

College Event Feedback Analysis Using Data Science & NLP

Internship Project Report – Task 3

Data Science & Analytics Internship | Future Interns

1. Introduction

In today's education environment, student feedback plays a crucial role in improving the quality of academic courses and college events. Feedback collected from students provides valuable insights into teaching effectiveness, course relevance, presentation quality, assignment difficulty, and overall satisfaction.

The purpose of this project is to analyze student feedback data using Data Science techniques to identify satisfaction trends, highlight strengths and weaknesses, and provide actionable recommendations for improving future college events and academic programs.

This project is part of **Task 3** of the Data Science & Analytics Internship at **Future Interns**.

2. Objective of the Project

The main objectives of this project are:

- To analyze student feedback survey data
 - To understand overall student satisfaction levels
 - To identify top-performing and weak areas
 - To visualize feedback trends using charts
 - To perform sentiment analysis using NLP techniques
 - To generate insights and recommendations for event organizers
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3. Dataset Description

The dataset consists of structured feedback collected from students through a survey form. Each student rated different aspects of the event/course on a numerical scale.

Feedback Parameters Included:

- Well versed with the subject
- Explains concepts in an understandable way
- Use of presentations
- Degree of difficulty of assignments

- Solves doubts willingly
- Structuring of the course
- Provides support for students going above and beyond
- Course recommendation based on relevance

Each row in the dataset represents feedback from a single student.

4. Tools and Technologies Used

The following tools and technologies were used in this project:

- **Python** – Programming language
 - **Jupyter Notebook** – Development environment
 - **pandas** – Data manipulation and cleaning
 - **matplotlib & seaborn** – Data visualization
 - **WordCloud** – Natural Language Processing visualization
 - **NumPy** – Numerical computation
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5. Methodology

The project was executed using a structured data science workflow:

Step 1: Data Loading

The dataset was loaded into Python using pandas and inspected to understand its structure.

Step 2: Data Cleaning

- Removed unnecessary index columns
- Checked for missing values
- Ensured all rating values were in numeric format

Step 3: Exploratory Data Analysis (EDA)

- Statistical summary using describe()
- Calculation of average rating for each feedback parameter
- Computation of overall satisfaction score

Step 4: Feature Engineering

A new column called **Overall Satisfaction Score** was created by taking the average of all feedback parameters for each student.

Step 5: Visualization

Multiple charts were created to visualize:

- Average ratings per feedback category
- Overall satisfaction distribution
- Student satisfaction segmentation

Step 6: Sentiment Analysis using NLP

Since the dataset did not contain open-ended textual feedback, synthetic feedback text was generated from satisfaction scores.

This allowed Natural Language Processing techniques to be demonstrated using WordCloud visualization.

Step 7: Insight Generation & Recommendations

Insights were derived from the analysis and practical recommendations were provided.

6. Data Analysis & Findings

6.1 Overall Satisfaction Analysis

The overall satisfaction score was calculated by averaging all rating parameters for each student.

This score provides a single metric to measure how satisfied a student was with the event/course.

The distribution of satisfaction scores shows that most students rated the experience between **4 and 5**, indicating a high level of satisfaction.

6.2 Average Ratings by Feedback Category

The average rating for each parameter was calculated and visualized using a bar chart.

Observations:

- Highest Rated Parameters:
 - Subject knowledge
 - Course structuring

- Student support
- Teaching clarity
- Moderate Rated Parameters:
 - Presentation methods
 - Assignment difficulty

This helps identify strengths and improvement areas.

6.3 Student Satisfaction Segmentation

Students were segmented into three groups based on their overall satisfaction score:

- **High Satisfaction**
- **Moderate Satisfaction**
- **Low Satisfaction**

This segmentation helps organizers understand how many students are highly satisfied and how many require attention.

7. Sentiment Analysis Using NLP

Since the dataset was numeric, synthetic feedback text was generated from satisfaction scores such as:

- “Excellent course”
- “Good course”
- “Average course”
- “Poor course”

Using this feedback text, a **Word Cloud** was generated.

Word Cloud Analysis:

The most frequently appearing words were:

- Excellent
- Good
- Course
- Structured
- Supportive

- Faculty

This indicates an overall positive perception of the course/event.

8. Insights from the Analysis

- The majority of students are highly satisfied with the course/event.
 - Teaching quality and subject expertise are strong positive factors.
 - Assignment difficulty needs improvement.
 - Course relevance strongly influences recommendation scores.
 - Students value structured teaching and faculty support.
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9. Recommendations for Event Organizers

Based on the analysis, the following recommendations are proposed:

1. Maintain strong faculty engagement and subject expertise.
 2. Improve assignment design to ensure balanced difficulty levels.
 3. Enhance presentation methods using interactive tools.
 4. Introduce more real-world examples and case studies.
 5. Collect open-ended feedback in future surveys for deeper sentiment analysis.
 6. Conduct periodic feedback analysis to track improvement over time.
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10. Business Impact

This feedback analysis system can help institutions:

- Improve student satisfaction
 - Enhance course quality
 - Increase course recommendation rates
 - Strengthen academic reputation
 - Enable data-driven academic planning
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11. Conclusion

This project demonstrates how student feedback data can be transformed into meaningful insights using data science techniques. By applying data cleaning, exploratory analysis, visualization, and NLP-based sentiment analysis, the project provides a complete feedback analytics system.

The insights generated can help college event organizers and academic coordinators improve the quality of teaching, course structure, and overall student experience.

12. Project Summary

- Performed end-to-end data analysis on student feedback survey
- Built satisfaction KPIs and performance metrics
- Applied NLP techniques using WordCloud
- Generated actionable recommendations
- Created an internship-ready analytics report

➔ Tools Used

- Python
- pandas
- matplotlib
- seaborn
- WordCloud
- Jupyter Notebook