Final Project Specifications

Stat 331/531

Dr. Williams

Final Project Specifications

Overview

The final project for this course involves creating an R Shiny application that draws on one of four specified areas: Spotify, Sports, Census Data, or Finance Data. This project is designed to integrate concepts from each chapter of the textbook and demonstrate practical applications using R.

Group Organization and Selection Process

- **Total Number of Groups**: The class will be divided into 12 groups, with each group consisting of exactly 3 members. This ensures a balanced team size for effective collaboration.
- **Distribution Across Areas**: There will be three groups dedicated to each of the project areas. This structure allows for a focused exploration of each area while maintaining diversity in project topics.
- **Group Formation**: Groups are self-selected based on mutual interest in a specific project area. This approach encourages students to collaborate with peers who share similar interests, fostering a more engaged learning environment.
- **Fixed Group Membership**: Once formed, group membership is final. This policy is in place to encourage students to learn to work effectively with diverse personalities and perspectives, mirroring real-world team dynamics.
- **Project Area Selection**:
  - **Initial Meeting Requirement**: After forming your group, you are required to meet with me either during learning hours or after class. This meeting is crucial for discussing your project selection. This should be done by week 2.

- **Area Availability Confirmation**: During our meeting, I will confirm the availability of your chosen project area. It's important to have a second choice in mind, as spots in each area are limited and assigned on a first-come, first-served basis.

10-Week Project Timeline with Detailed Tasks

Week 1: Ice Breaker and Team Formation

- **Task**: Conduct engaging activities to facilitate interaction.

Week 2: Group Formation and Area Selection

- **Task: Formation of Research Teams and Area Selection**
  - **Objective**: Assemble a team of three and choose a specific research area to delve into. Given the limited availability of spots per area, it's important to act swiftly in forming your group and making your selection. **Action Required**: Collaboratively decide on a project area that resonates with your group's interests and skills.
- **Submission Process: Preliminary Approval and Official Registration**
  - **Initial Approval**: Before you officially register your team, you'll need to get my approval for your group composition and chosen area. This ensures a balanced distribution of groups across different areas and aligns with course objectives.
  - **Official Registration**: Once approved, complete Google Form 1 with your team details. This includes:
  - **Team Members**: List all three group members.
  - **Group Name**: Choose a creative name for your team.
  - **Project Area**: Specify the area you plan to investigate. [Dropdown menu with options like Spotify, Sports, Census Data, Finance Data]
  - **Justification**: Briefly explain why you've chosen this particular area and what you hope to explore or achieve.
  - **Final Submission**: Submit the form only after receiving my approval, as this will be your formal commitment to the selected area and team structure for the project.

Week 3: Project Proposal Development

- **Task**: Start crafting project proposals, focusing on objectives and data sources.
- **Checkpoints**:
  - Assess whether project ideas align with course objectives. In other words, does the project cover one element from each chapter of the textbook? This hard to tell at this point but consult with me informally to make sure you are on the right track.

  - You will most likely change your minds during week 6 and 7 but that is ok. This is just a starting point.

Week 4: Proposal Submission

- **Task**: Submit project proposal detailing concept and data plans.
- **Submission**: Google Form 2
  - Group Name: [Text field]
  - Team Members: [Text field for names]
  - Selected Area: [Dropdown menu with options like Spotify, Sports, Census Data, Finance Data]
  - Potential Title of Your Project: [Text field]
  - Brief Description of Proposal: [Paragraph text field]

Week 5: Data Acquisition and Initial Development

- **Task**: Gain access to data and start developing initial code.
- **Checkpoints**:
  - Ensure data is relevant and properly sourced.
  - Check initial code for logical flow and functionality.

Week 6: Exploratory Data Analysis and Discovery

- **Task**: Engage in exploratory data analysis to discover potential insights and directions. Students should:
  - **Experiment with Data**: Delve into the dataset to uncover interesting patterns, trends, or anomalies. This can involve statistical analysis, hypothesis testing, or trying out different data transformations.
  - **Showcase Discoveries**: Present findings in an informal setting, highlighting any surprising insights or potential areas of further exploration.
  - **Open Exploration**: Encourage creativity in exploring the data. This is the stage for brainstorming and playing around with different ideas without being committed to a final project direction.

Week 7: Refining Focus for R Shiny Application and Data Preparation

- **Task**: This week, students will refine the focus of their R Shiny application using insights from their exploratory data analysis and start preparing their data for the application.

  - **Determine Application Focus**: Based on the exploratory analysis conducted in Week 6, decide on the specific aspect or question your R Shiny app will explore. This decision should leverage the data's potential to engage and inform users, focusing on a clear and achievable objective.
  - **Data Preparation**: Once a direction has been selected, students are required to save their data from the API they are using as an RDA (R Data) file. This step ensures that the data is readily available in a format that can be efficiently used within the R environment, facilitating smoother development and deployment of the application.
  - **Initial Visualization Concepts**: Begin brainstorming and sketching initial ideas for data visualization within the app. Focus on creating interactive, user-friendly, and informative visualizations that effectively communicate the data's story.
  - **Flexibility to Pivot**: Remember, you have the option to adjust or change your project focus if a more compelling or feasible direction emerges from your data exploration. This flexibility is available until the end of Week 8, allowing for adaptive and responsive project development.

Week 8: Enhance App Aesthetics and Functionality

- **Task**: Create app's UI/UX outline and develop script the video demonstration.
- **Checkpoints**:
  - Assess the aesthetic appeal and user experience of the app.
  - Review the script for clarity and comprehensiveness.

Week 9: Finalize App and Draft Report

- **Task**: Complete app development and start the report draft.

Week 10: Project Submission

- **Task**: Submit the final version of the R Shiny app, video, and report.
- **Final Evaluation**:
  - Thoroughly test the app for functionality and user experience.
  - Assess the video for effective communication and demonstration of the app.
  - Evaluate the report for depth of analysis, technical accuracy, and reflection on the learning process.

Project Requirements

1. **Content Coverage**: The project must cover one element from each chapter of the textbook.
2. **R Shiny Application**: Students must use R Shiny, enabling users to interact with the data and insights provided by the app.
3. **Develop a Scenario**: Each group must develop a scenario or use case for their app, detailing what the app allows users to do, learn, or explore.
4. **Video Demonstration**: Create a video demonstrating how the app is used and what users can gain from it.
5. **Report Submission**: Submit a 1-2 page report explaining the purpose of the app, its importance, a brief explanation of the code, and the role of ChatGPT in the project development.

Examples for Scenarios

1. **Spotify App**: An app that analyzes user listening habits and recommends new songs or playlists.
2. **Sports Analytics App**: An application that provides detailed statistics and performance analysis of sports teams or players.
3. **Census Data Explorer**: An interactive tool for visualizing and interpreting demographic data from census reports.
4. **Financial Trends Analyzer**: An app that tracks and predicts stock market trends or personal finance management.

Evaluation Criteria

- Adherence to project requirements and timeline.
- Creativity and practicality of the R Shiny application.
- Quality of the video demonstration and report.
- Effective use of R and integration of textbook concepts.

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