



Assignment 01

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1. What is Data Science?

 **Answer:** Data science is the study of data to extract meaningful insights for business. It is a multidisciplinary approach that combines principles and practices from the fields of mathematics, statistics, artificial intelligence, and computer engineering to analyze large amounts of data.

2. What is Artificial Intelligence?

 **Answer:** Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

3. What is Machine Learning?

 **Answer:** Machine Learning is an AI technique that teaches computers to learn from experience. Machine learning algorithms use computational methods to “learn” information directly from data without relying on a predetermined equation as a model.

4. Future of Data Science and Real life applications.

Answer: Data Science Application in Different Areas

Education.

Airline Route Planning.

Healthcare Industry.

Delivery Logistics.

Banking and Finance.

Filtered Internet Search.

Product Recommendation Systems.

Digital Marketing and Advertising.

5. Why Python so popular? Future of Python.

Answer: The python language is one of the most accessible programming languages available because it has simplified syntax and not complicated, which gives more emphasis on natural language. Due to its ease of learning and usage, python codes can be easily written and executed much faster than other programming languages.

6. Why Python for data analytics?

Answer: Thanks to Python's focus on simplicity and readability, it boasts a gradual and relatively low learning curve. This ease of learning makes Python an ideal tool for beginning programmers. Python offers programmers the advantage of using fewer lines of code to accomplish tasks than one needs when using older languages.

7. Importance of Python in machine learning.

Answer: Python offers all the skillsets that are required for a machine learning or AI project – stability, flexibility and a large number of tools. Python helps developers to be productive and confident about the product that they are manufacturing, from the stages of development to deployment and till the maintenance stage.

8. Importance of Python in deep learning & NLP

Answer: WebDeep Learning for NLP. in Python. Further your Natural Language Processing (NLP) skills and master the machine learning techniques needed to extract insights from data. In this track, you'll learn how to create Recurrent Neural Networks (RNN), build models to ...

9. Supervised Learning with examples.

Answer:

Supervised Learning is the machine learning approach defined by its use of labeled datasets to train algorithms to classify data and predict outcomes.



The labeled dataset has output tagged corresponding to input data for the machine to understand what to search for in the unseen data.

Here's how it looks in practice.

10. Unsupervised learning with examples.

Answer:

Supervised Learning vs. Unsupervised Learning: Key differences

-  In essence, what differentiates supervised learning vs unsupervised learning is the type of required input data. Supervised machine learning calls for labelled training data while unsupervised learning relies on unlabelled, raw data.
-  But there are more differences, and we'll look at them in more detail.

11. Role and responsibilities of a Database Engineer.

Answer:

Database Engineer Responsibilities:

- Maintaining and enhancing the performance of existing database programs.
- Assisting database development teams in designing new database programs that meet the organization's data storage needs.
- Monitoring databases and related systems to ensure optimized performance.
- Writing new support programs and scripts to increase data storage capacity.
- Reviewing database and user reports, as well as system information.
- Performing debugging procedures on database scripts and programs, as well as resolving conflicts.
- Mentoring database administrators and providing them with technical support.
- Adhering to best practices in securely storing, backing up, and archiving data.
- Documenting processes related to database design, configuration, and performance.
- Keeping abreast of developments and best practices in database engineering.
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12. Role and responsibilities of a Data Analyst.

Answer: Interpreting data, analyzing results using statistical techniques. Developing and implementing data analyses, data collection systems and other strategies that optimize statistical efficiency and quality. Acquiring data from primary or secondary data sources and maintaining databases.

13.Role and responsibilities of a Data Engineer.

Answer: Data Engineer Roles and Responsibilities

Work on Data Architecture. They use a systematic approach to plan, create, and maintain data architectures while also keeping it aligned with business requirements.

Collect Data. ...

Conduct Research. ...

Improve Skills. ...

Create Models and Identify Patterns. ...

Automate Tasks.

14.Role and responsibilities of a Data Scientist.

Answer: Responsibilities of a Data Scientist

Data cleansing and processing.

Identifying new business questions that can add value to the organization.

Developing new analytical methods and machine learning models.

Correlating disparate data sets.

Conducting causality experiments.

Data storytelling and visualization.

15. Role and responsibilities of a Machine Learning Engineer.

Answer:

Machine Learning Engineer responsibilities include:

- Designing and developing machine learning and deep learning systems
- Running machine learning tests and experiments
- Implementing appropriate ML algorithms

Responsibilities

- Study and transform data science prototypes
- Design machine learning systems
- Research and implement appropriate ML algorithms and tools
- Develop machine learning applications according to requirements
- Select appropriate datasets and data representation methods
- Run machine learning tests and experiments
- Perform statistical analysis and fine-tuning using test results
- Train and retrain systems when necessary
- Extend existing ML libraries and frameworks
- Keep abreast of developments in the field

Ending