Final Paper

Section Requirements

Introduction: This section should provide the background for your research. It sets the stage for your readers, introducing the topic and the main objectives of your study.

1. Background: Provide a comprehensive overview of the research topic, including historical context and current relevance.
2. Objectives: Clearly state the main goals and anticipated outcomes of the study.
3. Sources: Cite at least three authoritative sources to substantiate the background.
4. Stakeholders: Identify the key stakeholders affected by or interested in the research.

Research Questions:

1. Formulation: Articulate precise and researchable questions that the study aims to answer.
2. Hypothesis: Present a testable hypothesis for each question, predicting possible outcomes.

Research Design and Methods

1. Provide a thorough and detailed description of the research design and methods employed in the study.
2. Clearly explain the rationale for choosing the specific methodology, highlighting its alignment with the research objectives and the underlying theoretical or conceptual framework.

Data Exploration and Preprocessing

1. Explore the dataset, understand the variables, and identify any missing values or
2. outliers.
3. Analyze the distribution of the data, including numerical summaries and visualizations.
4. Identify and handle outliers using appropriate techniques (e.g., trimming, winsorization,
5. or transformation).
6. Handle missing values using appropriate techniques (e.g., imputation, deletion).
7. Perform any necessary data transformations or feature engineering.
8. Encode categorical variables using suitable methods (e.g., one-hot encoding, dummy coding).
9. Include at least 3 visualizations (e.g., histograms, scatter plots, box plots) to explore the data.

Model Selection

1. Provide a well-reasoned justification for the chosen modeling techniques or algorithms.
2. Discuss the strengths and potential limitations of the chosen models, and why they were deemed appropriate for the given problem or research question.
3. Compare the performance of two distinct models or algorithms applied to the same dataset.

4. Discuss the implications of the comparison, highlighting the differences in accuracy, computational efficiency, interpretability, or any other relevant metrics.
5. Explain the process of fine-tuning the algorithms, including the selection of hyperparameters and the methods used for optimization.

Results

1. Provide a detailed explanation of the model coefficients, including their magnitude and direction (positive or negative).
2. Discuss the statistical significance of each coefficient, using appropriate test statistics and p-values.
3. Interpret the practical meaning of the coefficients in the context of the research question or problem.
4. Present the results of the fine-tuning process, demonstrating the improvements in model performance or highlighting any trade-offs encountered.

Discussion

Practical Implications and Applications

1. Explain how the model's findings can be applied in real-world scenarios or used to inform decision-making processes.
2. Discuss the potential impact or consequences of implementing the model's recommendations or predictions.
3. Identify specific industries, organizations, or stakeholders that could benefit from the model's insights.

Limitations and Assumptions

1. Acknowledge any limitations or assumptions inherent in the model, such as data quality issues, sample size constraints, or simplifying assumptions.
2. Discuss how these limitations may affect the model's accuracy, generalizability, or applicability in different contexts.
3. Propose strategies to mitigate or address the identified limitations in future research or model iterations.

Formatting Requirements

Report Length:

1. The anticipated length for the final report is a minimum of 2500 words.

Formatting:

1. Use a standard font (e.g., Times New Roman, Arial, or Calibri) with a 12-point size.
2. Use double-spacing throughout the document.
3. Include page numbers.

References:

1. Include a minimum of 3 references from reputable sources (e.g., academic journals, books, or authoritative websites) in the background section.
2. Use a consistent citation style (e.g., APA, MLA, or Chicago) throughout the report.
3. Provide a complete reference list at the end of the report.

Appendices (optional):

1. Appendices may be included to provide supplementary information, such as raw data, additional figures or tables, code snippets, or detailed calculations.
2. Appendices should be clearly labeled and referenced in the main body of the report.

Submission:

1. The final report should be submitted as a word document.
2. Include your name, team, database and course information on the cover page.

Rubric for Final Written Report

Section	Criteria	Points
Introduction	Clear overview of project objectives, scope, and relevance	5 pts
(15 points)	Well-defined research question	5 pts
	Identification of key stakeholders for your project	5 pts
Methodology	Thorough description of research design and methods (detailed rationale for chosen methodology)	10 pts
(30 points)	Defines variables in alignment with research objectives	5 pts
	Describes preprocessing steps in detail such as variable transformation, outlier handling, missing value treatment, etc.	10 pts
	Provide at least 3 visualizations for data exploration and preprocessing.	5 pts
Model Selection	Provides well-reasoned justification for chosen modeling techniques/algorithms and chosen variables	10 pts
(20 points)	Compares the performance of two models and discusses the implications of the comparison (algorithms need to be fine-tuned)	10 pts
Results & Discussion	Comprehensive presentation and interpretation of findings	10 pts
(25 points)	Insightful discussion connecting results to research questions/objectives	5 pts
	Critical analysis of unexpected results and study limitations	5 pts
	Substantive recommendations for future research/applications	5 pts
Writing Quality	Clarity and organization of writing	5 pts
(10 points)	Adherence to style guidelines and formatting rules	5 pts
Total		100 pts