka (local), and BigQuery (sandbox free 10GB/mo)	Free
Monitoring	Prometheus + Grafana (open-source) + Grafana Cloud (free tier) + Arize AI (free tier)	Free
Dev Tools	VS Code + GitHub Copilot (Student: free) + Cursor AI IDE + Docker Desktop + Postman (free)	Free (Copilot via GitHub Student Pack)
Learning	Fast.ai + HuggingFace Learn + MIT OCW + CS229/224n/231n + DeepLearning. AI (audit) + Kaggle Learn	Free (pay only for certs)
Interview Prep	Pramp.com (free mock interviews) + interviewing.io (free trial) + LeetCode free tier + Neetcode.io (free)	Free
Deploy / Host	HuggingFace Spaces (free) + Render (free tier) + Vercel (free) + Railway (free trial)	Free

## 12. Your Month-6 Final State vs. IITGN-CDF Graduate

What You Graduate With	IITGN-CDF Graduate	You (This Plan)
Credential	IITGN PG Diploma + IIT Executive Alumni Status	AWS SAA + GCP ACE + Terraform + HuggingFace + LangChain Academy + 5x DL.AI
Projects	15-20 deployed live projects (strong — their best asset)	15-20 public GitHub projects + HuggingFace models + real users
GitHub	200+ commits (they explicitly target this)	350+ commits + 150+ stars + 5+ open-source contributions
Coding Problems	300+ problems (their Month 5 target)	400+ problems (LeetCode + HackerRank SQL + Codeforces)

Mock Interviews	15+ mock interviews (Pramp, interviewing.io, Pramp)	20+ mock interviews + behavioral + system design
SQL Depth	Covered in data science track only	150+ SQL problems, BigQuery ML, dbt — cross-track strength
Research Exposure	None (AI Clinic is industry, not research)	24+ arXiv papers read + 2-3 implemented + documented
Global Visibility	Internal demo day + Futurense network	1,000+ LinkedIn followers + HuggingFace public profile + blog
Network	60 cohort peers + 40+ Futurense Leadership Council mentors	Global OSS community + LinkedIn network + hackathon contacts
Business Thinking	AI Clinic + Ideas Lab — genuine strength	3 real business AI projects + Kaggle competitions + hackathons
Cost Spent:	₹628,000 (tuition + hostel + GST)	₹18,000 (exam fees) + optional ₹900/mo Colab = ~₹23,400 total
Net Value (estimate)	₹6.28 lakh spent → entry ML Eng ₹12-18 L offer	₹23K spent → same entry ML Eng ₹12-18L offer + global certificates

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**Their program says: "Come Hungry, Leave Transformed."**

**Your plan says: "Come Hungry, Leave Unstoppable — and keep ₹6 lakh in your pocket."**