

Analyzing Student Feedback Using Artificial Intelligence techniques in Python

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Source code : <https://github.com/a7medalhadi/Analyzing-Student-Feedback-Using-Artificial-Intelligence-techniques-in-Python/tree/main>

Data Overview:

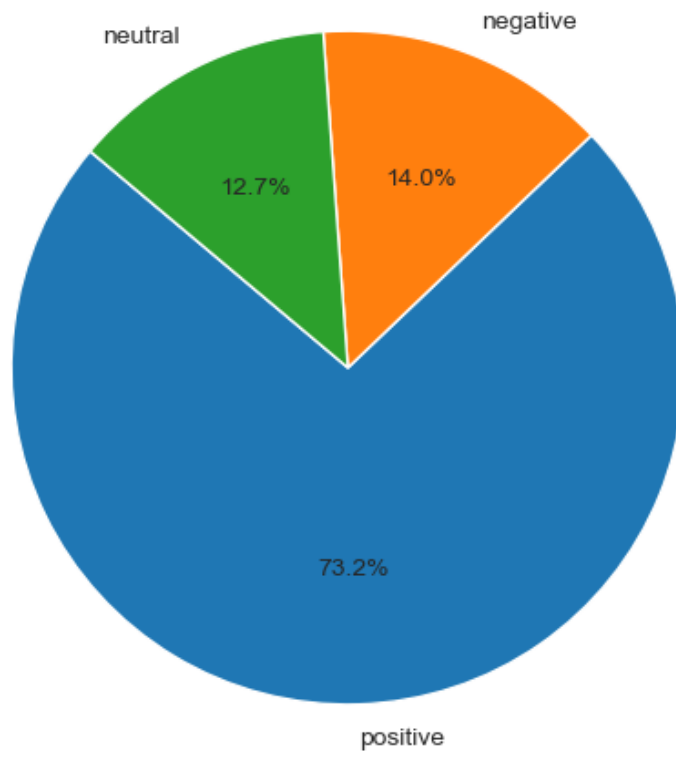
1. Number of Students Participated: There are a total of 2,086 students who participated and provided valid answers.
2. Degree Levels: The dataset includes responses from students belonging to 3 different degree levels.
3. Nationalities: Responses are received from students representing 59 different nationalities.
4. Student Programs: The dataset covers 22 distinct student programs.
5. Courses: There are a total of 634 unique courses included in the dataset.
6. Question Texts: There are 2,833 unique question texts that students have responded to.
7. Semesters: Responses span across 9 different semesters.

Data Exploration & Sentiment Analysis

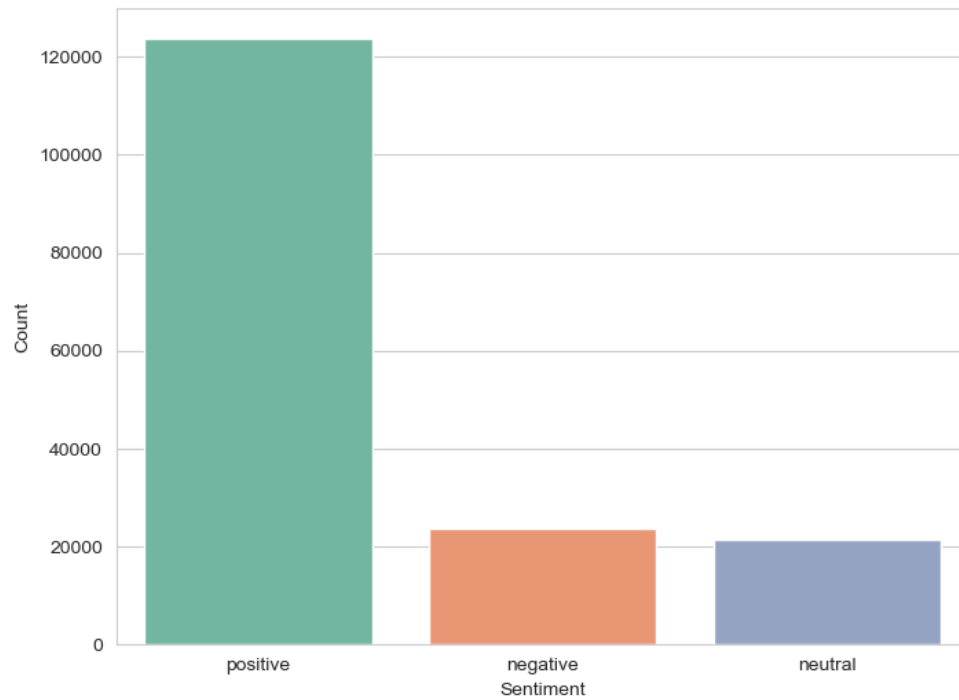
○ Overview:

Sentiment	Count	Percentage
positive	123,658	73.24%
negative	23,713	14.04%
neutral	21,477	12.72%

Sentiment Distribution



Sentiment Distribution



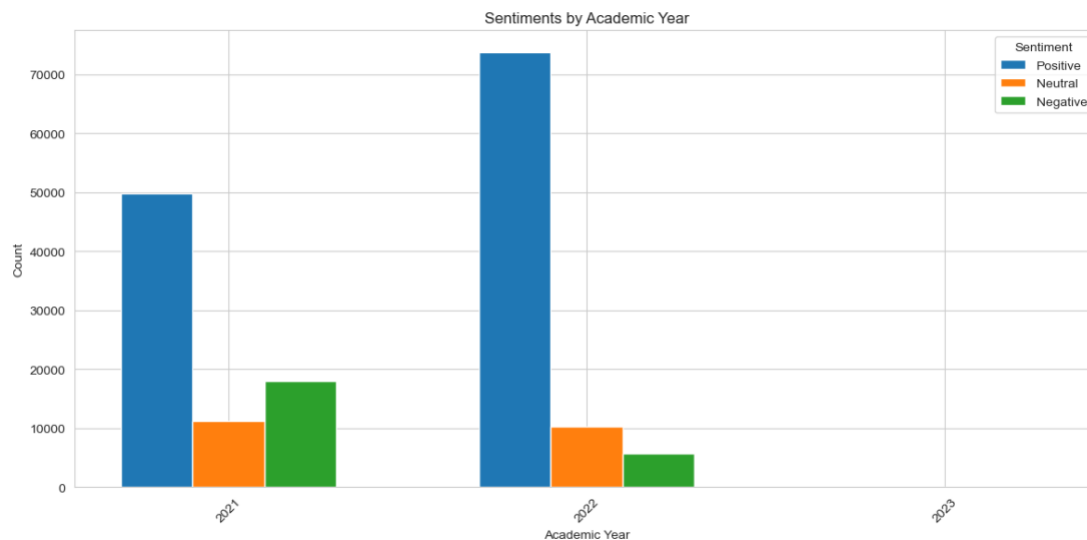
○ Sentiment Distribution by Academic Year

Upon analyzing the sentiment distribution by academic year, an interesting trend emerges:

In the academic year 2021, more than 1800 negative comments were recorded.

In contrast, the academic year 2022 witnessed a higher number of negative comments, with a total of 600.

This indicates that the academic year 2022 had a greater proportion of negative comments compared to the previous year.

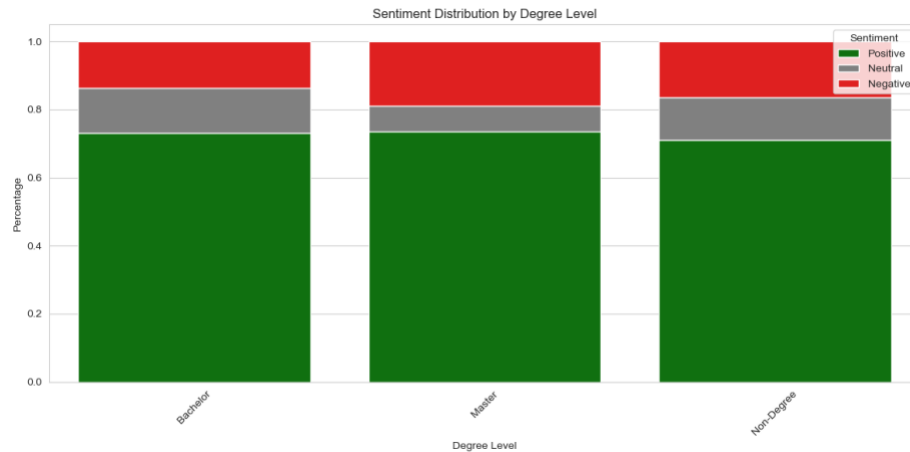


○ Sentiment Distribution by Degree Level

When examining the sentiment distribution by degree level, a notable trend emerges:

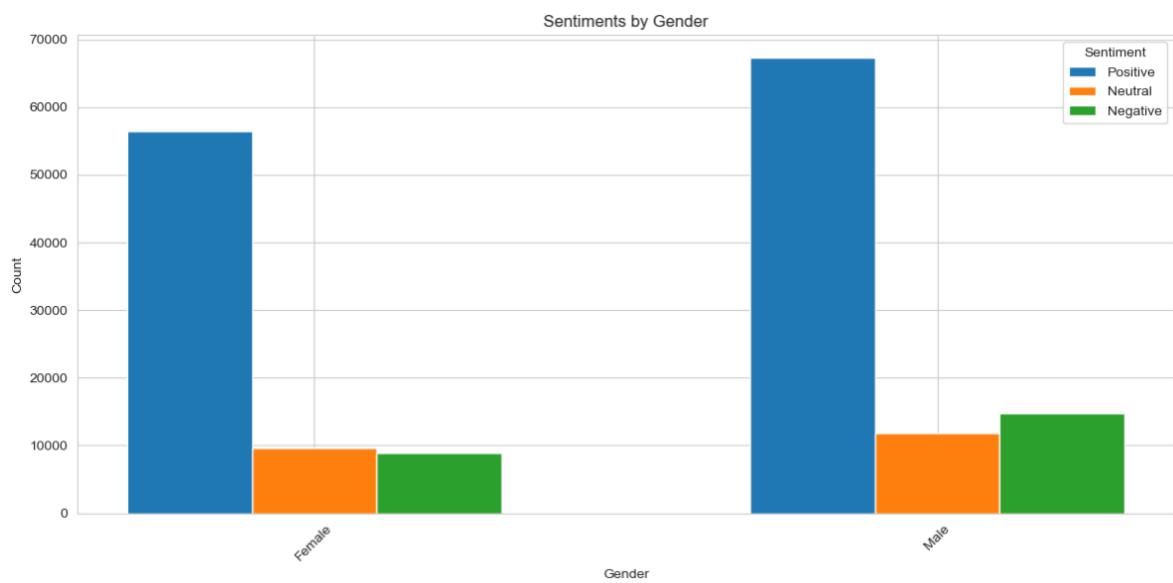
Among all degree levels, Master's degree programs recorded a higher number of

This suggests that Master's degree students expressed more negative sentiments in their feedback compared to students in other degree programs.



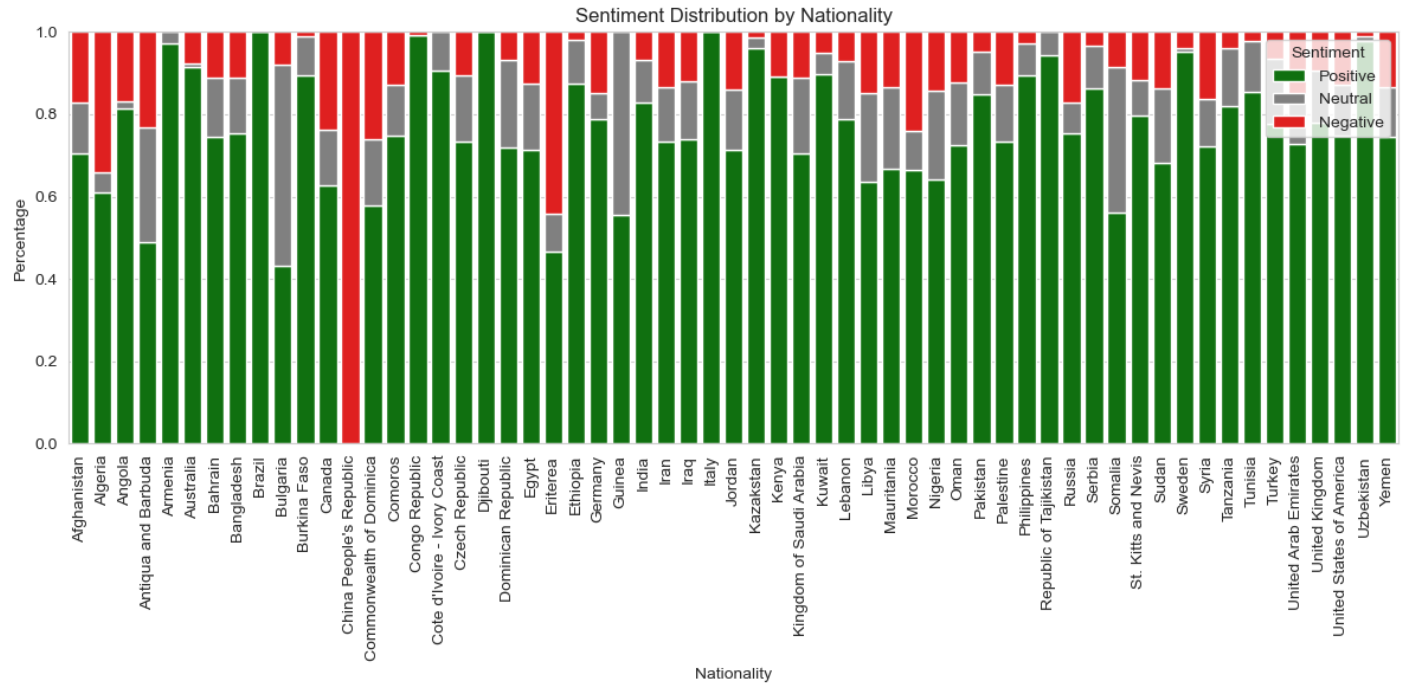
○ Sentiment Distribution by Gender

Males reported more negative comments than female



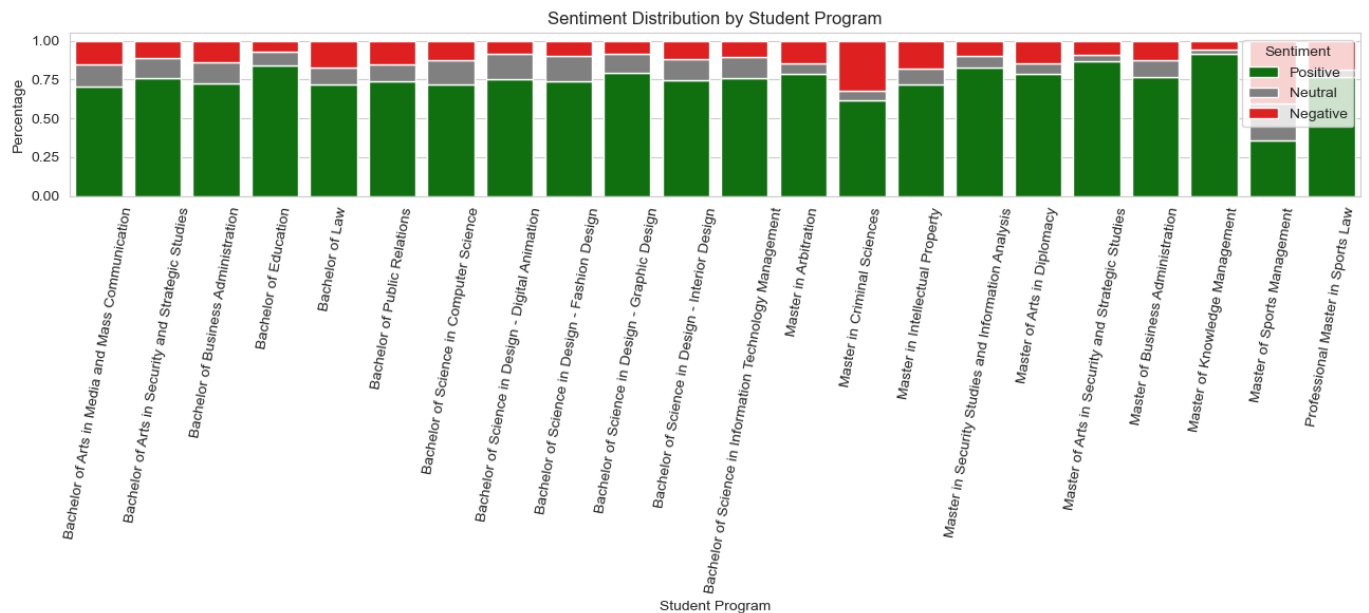
○ Sentiment Distribution by Nationality

All the comments from chines nationality were negative comments



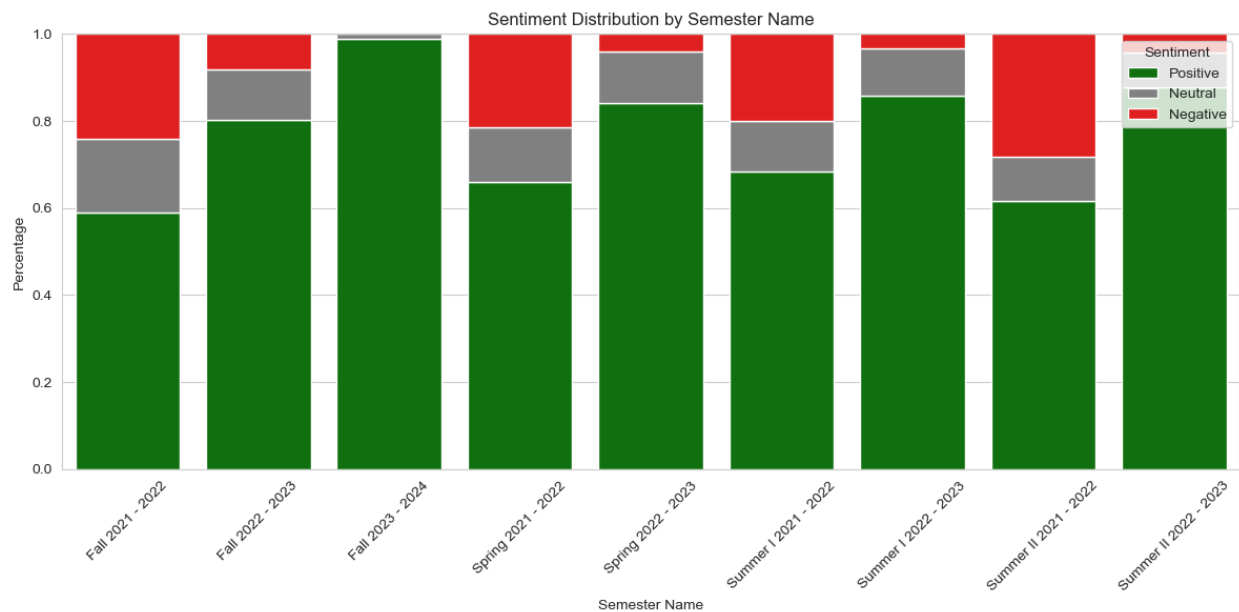
○ Sentiment Distribution by Student Program

There was more negative comments on the student program named (Master of sports Management)



○ Sentiment Distribution by Semester Name

Semester 2 2021-2022 reported more negative comments



Topic Modeling

Based on the Topic Modeling here's keywords and interpretation of the topics:

1. Topic 0: Positive Feedback on Course and Instructor

- Keywords: course, great, best, dr, really, helpful, class, instructor, well, good

- Interpretation: This topic appears to represent positive feedback about the course and Instructor. Students seem to appreciate the quality of the course and the instructor's effectiveness.

2. Topic 1: Mixed Feedback with Gratitude

- Keywords: nothing, course, everything, dr, best, great, thanks, instructor, add, doctor

- Interpretation: This topic seems to contain mixed feedback, including some negative aspects ("nothing," "add") along with expressions of gratitude and praise for the course and instructor.

3. Topic 2: Positive Feedback with Suggestions**

- Keywords: course, amazing, dr, doctor, best, suggestions, ever, way, time, nice

- Interpretation: This topic represents positive feedback about the course and instructor, with students also offering suggestions for improvement.

4. Topic 3: Positive Feedback on Teaching and Engagement**

- Keywords: course, dr, best, students, one, really, instructor, interesting, make, teach

- Interpretation: This topic appears to focus on positive feedback related to teaching effectiveness, student engagement, and interesting course content.

5. Topic 4: Positive Feedback with Gratitude and Understanding**

- Keywords: good, course, thank, best, dr, everything, really, understand, great, students

- Interpretation: This topic contains positive feedback with expressions of gratitude, understanding, and praise for the course quality and instructor.

6. Topic 5: Gratitude and Recommendations**

- Keywords: thanks, thank, recommendations, course, perfect, great, comment, amazing, interesting, clear

- Interpretation: This topic seems to express gratitude, recommendations, and positive feedback about the course, emphasizing its quality and clarity.

7. Topic 6: Positive Feedback on Course Content**

- Keywords: course, everything, comment, great, amazing, dr, doctor, class, would, clear

- Interpretation: This topic appears to focus on positive feedback about the course content, with students expressing satisfaction and praise.

8. Topic 7: Positive Feedback with Clarity**

- Keywords: course, good, perfect, students, everything, doctor, dr, helpful, clear, instructor

- Interpretation: This topic contains positive feedback emphasizing the course's clarity, helpfulness, and positive experience for students.

9. Topic 8: Positive Feedback with Appreciation**

- Keywords: course, great, everything, students, professor, dr, lot, suggestion, thanks, best
- Interpretation: This topic reflects positive feedback, appreciation for the course and instructor, and suggestions for improvement.

10. Topic 9: Positive Feedback with Likability**

- Keywords: good, dr, doctor, everything, best, like, really, yes, instructor, perfect
- Interpretation: This topic contains positive feedback with an emphasis on likability, indicating that students have a positive view of the course and instructor.

Insights and Recommendations:

1. Area of strength:

The top 5 questions with most positive semantic:

1. **Question: The faculty discussed the course syllabus at the beginning of the semester - Frequency: 13,731
2. **Question: Course learning materials are available on the portal** - Frequency: 13,572
5. **Question: The coursework and assignments are challenging** - Frequency: 10,159

From the top 5 questions with the most positive sentiment, we can identify the following areas of strength in the feedback from students:

1. Effective Course Syllabus Discussion: The fact that a significant number of students (13,731) mentioned that the faculty discussed the course syllabus at the beginning of the semester suggests that this is an area of strength. This indicates that students appreciate clear communication about course expectations and content.
2. Availability of Learning Materials: With 13,572 students mentioning that course learning materials are available on the portal, it indicates a positive aspect of the

course. This implies that students find it convenient to access course materials, which contributes to their learning experience.

5. Challenging Coursework and Assignments: The fact that 10,159 students mentioned that the coursework and assignments are challenging is a positive sign. Challenging coursework can indicate that students are being intellectually stimulated and are likely to gain valuable skills and knowledge.

These areas of strength reflect positive aspects of the course and teaching practices that contribute to a favorable learning experience for students. They can serve as valuable insights for course improvement and maintaining positive aspects in the future.

2. areas for improvement:

The top 5 questions with most negative semantic were:

1. Question: The course is relevant to my program of study - Frequency:2,624.
2. Question: The faculty uses additional resources (other than textbook) to enhance my learning- Frequency: 2,445.

Based on the feedback of the above questions here are some areas of improvements:

1. Relevance to Program of Study (2,624 mentions):

Area for Improvement: The negative sentiment related to the course's relevance to students' program of study suggests that there may be a perception among some students that the course content does not align well with their academic goals.

2. Use of Additional Resources (2,445 mentions):

Area for Improvement: Negative sentiment regarding the use of additional resources suggests that some students may have concerns or preferences regarding the materials or methods used to enhance their learning.

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