Master Data Analysis

A Step-by-Step Roadmap to Land a Job in 2025 with AI

This roadmap is designed for **freshers**, **career changers**, and **non-IT professionals**. It includes **FREE** learning resources for technical skills.

This guide will equip you with the **must-have technical skills**, actionable strategies **(ATS-friendly resumes, LinkedIn optimization, interview prep)**, and hands-on **project ideas** to build your portfolio.

As we approach 2025, **Machine Learning (ML)**, **AI tools**, and **Prompt Engineering** are rapidly becoming integral to the **data analyst's skill set**.

Machine learning, AI tools, and prompt engineering are no longer just **advanced skills** for data scientists. In 2025, these technologies will not only enhance productivity but also enable analysts to deliver more **accurate, faster, and actionable insights**, positioning them at the forefront of the data revolution.

Doubts about ***Will AI replace Data Analyst Jobs?***
Watch this: https://www.youtube.com/watch?v=19bGdeau_bM&t=247s

Total Duration: 5 months

- Freshers or non-IT professionals: 5-6 months
- Career changers with some transferable skills: 4-5 months

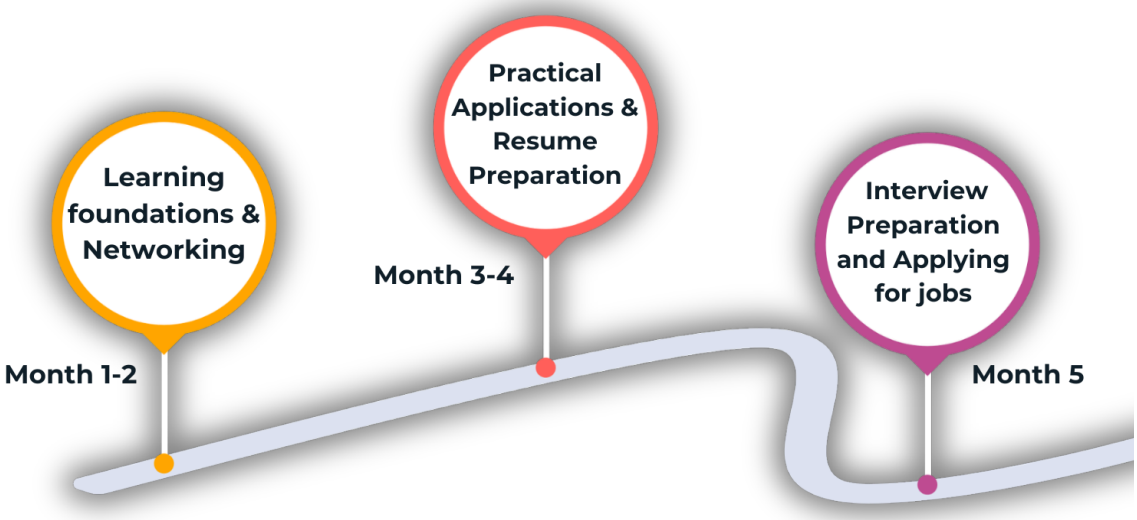
Daily Time Commitment:

- Part-time learners (e.g., working professionals): 2-3 hours daily
- Full-time learners: 4-6 hours daily

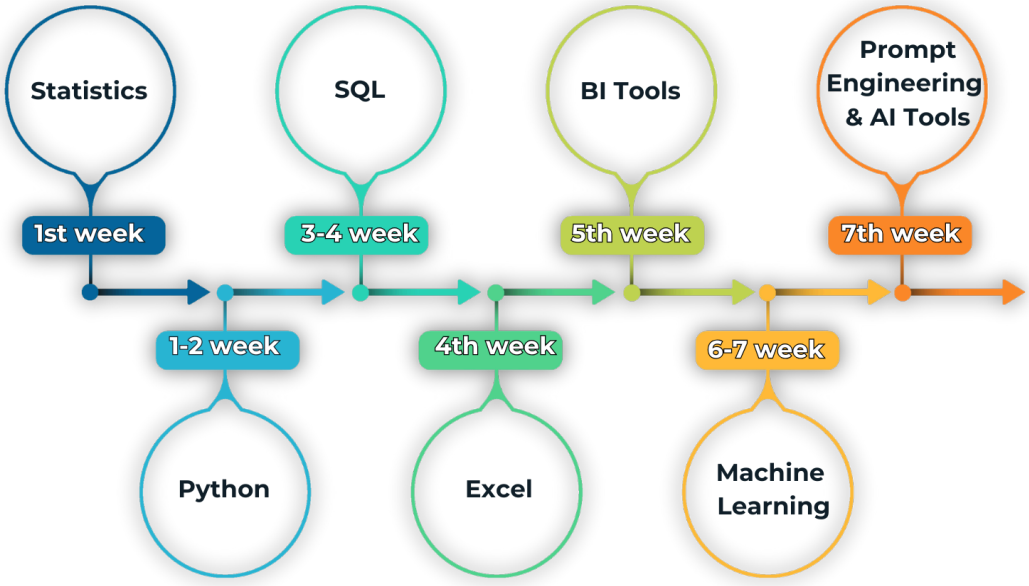
Timing Requirement:

- Morning learners: Early hours are great for focused learning (e.g., technical skills).
- Evening learners: Post-work hours can be used for lighter tasks like soft skills, networking, practicing technical skills and revising.

5 Month Learning Plan:



Learning Technical Skills



1. Statistics

What to learn:

- **Descriptive Statistics:**
  Measures of central tendency (Mean, Median and Mode)
  Measures of dispersion (Range, Variance, Standard Deviation, Percentiles and Quartiles)
  Frequency, Relative and Cumulative frequency
  Graphical Representations - Boxplots, Histograms, Scatterplots
  Outliers, how to identify and remove outliers
  Correlation and Covariance

- **Probability:** Bayes Theorem, Probability Distributions, Standard Normal Distribution, Empirical Rule

- **Inferential Statistics:** Confidence Interval (Z / T distribution), Hypothesis testing, Level of significance and p values, Types of tests (z test, t test, ANOVA, Chi square etc)

Real Life Applications: A/B Testing, Regression Analysis, Time Series Analysis and Forecasting

Projects and Tutorials:

- **Statistics Crash Course Tutorial:**
  https://www.youtube.com/watch?v=S7LvZZNq4ys&t=8317s

- **A/B Testing and Regression Analysis Project:**
  https://www.youtube.com/watch?v=iCj4IT5KvJk&t=1057s

- **Time Series Analysis Crash Course Tutorial:**
  https://www.youtube.com/watch?v=A3fowDMo8mM&t=8995s

- **Stock Price Prediction Project:**
  https://www.youtube.com/watch?v=IY8HZ2Z_sn4

2. Python

What to learn:

- **Basics:** Data Types, Data Structures (list, dictionary, set, tuple), Conditional Statements, Loops, Control Statements, Functions, Error handling, Modules and Packages, OOPs (Optional)
- **Libraries for Data Analysis:** Pandas, Numpy, Matplotlib, Seaborn, Scipy and Statsmodels

Real Life Applications:

- **Exploratory Data Analysis:** Summary Statistics, Formulating Research Questions and answering using Data Analysis & Visualization, Identifying Outliers, Identifying anomalies in data, feature engineering
- **Data Cleaning and Preparation:** Handling missing data, removing inconsistencies and duplicacy, removing outliers, feature selection
- **Data Transformation:** Pivot, groupby, merge, join, scaling and normalization
- **Working with databases:** using sqlite/ psycopg2 like databases libraries to fetch data from database in python for advance analysis
- **Time Series Analysis:** Stationarity, Resampling, Rolling window analysis, Forecasting
- **Statistical Analysis:** Applying all statistical tests using python

Projects and Tutorials:

- **Python Playlist:** https://www.youtube.com/watch?v=bPrmA1SEN2k&list=PLZoTAELRMXVNUL99R4bDlVYsncUNvwUBB
- **Python for Data Analysis:** https://www.youtube.com/watch?v=wUSDVGivd-8
- **Data Analysis End-to-End Project using Python:** https://www.youtube.com/watch?v=obJZ1rB7TKc&t=2074s

- **Complete python project:** https://www.youtube.com/watch?v=KgCgpCIOkIs&t=1226s&pp=ygUOcHl0aG9uIHByb2plY3Q%3D

Practice Websites:

- https://www.analyticsvidhya.com/blog/2024/05/python-coding-interview-question s-for-beginners/
- https://www.hackerrank.com/domains/python
- https://leetcode.com/problemset/

3. SQL

What to learn:

- **Data Definition Language (DDL):** Creating, Altering, Dropping tables
- **Constraints, Keys:** Primary Key, Foreign Key, Unique Key, NOT Null
- **Normalization:** 1NF, 2NF, 3NF, BCNF
- **Data Manipulation:** Inserting, updating, deleting records
- **Data Types:** Numeric, String, Date and Time
- **Query Structure**: Select, filtering, sorting and limiting data
- **Joins:** Inner, Left, Right, Full Outer, Cross, Self
- **Grouping and Aggregation**
- **Subqueries:** Single, Multiple, Correlated subqueries
- **Indexing:** Unique, Composite, Full text
- **Transactions:** ACID properties, Begin transaction, commit, rollback
- **Performance Optimization:** Indexing, Optimizing Joins, Caching
- **Window function, CTEs, Stored Procedure and Functions, Triggers**

Real Life Applications: Writing queries for creating reports, Leveraging Python with SQL to solve complex business problems

Projects and Tutorials:

- **SQL Crash Course:** https://www.youtube.com/watch?v=On9eSN3F8w0

- **SQL and Python End-to-End Project:** https://www.youtube.com/watch?v=2VMAdIzNuTw&t=1350s

- **Airlines Analysis using SQL and Python Project:** https://www.youtube.com/watch?v=LcMjsqZiSjY&t=115s

Practice Websites:

- https://leetcode.com/problemset/database/
- https://leetcode.com/studyplan/top-sql-50/
- https://www.hackerrank.com/domains/sql

Consistent practice is the key to mastering SQL, as it not only helps reinforce your understanding but also enables you to solve real-world problems efficiently, making you a more confident and capable data analyst.

So practice as you learn (Will help in sql coding round in interviews as well)

4. Excel

What to learn:

- **Excel Functions/ Formulas:** Mathematical, Text, Logical functions
- **Data Cleaning and Preparation:** Handling missing data, text-to-columns, removing duplicates, data validation
- **Data Analysis with Formulas:** Aggregate, lookup, date and time, financial, Statistical functions
- **Pivot tables and Charts:** Creating and formatting pivot tables, creating pivot charts, dynamic filtering with slicers and timelines
- **What-If Analysis:** Goal seek, data tables (one and two variable), scenario manager
- **Conditional Formatting:** Highlight cells, data bars, color scales, icon sets, conditional formatting with formulas
- **Data Analysis with Power Query:** Connecting to different data sources, Importing and transforming data

Real Life Applications: Budget analysis, KPI dashboards, and quick data cleaning, analyze small datasets, automate tasks with formulas, and create dashboards.

Projects and Tutorials:

- **Excel Playlist:** https://www.youtube.com/playlist?list=PLUaB-1hjhk8Hyd5NiPQ9CND82vNodlFF5

- **Sales Dashboard using Excel:** https://www.youtube.com/watch?v=6OMR81faW54&t=58s

- **End-to-End Excel Project:** https://www.youtube.com/watch?v=gTK5rNhWJyA&t=5s&pp=ygUaZXhjZWwgZGF0IGFuYWx5c2lzIHByb2plY3Q%3D

- **Data Analysis Excel Project:** https://www.youtube.com/watch?v=Rthh_bK5xUs

Practice Websites:

- https://www.excelpracticeonline.com/
- https://www.excel-easy.com/

5. BI Tools: Power BI/ Tableau

What to learn:

- **Power BI**
  1. Basic Table transformation
  2. Text, Number and Date tools
  3. Index and Conditional Columns
  4. Grouping and Aggregating Data
  5. Pivoting and Unpivoting
  6. Merging, Modifying and Appending Queries
  7. Connecting to Folders
  8. Defining Hierarchies and Categories
  9. Best Practices of Query Editing and Power BI
  10. Data Model
  11. Database Normalization
  12. Creating Table Relationships
  13. Table Schemas
  14. Connecting Multiple Data Tables
  15. Filter
  16. DAX

17.Creating Interactive Reports and Dashboards

- **Tableau**
  1. Basics of Data Pane
  2. Quick Visualizations
  3. Marks and its Properties
  4. Menu and Toolbar
  5. Data Types, Sorting and Grouping
  6. Filtering
  7. Aggregations
  8. Table Calculations
  9. Formatting
  10. Action Filters
  11. Dashboard Layout
  12. Stories
  13. Distributing and Publishing
  14. Joins
  15. Relationships
  16. Data Models
  17. Types of Relationships
  18. Pivot
  19. Interactivity
  20. Trend Lines
  21. Clustering and Forecasting
  22. Nested LODs and Mapping Functions
  23. Dynamic Designs, Extensions and Tooltip Visualizations

Projects and Tutorials:

- **Power BI Tutorial:** https://www.youtube.com/watch?v=bQ-HTp-tx40&pp=ygUJcG93ZXIgYmkg
- **Tableau Tutorial:** https://www.youtube.com/watch?v=j8FSP8XuFyk&pp=ygUIdGFibGVhdSA%3D
- **HR Analytics Dashboard using Power BI:** https://www.youtube.com/watch?v=6H4afhQeewU&t=6s

- **Blinkit Real Time Dashboard using Power BI:** https://www.youtube.com/watch?v=mmxVCFceQgU&t=30s&pp=ygURcG93ZXIgYmkgcHJvamVjdHM%3D

- **End-to-End Data Analyst Project using Power BI:** https://www.youtube.com/watch?v=tT4V7zguCnc&pp=ygURcG93ZXIgYmkgcHJvamVjdHM%3D

- **Tableau Project:** https://www.youtube.com/watch?v=KlAKAarfLRQ&pp=ygUPdGFibGVhdSBwcm9qZWN0

- **Sales dashboard using Tableau:** https://www.youtube.com/watch?v=dahrmqT5GD4&pp=ygUPdGFibGVhdSBwcm9qZWN0

6. Machine Learning

What to learn:

- **Supervised learning:** Regression (Linear, Ridge, Lasso), Classification (Logistic, Decision Trees, Random Forests, Support Vector Machines, Gradient Boosting)

- **Unsupervised learning:** K-Means Clustering, DBSCAN, PCA

- **NLP:** Tokenization, Text Cleaning, Bag of Words, Word Embeddings, Topic Modeling, Named Entity Recognition, Part of Speech Tagging

- **Overview of pipelines:** Data preparation, Feature Engineering, Modeling, Evaluation and Deployment

- **Python libraries:** scikit-learn, nltk,

Real Life Applications: Predictive analytics, Classification, Clustering and Segmentation, Sentiment Analysis

Projects and Tutorials:

- **Machine learning Tutorial:** https://www.youtube.com/watch?v=JxgmHe2NyeY&pp=ygUbbWFjaGluZSBsZWFybmluZyBrcmlzaCBuYWlr
- **Machine learning Playlist Tutorial:** https://www.youtube.com/watch?v=ZftI2fEz0Fw&list=PLKnIA16_Rmvbr7zKYQuBfsVkjoLcJgxHH
- **End-to-End Machine Learning Project:** https://www.youtube.com/watch?v=S_F_c9e2bz4&list=PLZoTAELRMXVPS-dOaVbAux22vzqdgoGhG

7. Prompt Engineering and AI Tools

What to learn:

- **Anatomy of a good prompt:** Clarity, context, and specificity, using keywords, command, and examples to guide outputs
- **Types of prompts:** Instructional, Conversation, Zero-shot, Few-shot, Chained prompts
- **Crafting Prompts for AI:** Creating structured, specific instructions for analytics tasks.

Real Life Applications: Generating SQL queries, summarizing reports, or building Python scripts with AI assistance, coding logic, formulating research questions

Prompt Engineering Tutorials:
https://www.youtube.com/watch?v=5i2Hn8OG94o&pp=ygUScHJvbXB0IGVuZ2luZWVyaW5n

Other Skills to focus on

Version Control: Basics of Git/GitHub for tracking and sharing projects.
Big Data Tools (Optional): Basics of Spark or Hadoop for analyzing large datasets.

Projects

How many projects should you include?
3-5 High Impact Projects: showcasing different domains, tools, and techniques. Aim for quality over quantity.

Guide to make data analysis projects:
https://www.youtube.com/watch?v=X-GRMfxNfrE&t=70s

End-to-End Analytics Projects:

- Solve any business problem using your projects tailored to industries like finance, healthcare, retail, or marketing
- Projects that start from data collection from database or web scraping and end with actionable insights or dashboards. Include multiple tools for creating end-to-end solutions.
- Create reports in pdf or ppt with all insights and visualizations of the project explaining the steps how you solved the problem statement and present your data driven decisions based on extracted insights. Include a README file or case study explaining the problem, solution, and impact.
- Use machine learning for forecasting/ decision making/ classification/ regression tasks with advanced analysis and presenting data or predictions in dashboards or web portals.

Linkedin Optimization, ATS Friendly Resume, Cover Letter, Portfolio, Job Preparation and Interview Guide:

LinkedIn is not just a platform for networking—it's your online portfolio, resume, and professional brand. Start building your profile from day one of your preparation and use

it strategically to showcase your journey, projects, and skills. Recruiters often scout LinkedIn for talent, and having an optimized profile will give you a competitive edge.

1. Create and Optimize your linkedin profile
2. Post regularly to build your personal brand: learning journey, valuable content and projects
3. Interact with others posts to expand your network.
4. Connect with recruiters and industry professionals working in the data analyst domain.
5. Update your profile regularly like adding new certifications, projects, skills as you learn them.

Develop Soft Skills

Soft skills are just as important as technical expertise in landing and succeeding in a data analyst role. These skills enable you to communicate your findings effectively, collaborate with teams, and solve business problems. Here's what to focus on:

- Communication skills:
  Practice presenting your projects to friends or mentors.
  Use storytelling techniques to explain data insights.

- Problem Solving and Critical Thinking:
  Work on case studies and business problems.

- Storytelling with data:
  Practice creating presentations or reports that include visuals and key insights.

- Negotiation and Persuasion
  Learn to back your arguments with data and explain the “why” behind them,

Prepare for Interviews and Apply for Jobs

- **Understand the Interview Structure**
  - **Technical Round:**
    - Expect questions on SQL, Python, statistics, data visualization, and sometimes case studies.
    - Be prepared to solve coding problems and write SQL queries live.

- **Scenario-Based Questions:**
  - Be ready to explain how you'd approach real-world problems like improving sales, reducing churn, or optimizing processes.
- **Behavioral Round:**
  - These questions assess your soft skills, teamwork, and problem-solving abilities. Use the STAR method (Situation, Task, Action, Result) to answer.

- Data analyst interview preparation might be difficult, but with the appropriate approach, you can improve your chances of success. Here are some pointers for getting ready for data analyst interviews:

- Review your projects and case studies: Review your portfolio's projects and case studies, and be prepared to go into detail about each. Prepare to describe the issue you set out to address, the techniques you employed, the outcomes you attained, and the significance of your work.

- Practice your technical abilities, including any programming languages you are knowledgeable with, such SQL, Python, R, and others. During the interview, be ready to use a whiteboard to solve issues or create code.

- Study the company: Do your homework about the organization and its sector, and be ready to explain how your qualifications fit with the company's goals and core principles and how you can help it succeed.

- Be prepared for behavioral questions, such as "Tell me about a time when you had to deal with a tough team member" or "Describe a circumstance when you had to make a judgment with minimal evidence." Be prepared to describe your approach to the circumstance with specific examples.

Strategically Applying for Jobs

- **Build an ATS-Friendly Resume**
  - **Keywords:** Add role-specific keywords like Data Cleaning, Data Visualization, Dashboarding, Reporting, etc.
  - **Customization:** Tailor your resume for each job application by emphasizing the skills and projects relevant to the job description.

- **Write a Compelling Cover Letter**
    - Highlight why you're a great fit for the role and how your skills align with the company's needs.
    - Use specific examples from your projects to demonstrate your value.

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c) Use Job Platforms Effectively

- Platforms: LinkedIn, Indeed, Glassdoor, and company websites.
- Leverage LinkedIn:
    - Turn on the *"Open to Work"* feature.
    - Actively engage with job posts by commenting or liking.
    - Reach out to recruiters with personalized messages.

- **Writing Cover Letter:**
  https://www.youtube.com/watch?v=a0ATCc6ytyw&t=29s

- **Avoid Data Analyst Mistakes:**
  https://www.youtube.com/watch?v=W--TWiZPztU&t=85s

- **Finding jobs on linkedin:**
  https://www.youtube.com/watch?v=NgdtWKtes6A

- **Write Resume with no experience:**
  https://www.youtube.com/watch?v=EXyO1WiVuZw

From my experience and Industry Standards, I have created an eBook Guide.

What you will find inside the Guide:

1. **Crafting a Winning Resume (ATS Friendly)**
   1.1 What is ATS?
   1.2 Common reasons, why the ATS rejects a resume, even if the candidate is well qualified for the job
   1.3 Essential Sections and What to Include

1.4 ATS Friendly Tips and Tricks
1.5 Do’s and Don’ts for resume
1.6 ATS Friendly Resume Template:
1.7 Top 5 websites to build great resume
1.8 Example Experience Section
1.9 Example Project Section

2. **Building a Standout Portfolio**
   2.1 Importance of Portfolio
   2.2 Websites for creating a portfolio
   2.3 Different Ways to create a portfolio
   2.4 What to include in a portfolio?
   2.5 Explaining projects in a portfolio
   2.6 Sections to include in project descriptions
   2.7 Example project descriptions

3. **Writing an Effective Cover Letter**
   3.1 Cover Letter Sections
   3.2 Example Cover Letter
   3.3 Tips for writing an effective cover letter
   3.4 Common mistakes to avoid

4. **LinkedIn Optimization**
   4.1 Importance of Linkedin Profile Optimization
   4.2 Sections to complete
   4.3 Mistakes to avoid
   4.4 Do’s and Don’ts on your Linkedin
   4.5 Networking through linkedin
   4.6 How to reach out to recruiters on Linkedin? (Message Template)
   4.7 How to announce your new job on linkedin?
   4.8 How to ask for a referral?
   4.9 Polite follow-up message for when you don’t hear back after asking for referral

5. **Interview Preparation**
   5.1 Steps to take before interview
   5.2 Common Interview Questions
   5.3 Questions to ask the interviewer
   5.4 Different ways you can answer, Why did you leave your last job?
   5.5 Tell me about yourself
   5.6 How to explain the career gap?
   5.7 Job application email template
   5.8 How to follow up on a job application?

5.9 Thank you/ Follow up email after the interview
5.10 How to write a job acceptance email?
5.11 How to decline a job offer?
5.12 How to ask about salary before the interview?
5.13 How to respond to a job rejection email?
5.14 How to write a counter offer email?
5.15 How to respond to an offer with a low salary?
5.16 List of Strengths and Weakness for job interview
5.17 Do's and Don'ts to say in interviews

6. **ChatGPT Prompts**
   6.1 ChatGPT Roles
   6.2 ChatGPT Prompts to help in Job Preparation, Customizing Resumes based on Job Description, Cover Letters, Linkedin Optimization.

Whether you're a **recent graduate**, **career changer**, or aiming for that **next big opportunity**, this eBook is designed to be your go-to resource. It's more than just advice, it's a step-by-step guide to help you land your dream job. Here's what you'll find inside:

- **Craft a Standout Resume:** Learn how to create a resume that grabs attention, with insights and how to showcase your skills effectively.
- **Master the Art of Cover Letters & Portfolios:** Understand how to write impactful cover letters and build portfolios that make you stand out. These skills are crucial for making a memorable first impression.
- **Optimize Your LinkedIn & Network Like a Pro:** From optimizing your LinkedIn profile to mastering the art of networking, you'll learn how to connect with the right people and open doors to new opportunities.
- **Ace Interviews with Ease:** Prepare for every type of interview, whether it's behavioral, technical, or case-based. Get ready for the toughest questions with proven techniques and practical examples.
- **ChatGPT Prompts for Success:** Gain access to specially designed prompts that help you practice and refine your interview responses, making preparation easy and efficient.

Why This Guide?

- **Comprehensive & Actionable**: Every section is packed with actionable steps that you can start using right away.
- **Tailored for Every Stage**: Whether you're a beginner or looking to switch careers, this guide has something for everyone.

- **Boost Your Confidence**: Equip yourself with the knowledge and skills needed to approach every stage of the job search with confidence.

Ready to transform your job search and achieve career success? This eBook is the key to making it happen. **Get started now and take the first step toward landing your dream DATA ANALYST job!**

eBook Link: https://topmate.io/ayushi_mishra/842027