

What are the steps to need to follow to learn Data-science from Non-Technical Background

Transitioning from a non-IT background to a career in data science, data analysis, business analysis, generative AI, or working with large language models (LLMs) requires a structured approach.

Here are the detailed steps to follow:

1. Self-Assessment and Goal Setting

- **Identify Your Interests:** Determine which specific area (data science, data analysis, business analysis, generative AI, or LLMs) excites you the most.
- **Set Clear Goals:** Define what you want to achieve in both the short term and long term.

2. Learning Core Concepts

Data Analysis:

- **Excel and Google Sheets:** Learn data manipulation, pivot tables, basic formulas, and data visualization.
- **Descriptive Statistics:** Mean, median, mode, variance, standard deviation, correlation, and data visualization techniques.
- **Data Cleaning:** Handling missing data, data normalization, and preprocessing techniques.

Business Analysis:

- **Understanding Business Processes:** Learn how businesses operate and the role of data in decision-making.
- **Key Performance Indicators (KPIs):** Understand how to define, measure, and interpret KPIs.
- **Tools:** Learn to use business analysis tools like Microsoft Power BI or Tableau.

Programming Fundamentals:

- **Python:** Basic syntax, data structures (lists, dictionaries), control structures (loops, conditionals).
- **Libraries:** Introduction to libraries such as pandas for data manipulation and matplotlib/seaborn for data visualization.

3. Diving Deeper into Data Science

Advanced Statistics and Mathematics:

- **Probability Theory:** Probability distributions, Bayes' theorem.
- **Linear Algebra:** Vectors, matrices, matrix multiplication.
- **Calculus:** Derivatives, integrals (basic understanding for optimization in machine learning).

4. Machine Learning: Deep Learning: NLP: AI

- **Supervised Learning:** Linear regression, logistic regression, decision trees, random forests.
- **Unsupervised Learning:** K-means clustering, principal component analysis (PCA).
- **Model Evaluation:** Train/test split, cross-validation, evaluation metrics (accuracy, precision, recall, F1 score).

Tools and Platforms:

- **Jupyter Notebooks:** For interactive coding and data visualization.
- **Scikit-learn:** For implementing machine learning algorithms.
- **TensorFlow/Py-Torch:** Introduction to deep learning frameworks.

5. Exploring Generative AI and Large Language Models (LLMs)

Fundamentals of AI:

- **Artificial Intelligence:** Basic concepts and history.
- **Machine Learning vs. Deep Learning:** Understanding the differences and applications.

Generative AI:

- **GANs (Generative Adversarial Networks):** Basic concepts, architecture, and applications.
- **Transformers:** Understanding the architecture behind models like BERT and GPT.

Large Language Models:

- **Hugging Face Transformers Library:** How to use pre-trained models for text generation and other NLP tasks.
- **Fine-Tuning LLMs:** Techniques for adapting pre-trained models to specific tasks.

6. Practical Experience and Projects

- **Hands-On Projects:** Apply your knowledge to real-world projects. Start with simple data analysis tasks and progress to more complex machine learning and AI projects.
- **Kaggle Competitions:** Participate in data science competitions to test your skills.
- **GitHub Portfolio:** Maintain a portfolio of your projects on GitHub to showcase your skills to potential employers.

7. Networking and Professional Development

- **Join Communities:** Engage with online communities like Stack Overflow, Reddit, and specialized forums for data science and AI.

- **Attend Workshops and Conferences:** Participate in industry events to stay updated and network with professionals.
- **Certifications:** Consider earning certifications from platforms like Coursera, edX, and Udacity to validate your skills.

8. Job Search and Continuous Learning

- **Resume and LinkedIn Profile:** Tailor your resume and LinkedIn profile to highlight your skills and projects in data science and AI.
- **Job Applications:** Apply for entry-level positions, internships, or freelance opportunities to gain industry experience.
- **Continuous Learning:** Stay updated with the latest trends and advancements in the field through courses, reading research papers, and following industry leaders.

This structured approach will help you transition from a non-IT background to a career in data science, data analysis, business analysis, generative AI, or working with large language models. Each step builds on the previous one, ensuring you develop a comprehensive skill set.