

# DATA ANALYST vs DATA SCIENTIST vs MACHINE LEARNING vs DEEP LEARNING vs ARTIFICIAL INTELLIGENCE vs LLM vs GENERATIVE AI vs PROMPT ENGINEER vs AGENTIC AI

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## 1. Data Analyst

Aspect	Details
Goal	Analyze past data for insights & reporting
Focus	Dashboards, KPIs, trends
Tools	Excel, SQL, Power BI, Tableau, Python (pandas, matplotlib, numpy, seaborn)
Roles	Data Analyst, Business Analyst

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## 2. Data Scientist

Aspect	Details
Goal	Predict outcomes, solve business problems with data
Focus	Statistics, machine learning, data storytelling
Tools	Python, R, Scikit-learn, Jupyter, SQL, ML models
Roles	Data Scientist, ML Engineer, Decision Scientist

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## 3. Machine Learning (ML)

Aspect	Details
Goal	Enable systems to learn from data
Focus	Algorithms (regression, classification, clustering, etc.)
Tools	Scikit-learn, XGBoost, TensorFlow, PyTorch
Roles	ML Engineer, Data Scientist

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## 4. Deep Learning (DL)

Aspect	Details
Goal	Model complex patterns with neural networks
Focus	Neural networks, CNNs, RNNs, transformers
Tools	TensorFlow, PyTorch, Keras
Roles	Deep Learning Engineer, AI Engineer

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## 5. Artificial Intelligence (AI)

Aspect	Details
Goal	Simulate human intelligence in machines
Focus	ML + DL + logic + search + planning
Tools	AI frameworks, rule engines, ML tools
Roles	AI Engineer, AI Architect, Researcher

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## 6. LLM (Large Language Models)

Aspect	Details
Goal	Understand and generate human-like language
Focus	Transformers (GPT, LLaMA, etc.), text generation, embeddings
Tools	Hugging Face, OpenAI API, LangChain
Roles	LLM Engineer, NLP Engineer, RAG Developer

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## 7. Generative AI

Aspect	Details
Goal	Generate new content (text, image, code, audio)
Focus	Text (LLMs), Images (Diffusion, GANs), Code
Tools	OpenAI, Stability AI, Midjourney, DALL·E, Runway
Roles	Generative AI Engineer, AI Artist, Content AI Dev

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## 8. Prompt Engineer

Aspect	Details
Goal	Optimize prompts to guide LLMs effectively
Focus	Language instructions, tokens, few-shot, chain-of-thought
Tools	OpenAI, Anthropic, Prompt Layer, LangChain
Roles	Prompt Engineer, LLM QA Specialist, AI Trainer

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## 9. Agentic AI

Aspect	Details
Goal	Build autonomous agents that plan, reason, and act
Focus	Memory, planning, tools, decision-making, autonomy
Tools	LangGraph, CrewAI, Autogen, BabyAGI, OpenAgents
Roles	Agent Developer, Autonomous AI Engineer, Agent Designer

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Field	Focus	Typical Tools/Skills	Job Role Examples
Data Analyst	Reporting & BI	SQL, Excel, Power BI, Tableau, Python	Data Analyst, BI Analyst
Data Scientist	Prediction & insights	Python, ML, Stats, Scikit-learn	Data Scientist
ML	Model training	Scikit-learn, XGBoost, PyTorch	ML Engineer
DL	Neural networks	TensorFlow, PyTorch	Deep Learning Engineer
AI	Human-like intelligence	Logic, ML, NLP, planning	AI Researcher, AI Engineer
LLM	Language modeling	Transformers, OpenAI, HF Transformers	LLM Engineer, NLP Engineer
Generative AI	Content creation	Diffusion, GPT, DALL·E	GenAI Engineer, AI Content Creator
Prompt Engineer	Guide LLM behavior	Prompt tuning, OpenAI API	Prompt Engineer
Agentic AI	Autonomous intelligent agents	LangGraph, CrewAI, Autogen	Agent Developer, AI Systems Engineer