BONUS Assignment: In-Depth Literature Review on a Selected Data Science Algorithm

Objective:

To conduct an in-depth literature review on one of the key algorithms or techniques covered in the "Algorithms for Data Science" course up to Week 11. This review should explore the chosen topic comprehensively, examining its development, applications, and current state in the field of data science.

Topics for Selection (Choose One):

1. Data Mapping and Data Dictionaries
2. Regression Modeling: Linear and Logistic Regression
3. Cluster Analysis: K-means and Hierarchical Clustering
4. k-Nearest Neighbors (k-NN)
5. Bayes Theorem and Naïve Bayes Classifier
6. Decision Trees
7. Neural Networks
8. Time Series Forecasting

Instructions:

1. **Topic Selection**:
    - Choose one topic from the list provided. Your selection should be based on your interest, the relevance to your future career, or academic curiosity.
2. **Research and Compilation**:
    - Conduct a thorough literature search on your selected topic. Focus on finding peer-reviewed articles, authoritative texts, and significant research papers.
    - Include both foundational papers and recent studies to understand the evolution and current trends in the topic.
3. **Writing the Review**:
    - Provide a comprehensive overview of the topic, including its definition, historical development, key concepts, methodologies, and algorithms.
    - Discuss various applications of the algorithm in real-world data science scenarios.
    - Analyze the strengths, limitations, and any controversies or challenges associated with the topic.
4. **Comparative and Critical Analysis** (if applicable):
    - Compare different approaches or variations within the topic.
    - Critically analyze the impact and effectiveness of the algorithm in practical applications.
5. **Future Directions**:
    - Identify and discuss any emerging trends, future developments, or cutting-edge research related to your topic.
6. **Citations and References**:
    - Ensure all sources are properly cited and referenced. Use a consistent citation style as per your course guidelines.
7. **Personal Reflection**:
    - Reflect on what you have learned from this literature review and how it enhances your understanding of the broader field of data science.

Deliverables:

- A detailed literature review document (file.ipynb).

Evaluation Criteria:

- Depth and breadth of research.
- Clarity and coherence of the review.

- Critical analysis and synthesis of the literature.
- Quality of writing and adherence to academic standards.