Final Project Introduction

Data Science RFP Competition for Acme Innovations
Project Theme: Data Science RFP Competition (Request for Proposal)

Scenario:

Acme Innovations: A Legacy of Quality Under Threat
Acme Innovations, a household name for over 75 years, has built its reputation on providing reliable and innovative in the realm of household appliances, sporting goods, tools, and a variety of quality of life needs. Our user-friendly designs and commitment to durability has earned the trust of generations, reflected in our loyal customer base. However, recent years have seen a concerning trend: customer retention rates are declining.

The Challenge: Rekindling the Spark

While our core products remain top-notch, a shift in consumer preferences and increased competition have eroded our market share. We suspect our marketing strategies haven't kept pace with evolving customer needs. We're experiencing a disconnect with our customer base, and it's impacting our bottom line.

The Solution: Unleashing the Power of Data

Acme Innovations is committed to regaining its position as a leader in a variety of industries. We believe data science holds the key to unlocking valuable insights about our customers and their evolving preferences.

The Opportunity: Partnering with the Best

We're seeking a forward-thinking data science consultancy firm to help us leverage the power of data. This partnership will be crucial in:
- **Understanding Our Customers:** Who are our most loyal customers? What are their buying habits and preferences?
- **Identifying Growth Opportunities:** Are there untapped markets or product categories we should explore?
- **Optimizing Marketing Strategies:** How can we personalize marketing campaigns to resonate with different customer segments?
- **Enhancing Customer Retention:** How can we identify at-risk customers and develop strategies to win back their loyalty?

The Invitation

Acme Innovations invites leading data science consultancies to submit proposals outlining their approach to addressing our declining customer retention rates. We're looking for a

team with a proven track record, innovative ideas, and a deep understanding of data science techniques.

The Competition

This is your chance to showcase your expertise and become a valued partner in Acme Innovations' journey to reclaim its rightful place as an industry leader. We look forward to receiving your proposals!

Student Teams:

Each student group will represent a data science consultancy firm competing for your business. Students will need to create a company identity:

- **Catchy company name:** (e.g., "Insightsphere", "The Data Refinery")
- **Creative logo**
- **Short, memorable motto:** (e.g., "Unlocking the Power of Your Data", "Data Science for Real-World Results")

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Project Deliverables:

Proposal Document (2-3 pages):

- **Executive Summary:** Briefly introduce the company, its understanding of Acme Innovations' business challenge, and a high-level overview of the proposed data science approach.
- **Methodology:** Detail the proposed data science approach, including:
  - **Data Exploration and Cleaning:** Explain how the team will explore and clean the provided sample dataset.
  - **Model Selection:** Justify the chosen data mining models and explain their suitability for addressing Acme Innovations' business challenge.
  - **Model Training and Evaluation:** Describe the training process and metrics used to evaluate model performance.
  - **Metrics:** How will you evaluate success?
  - **Recommendations:** Based on the models' insights, propose actionable recommendations for Acme Innovations to address the business challenge.

Customer Segmentation and Recommendation Engine

- **Data:** We will provide you with a sample of our customer dataset containing information like purchase history (products purchased, amounts spent), demographics (age, location), and potentially loyalty program data (if applicable).
- **Work for Students:**
  - **Customer Segmentation:**
    - Students will use the data to segment customers into different groups based on their buying habits.
    - In the proposal, you should explain the chosen model, its benefits for customer segmentation, and how they will evaluate its performance.
  - **Product Recommendation:**
    - Students will use data science to group products based on purchase patterns. This will help identify frequently bought together products.
    - Based on these product clusters, they can propose a recommendation system that suggests relevant products to customers based on their past purchases.

PowerPoint Presentation (5-10 minutes):

  - Introduce the data science consultancy firm with its company name, logo, and motto.
  - Present the methodology used, focusing on key points from the proposal document.
  - Showcase key visualizations and results from data exploration and model evaluation.
  - Conclude with a clear, compelling presentation of recommendations for Acme Innovations.

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Evaluation Criteria:

- **Clarity and Comprehensiveness of the Proposal:** Organization, depth of understanding of the problem and data, justification of chosen approaches.
- **Technical Competency:** Sound methodology for data exploration, appropriate model selection and justification, understanding of evaluation metrics for all algorithms.
- **Data Storytelling:** Effective visualization of key findings and insights from data exploration and model results.
- **Actionable Recommendations:** Clear, impactful recommendations based on data insights and their relevance to Acme Innovations' business challenge.
- **Presentation Delivery:** Clarity, professionalism, organization, and ability to answer questions effectively.

- **Academic Integrity:** Minimal use of A.I. (<25%), minimal similarity scores to other teams (<15%) and no plagiarism.

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Model Code Requirement:

You will provide a full code of the for this assignment. You will follow a clear and easy to follow process including loading the dataset, exploring the data, various preprocessing steps, modeling, model evaluation, hyperparameter tuning (as necessary).

Data Description:

The data provided for this challenge will include customer purchase history (products purchased, amounts spent), demographics, and potentially loyalty program data. Students can use this data to build their customer segmentation models and propose recommendations.

Grading:

The project will be graded based on the following:

- **Proposal Document (30%)**
  - Must be writen in essay form in 12 pt Time new Roman font.
  - No code snippets
  - No visualizations
  - Mo bullets of any kind

- **PowerPoint Presentation (50%)**
  - Content (clarity, organization, technical accuracy)
  - Delivery (professionalism, engagement)
  - Visuals (effectiveness, design)

- **Model Code Overview (20%)**
  - Completeness
  - Understanding