

# Online Student Feedback Analysis System with Sentiment Analysis

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**ABSTRACT:** The Online Student Feedback Analysis System is a web based system which collects the feedback from every individual student and provides an automatic generation of a collective feedback which has been taken by the students. We have developed a feedback system to provide the feedback in an easy and quick manner to any particular department in a college or an educational institute. We have named it as the Online Student Feedback Analysis System (OSFAS) which delivers via the student staff interface as an online system. With the help of this application, we can give feedback through this online system much faster than the existing paper feedback system.

The existing system takes more time to get the feedback from the students, thus the online feedback system is implemented. Students will fill online feedback using a standard form provided online. This feedback can be about the course structure, topics in the course, assigned faculties of the course, etc.

Special care has been taken to provide the security in the proposed system as only the authentic user is able to see the collective feedback of a batch of the students and can also get to know about the collective opinion.

The paper also discusses the application of giving the feedback not only objectively (i.e. rating out of a fixed constant value ) but also in subjective manner by leaving their comments and reviews about any particular field or subject.

For this feedback analysis system, we are using

- The conventional objective analysis as well as
- subjective analysis with the help of Sentiment Analysis.

**KEYWORDS:** Implementation, Sentiment Analysis, Opinion Mining, Feedback, E-R Diagram.

## I. INTRODUCTION

The Online Student Feedback Analysis System (OSFAS) is a management information analysis system for educational institutes to manage student feedback data.

This system provides facilities for selecting any particular subject for feedback and generate a report automatically, build collective opinion of the students, student's needs and requirements in the college. The Online Student Feedback Analysis System (OSFAS) is an automatic feedback generation system that provides the proper feedback about the teachers by using comments and categories like good, interesting, late, interactive, etc.

In the earlier existing system, students have to give the feedback on paper. After filling these paper feedback forms, these paper forms are collected by the faculties and class-teachers and then they calculate the overall grade for each subject and each teacher /faculty. Later on this collective grade report is viewed by the Head of Department. Then estimating the performance of teachers and course. This existing system is very time consuming and also causes a lot of trouble to the persons who are in charge of creating this analysis through the paper feedback forms. These are huge disadvantages of the existing system, thus the implementation of the Online Student Feedback Analysis System

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(OSFAS) is very much necessary.

Student feedback on courses is also an essential element in quality assurance. Questionnaires are of huge importance in the dialogue with the students, since these questionnaires are the best tool currently available for collecting objective, detailed, and reasonably systematic information on a wide range of questions, which informs the teacher about student's perception about the course – its strengths and weaknesses. Responses are gathered and analysed on behalf of the department by this system and will be used for the purpose of the quality enhancement. The aim of this system is to save time and also to decrease human load and efforts.

In order to gain maximum advantage:

- 1) Students must be instructed well on how to fill and submit the feedback online, when and how the results will be published, and that their contribution and opinion is important and taken seriously.
- 2) The head of the department must discuss a complete summary of the feedback on each course with the concerned faculty.
- 3) The comment section for the students in the online feedback form should be filled with direct statements by the students and must not contain any ironical statements or phrases.

## II. RELATED WORK

The system which we are proposing is an interface between the faculties and students. This is a web based system where the database is very important. The system generates two kinds of analysis. First is in the form of pie-charts and graphs whereas the second one shows the collective opinion of all the students.

We have used methods such as

- (1) Evaluation on the basis of ratings provided by the students for a particular field such as Subject, faculty etc.
- (2) We have used Sentiment Analysis Approach to analyse and generate the collective opinion of a whole batch of students. We have introduced two algorithms for Sentiment analysis process. First is General Sentiment Analysis Algorithm and second is Multi-use Sentiment Analysis Algorithm. Both the algorithms are going to be explained further in the later section of this paper.

The system which we are proposing is inspired by the work done in various universities around the globe. There are various implementations of this system in other fields as well such as the customer feedback systems in retail industries, in food industries, etc.

## III. OBJECTIVES

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Student feedback on courses is also an essential element in quality assurance. Questionnaires are of huge importance in the dialogue with the students, since these questionnaires are the best tool currently available for collecting objective, detailed, and reasonably systematic information on a wide range of questions, which informs the teacher about student's perception about the course – its strengths and weaknesses. Responses are gathered and

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## IV. SYSTEM IMPLEMENTATION

In this we have implemented a system which works on the concept of online feedback from students which is the replacement for existing paper feedback system which is very complicated method for analysing the collective feedback of a batch of students. In the proposed system we have designed a student login form and an admin login form. Student will login in their student login form with a proper id and password which was set by them while registration. After that if a student wants to have any changes in their profile they can edit the profile by making that particular change of their own. After this the page with different subjects is displayed, where the subject is located and as per the selection done by the student, the student is directed towards the main feedback form where the student gives their feedback and submit it. This page contains a form which includes questions about the selected subject's contents, course, teachers etc., whereas it also contains some questions regarding that particular subject's faculty. After giving the feedback, the student can submit their feedback. After submitting the feedback, student can log out from the system. In the main page, there are two particular modules such as student login and admin login.

Admin fill the details of the students or details of a particular batch to view their collective as well as individual feedback. This admin is the authentic user who can access all the data of the system. Admin will log out after his task.

The feedback collected by the students will be presented in two forms :

- (1) As a whole in the form of pie-charts on the basis of the objective questions filled with rating marks.
- (2) As a collective batch's opinion on the basis of the comments and reviews provided by the students by using Sentiment Analysis Algorithms.

## V. SENTIMENT ANALYSIS

The Sentiment Analysis is an approach of using natural language processing, and text analysis for extracting and identifying the sentiment of a text into a positive, negative or neutral category. In-order to reach a binary decision, generally sentiment analysis is used.

Binary decision such as either somebody is in support for something or against it, people either like something or hate it.

Opinion Mining is an another term used for sentiment analysis as it includes identifying people's emotions, attitude and their opinion about any particular person, subject or a field.

### *Approach of Sentiment Analysis in the Proposed System*

In the proposed Online Student Feedback Analysis System (OSFAS) , comments and reviews given by the students about the course structure, contents of the course and faculties are recorded and then analysed using sentiment analysis algorithms.

Firstly, we are using the **General Sentiment Analysis Algorithm** which is tuned to analyse the sentiment of a general statement/review/comment. This General Sentiment Analysis Algorithm accepts any particular string and in return gives an emotion with the help of a rating for positive, negative and neutral. Then we have a compound result which provides the complete rating of the string.

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**Input Example:**

```
{
  "sentenceList":[
    "I like computer programming ",
    "I love data mining and sentiment analysis approach",
    "I don't want to learn physics."
  ]
}
```

**Output Example:**

```
[
  {
    "positive ": 0.455,
    "negative ": 0,
    "sentence": "I like computer programming ",
    "neutral": 0.545,
    "compound": 0.3612
  },
  {
    "positive ": 0.673
    "negative ": 0
    "sentence": " We are in love with the data mining and sentiment analysis approach."
    "neutral": 0.327,
    "compound ":
    "sentence": " I love data mining and sentiment analysis approach ",
    "neutral": 0.488,
    "compound": 0.7432
  },
  {
    "positive ": 0,
    "negative": 0.432,
    "sentence": "I hate physics"
    "neutral": 0.668,
    "compound": -0.0654
  }
]
```

Secondly there is a flexible , **Multi-use Sentiment Analysis Algorithm** , which is great for more general texts , like books , articles ,transcripts , comments etc. This algorithm is based on the **STANFORD CoreNLP Toolkit**. The working of this algorithm is quite different as it first accepts a string and rate that string from 0 – 4. This rating can be categorized such as in the following table.

**SAMPLE SENTIMENT LEVELS**

Sentiment	Rating
VERY NEGATIVE	0
NEGATIVE	1
NEUTRAL	2
POSITIVE	3
VERY POSITIVE	4

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**Input Example:**

“We love sentiment analysis approach.”

**Output Example:**

```
{
  "result": 3
}
```

So these are the two basic sentiment analysis algorithm which we are going to use in our system.

## VI. PROPOSED WORK

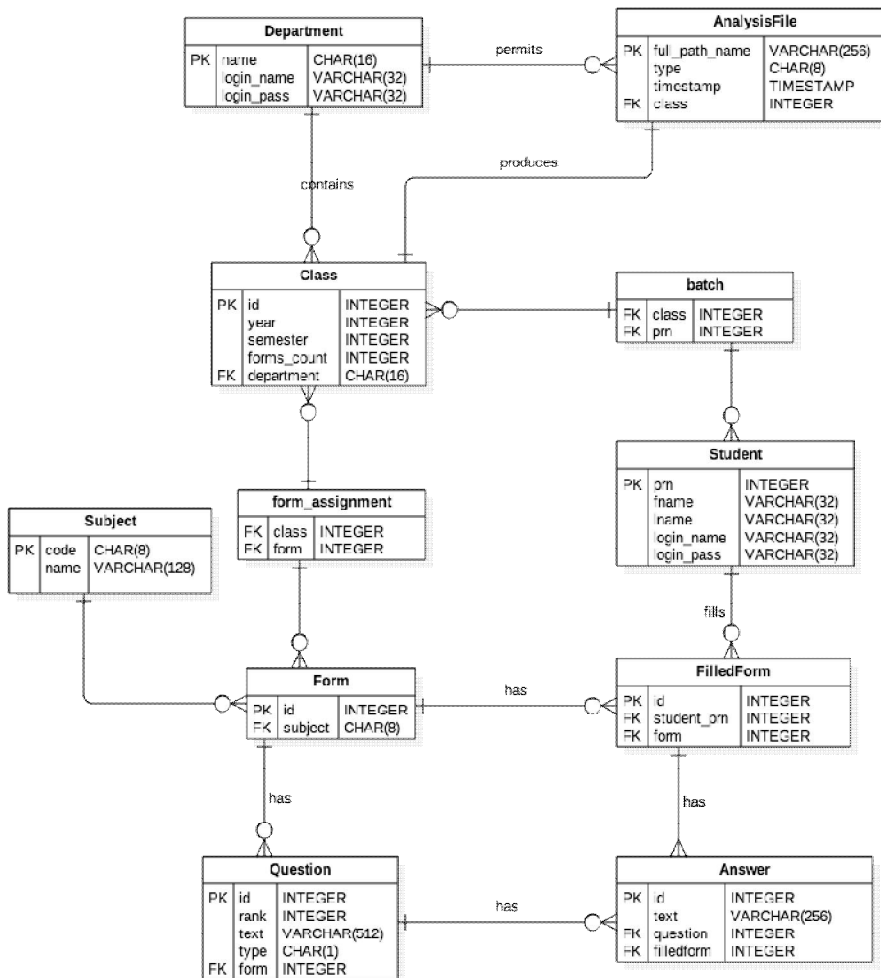


Fig 1: E-R Diagram of the Proposed System

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The main objective was to create a “Feedback Analysis System” with some magnificent qualities and features which differentiates it from other feedback systems and methodologies.

The key features of this system are:

- 1) Functionalities
- 2) Database

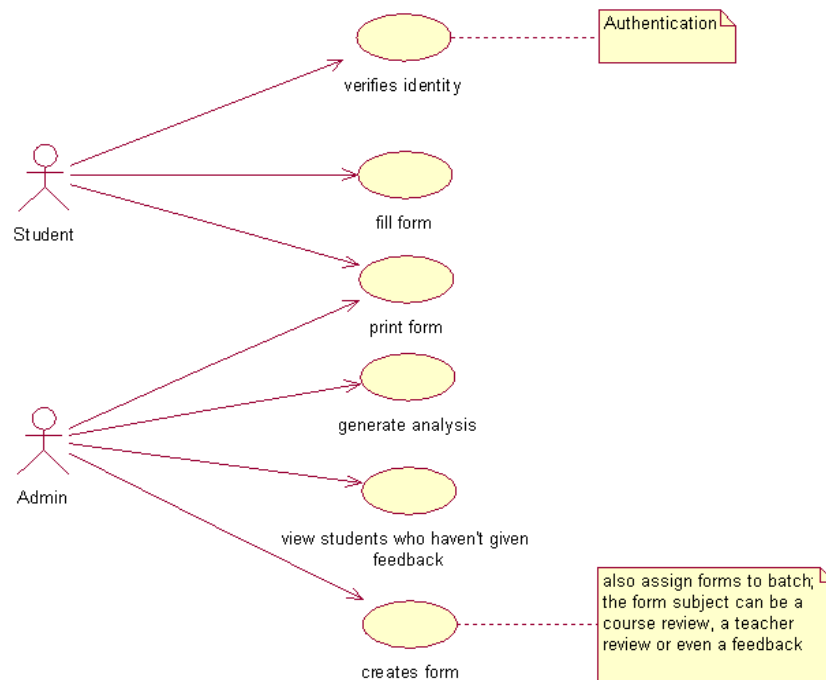
The core functionalities that is to be included in the system are as follows:

{1} ADMINISTRATOR:

- (1) Can insert /update/delete new student
- (2) Generate analysis
- (3) View students who haven't given feedback

{2} STUDENT:

- (1) Can fill the objective questionnaire by filling the marks out of a constant value
- (2) Can give the comments/compliments/reviews about the respective faculties, course structure, subject topics, contents etc.
- (3) Can verify the identity and edit the profile



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## VII. CONCLUSION

The proposed system is designed to reduce the time and save the efforts of the faculties from maintaining huge amount of records.

At the time of the feedback generation it applies the proposed algorithms and methodologies for generating a feedback of a particular batch of students.

After this a whole collective report is generated with pie-charts and graphs showing the collective rating of a particular field and a collective opinion is provided on the basis of sentiment analysis done on the subjective review/comment provided by the students about any particular field such as faculties, course structure, subject's topics etc. which can be provided to all the officials such as the principal, HOD etc.

When compared with the existing feedback system, the proposed OSFAS is much easier to implement and manage.

In comparison of the existing system, OSFAS very easily save each and every record of the individual students in the database and avoid usage of paper and save time and effort of the workers in charge or faculties.

## VIII. FUTURE SCOPE

This Online Student Feedback Analysis System (OSFAS) will be implemented in our college in all the departments. In future, this application can be used in offices, hotels etc.

Further enhancements can be made in designing the screens. Some more forms can also be added so as to retrieve the feedback details even in a better way. Some more designs can also be added in this proposed system.

## IX. ACKNOWLEDGEMENT

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