0-100 MACHINE LEARNING

1. **What is Machine Learning?**

Machine learning (ML) is a subset of artificial intelligence (AI) that focuses on building systems that can learn from and make decisions based on data. Unlike traditional programming, where explicit instructions are given to achieve a specific task, machine learning algorithms use statistical techniques to enable machines to improve their performance on a task through experience.

2. **Key Concepts in Machine Learning:**

1. **Data**: The foundation of machine learning. Data can be structured (like databases) or unstructured (like images, and text).
2. **Algorithms**: Procedures or formulas for solving problems. In ML, algorithms process data to learn patterns and make predictions.
3. **Models**: The output of machine learning algorithms after training. Models can predict outcomes based on new input data.
4. **Training**: The process of feeding data to a machine learning algorithm to learn from it.
5. **Testing**: Evaluating the performance of a model on unseen data to gauge its accuracy and generalisation.

3. **What Will Be the Outcome?**

1. Strong Technical Skills:
By learning machine learning, you will develop a solid understanding of algorithms, statistical methods, and programming languages such as Python and R. You will also gain experience with ML frameworks and libraries like **Numpy, Pandas, MatPlotLib, Seaborn & Scikit-learn.**

2. Ability to Build ML Models:
You will learn how to preprocess data, select and train appropriate algorithms, evaluate model performance, and fine-tune models to improve accuracy. This knowledge enables you to build and deploy ML models for various applications.

3. Project Experience:
Through hands-on projects, you will gain practical experience applying machine learning techniques to real-world datasets. This experience is invaluable for demonstrating your skills to potential employers and collaborators.

4. Portfolio Development

4. **6 Weeks Outline**
    1. **Probability & Statistics**
    2. **Supervised Machine Learning (Part1)**
    3. **Supervised Machine Learning (Part 2) & Unsupervised Learning**
    4. **Data Cleaning and Visualization**
    5. **Kaggle Project**
    6. **Advanced Kaggle Project**

5. **Mentor**
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