Artificial Intelligence

Digital Business and Data Science
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PROJECT BORKUM

AI Class Final Project: Borkum Survey Data Analysis

Due Date: July 10, 2024 (Wednesday)
Presentations: July 11, 2024 (Thursday)

Project Overview
This final project is an exciting opportunity to be part of a cross-faculty initiative exploring diverse perspectives around the island of Borkum. The survey was conducted by Psychology students at UE.

Your results will be submitted for a publication on the project by the UE Publication House and shared with the Borkum Tourist Information. Our program has 10 pages to fill maximum, and the best visualizations and results will be included in the publication and exhibitions (in UE and beyond).

Group Formation
- **Teams:** Form **teams of two students**. Notify me of your group members by **June 28, 2024**. Otherwise, I will assign you to a random group of the remaining students.

Project Tasks
Your project should cover the following key tasks:
1. **Data Exploration**
   o Perform exploratory data analysis to understand the data distribution and key features.
2. **Formulating Research Questions**
   o Choose or formulate **at least three research questions** to explore using the dataset.
   o Ensure the questions are relevant and can be addressed using machine learning techniques. (see handout on research questions for some guidance)
3. **Applying Machine Learning Methods**
   o Select and apply **at least two machine learning methods** (e.g., NLP, Clustering, Classification, Deep Learning) to answer your research questions.
   o Provide a detailed explanation of the methods used and the rationale behind their selection.

Optional Explorative Tasks
- **Reinforcement Learning and Generative Intelligence:** Explore potential applications on an conceptual level. These are optional and for creative exploration. If visualized and communicated accordingly, they might still be relevant for the publication.

Deliverables
1. **Communication: Presentation of results (20 points)**
   o Your results will be submitted for a publication on the project by the UE Publication House. Our program has 10 pages to fill maximum, and the best visualizations and results will be included in the publication and exhibitions (in UE and beyond).

- o Prepare a detailed presentation summarizing your project, methods, and key findings.
- o Focus on storytelling to effectively communicate your insights.
- o Use visual aids to enhance your presentation.
- o Include high-quality visualizations and innovative analysis techniques.
- o Submit high-resolution visualizations separately.

2. **Code Submission (10 points)**
    - o Submit well-documented code used for data preprocessing, analysis, and modeling.
    - o Ensure reproducibility of your results.

3. **Presentation of results (20 points)**
    - o Presentation of results on July 11th

Project Setup Guidance

1. **Exploratory Analysis**
    - o Start with an exploratory analysis to familiarize yourself with the dataset.
    - o Use visualization tools to identify patterns and interesting aspects of the data.

2. **Method Application**
    - o Select the most appropriate machine learning methods to address your research questions.
    - o Document your approach, including the reasons for choosing specific methods.

3. **Iterative Process**
    - o Treat your analysis as an iterative process. Refine your methods and questions based on initial findings.
    - o Collaborate effectively with your partner to explore different perspectives and ideas.

4. **Storytelling**
    - o Develop a compelling narrative around your findings.
    - o Highlight key insights and their implications for understanding visitor behavior and sustainability on Borkum.

Evaluation Criteria

- **Depth of Analysis:** Thoroughness and sophistication of the analysis performed.
- **Method application:** Applying AI techniques and generating insights.
- **Visualization:** Clarity and effectiveness of visualizations in presenting data and results.
- **Communication:** Quality of the presentation in conveying the project's findings and significance.
- **Code Quality:** Readability, organization, and documentation of the submitted code.

Important Dates

- **Group Notification:** June 28, 2024
- **Project Submission:** July 10, 2024
- **Presentations:** July 11, 2024

Good luck with your project! Your innovative analyses and insights could contribute significantly to our understanding of tourism and sustainability on the island of Borkum.