Automated System to analyze & provide feedback to open-ended start-of-semester MOOC student surveys

Feedback Fusion

User Manual

Version 1.3

02/04/2025

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1. Introduction

This User Manual (UM) provides comprehensive guidance for instructors and administrative users to effectively utilize the Survey Response Management System (SRMS) called Feedback Fusion. The SRMS is designed to streamline and enhance the handling of survey responses within large courses, significantly reducing the manual effort and decision-making required by instructors.

1.1 Overview

The primary purpose of this User Manual is to equip users with the necessary information to navigate and leverage the system for improved efficiency in managing survey responses. The document outlines the system's functionalities, provides detailed instructions on how to use the system, and offers guidance on troubleshooting common issues. By following this manual, users will be able to automate responses, prioritize critical issues, and gain insights into recurring concerns.

1.2 Scope of Activities

The development of this User Manual is based on the functionalities implemented in the SRMS, which include:

- **Automated Instructor Actions:** The system automates the process of sending email responses to the MOOC survey responses, reducing the manual workload on instructors.
- **Flagging Critical Responses:** It identifies and flags responses based on categories for immediate instructor attention, ensuring that urgent issues are promptly addressed.
- **Visualization of Common Concerns:** The system provides visual representations of the most frequently occurring words in responses, aiding in the interpretation and analysis of common concerns (included only in the code bench for now).

1.3 Intended Audience

This User Manual is intended for:

- **Instructors:** Users who will be utilizing the SRMS to manage and respond to survey feedback.
- **Administrative Staff:** Personnel responsible for overseeing the deployment and maintenance of the SRMS.
- **Technical Support Teams:** Individuals who provide technical assistance and support for the SRMS.

1.4 Expected Evolution of the Document

The User Manual is expected to evolve in conjunction with updates and enhancements to the SRMS. Future versions of this document will incorporate new features, address user feedback, and reflect changes in the system's functionality. Users are encouraged to refer to the latest version of the manual to ensure they have the most up-to-date information.

1.5 Security and Privacy Considerations

The SRMS handles sensitive survey responses and user information. Users must adhere to the following security and privacy guidelines:

- **Confidentiality:** Ensure that all survey responses and personal data are kept confidential and not disclosed to unauthorized individuals as per FERPA guidelines.
- **Data Protection:** Follow best practices for data protection, including the use of secure passwords and encryption where applicable.
- **Compliance:** Adhere to relevant data protection regulations and institutional policies when using the SRMS.

By following this User Manual, users will be able to effectively utilize the SRMS to enhance their course management processes and improve the overall efficiency of handling survey responses.

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2. Getting Started

2.1 Set-up Considerations:

- **Equipment:** A computer with internet access.
- **Dependencies:** Installation of libraries based on the requirements.txt files to ensure that the backend code runs smoothly.
- **Network Configuration:** Ensure that your network allows access to the SRMS.
- **Input and Output Devices:** Standard input devices (keyboard, mouse) and output devices (monitor).

2.2 User Access Considerations

- **Equipment:** A computer with internet access.
- **Network Configuration:** Ensure that your network allows access to the SRMS.
- **Input and Output Devices:** Standard input devices (keyboard, mouse) and output devices (monitor).

2.3 System Organization & Navigation

This section outlines how to set up and navigate the Survey Response Management System (SRMS) called **Feedback Fusion**. The system is designed for ease of use, allowing instructors and administrative staff to automate and manage survey responses effectively. Follow the steps below to get started with the system setup and navigation.

2.4 Prerequisites

Before starting, ensure that the following requirements are met:

- **Python 3.7 or higher**: Feedback Fusion requires Python to run. Ensure Python 3.7 or a later version is installed on your machine.
- **pip**: Python package installer pip must be installed to manage dependencies.
- **Download Anaconda:** For ease of handling virtual environments, it is recommended to download Anaconda.
- **Download Visual Studio Code:** For ease of accessing the file hierarchy structure of the code files, it is recommended to download Visual Studio Code.

2.5 Setup Instructions

2.5.1 Clone the Repository

The first step is to download the system's repository to your local machine.

· Open a terminal (command prompt on Windows).
· Run the following command to clone the repository:

git clone https://github.com/your-username/your-repository.git

cd your-repository

Link to the repository: *https://github.com/AyushiChakrabarty/Feedback-Fusion-for-Educators.git*

2.5.2 Create a Virtual Environment (Recommended)

To avoid dependency conflicts, it's recommended to set up a virtual environment for the project.

1. Create a virtual environment by running:

python -m venv env

2. Activate the virtual environment:

· On windows:

.\env\Scripts\activate

· On Linux/Mac:

source env/bin/activate

3. ***(Alternative - Recommended)*** Download Anaconda and use it to create the virtual environment.

Advantages:

- It handles both Python and non-Python dependencies, making it ideal if you have complex dependencies or need to install non-Python libraries (e.g., libopencv).
- Same command (conda activate myenv) works on all platforms (Windows, Linux, Mac).
- Conda's solver helps to automatically resolve package conflicts.

To create an environment in Conda, follow these steps:

· Install Conda (if you haven't already):

· Install Anaconda or Miniconda, which provides Conda.

· Open Terminal (Linux/Mac) or Anaconda Prompt (Windows).

Create the Environment: Run the following command:

conda create --name myenv

Replace myenv with your preferred environment name.

· Specify Python or Package Versions (Optional): You can specify the version of

Python or packages you need (3.7 or higher):

conda create --name myenv python=3.9

· Activate the Environment: Once the environment is created, activate it using:

conda activate myenv

· Deactivate the Environment: To deactivate the environment:

conda deactivate

2.5.3 Install Dependencies

With the virtual environment activated, install all required dependencies:

pip install -r requirements.txt

This command will install all the Python packages needed to run Feedback Fusion.

Tip:

- Make sure requirements.txt is located in the directory where you're running the command.

2.5.4 Setup Environment Variables

You will need to configure environment variables to enable certain functionalities such as generating & sending automated email responses.

You will need to configure environment variables to enable certain functionalities such as sending email responses.

1. Create or edit a .env file in the 'System' directory of the project.
2. Add the following lines to the .env file, replacing the placeholder values with your actual credentials:

GROQ_API_KEY=your_groq_api_key

EMAIL_USER=your_email@example.com

EMAIL_PASS=your_email_password

This step configures the necessary API keys and email credentials.

2.5.5 Run the Streamlit App

To start the Feedback Fusion app, run the following command:

streamlit run app.py

- **Local URL**: After starting the app, you can access it at *http://localhost:8501* in your browser.
- **Network URL**: You can also access it on your network at the provided address (e.g., *http://10.20.159.10:8501*).

3. Using the System

Once the app is running, you can perform the following actions:

1. **Upload a CSV File**: Upload your CSV file containing survey responses.
2. **Categorize Responses**: Click the ‘Categorize Responses’ button to analyze and categorize responses. You can view the category distribution of the concerns and download the updated CSV file after the categorization. You can also separately download the CSV file containing only the sensitive personal concerns as defined by the faculty.
3. **Generate Email Responses**: Use the ‘Generate Email Responses and Update CSV’ button to automatically generate emails based on the survey responses. You can also download the updated CSV.
4. **Send Emails**: Click the ‘Send Emails’ button to email the generated responses to the respective users.

The Feedback Fusion system automates much of the response management workflow, significantly reducing the time and effort needed to handle large volumes of survey feedback.

3.1 Upload CSV

Click on the ‘Drag and drop file here’ option. Select the ‘Browse files’ tab to choose your CSV or Excel data.

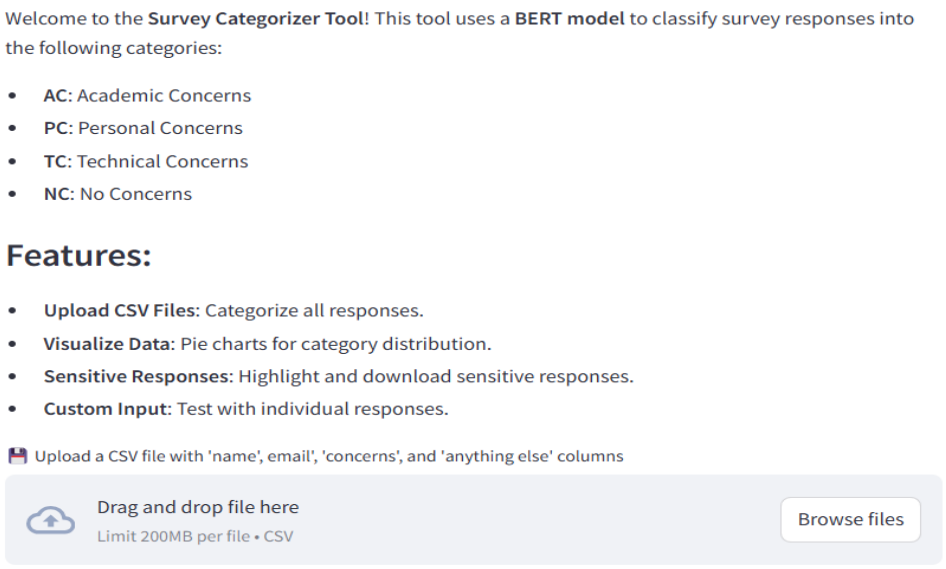

Figure 1. *Drag & Drop the File*

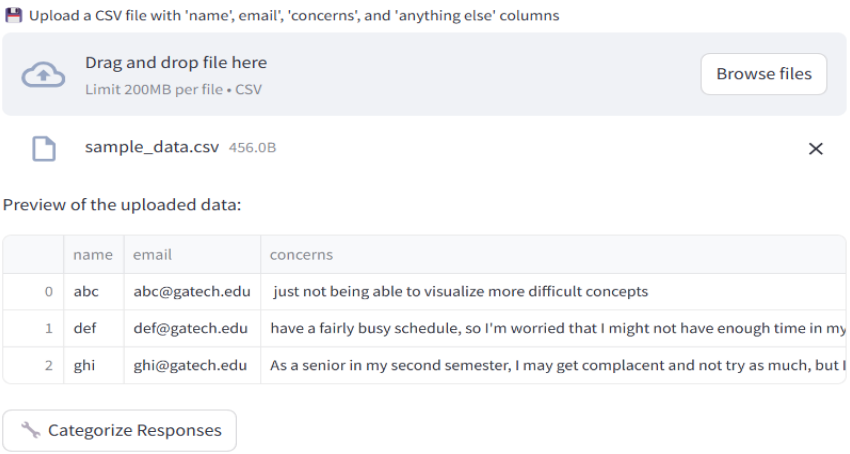

Figure 2. *Visualization on selecting the CSV/Excel file*

For example, in Figure 2., a file named *sample_data.csv* has been chosen as the input file. The file is visualized as the underneath table as displayed in the image. It is important to ensure that the file contains column names as ‘name’, ‘email’, ‘concerns’, and ‘anything else’.

3.2 Categorize Responses

Next, click on the tab highlighted in Red i.e., ‘Categorize Responses’ in Figure 3. to download the updated CSV file containing the automatically labeled file (using the Backend BERT model). The nature of output labels is the same as the input labels using which the dataset was trained:

- Academic Concerns or AC
- Technical Concerns or TC
- Personal Concerns or PC
- No Concerns or NC

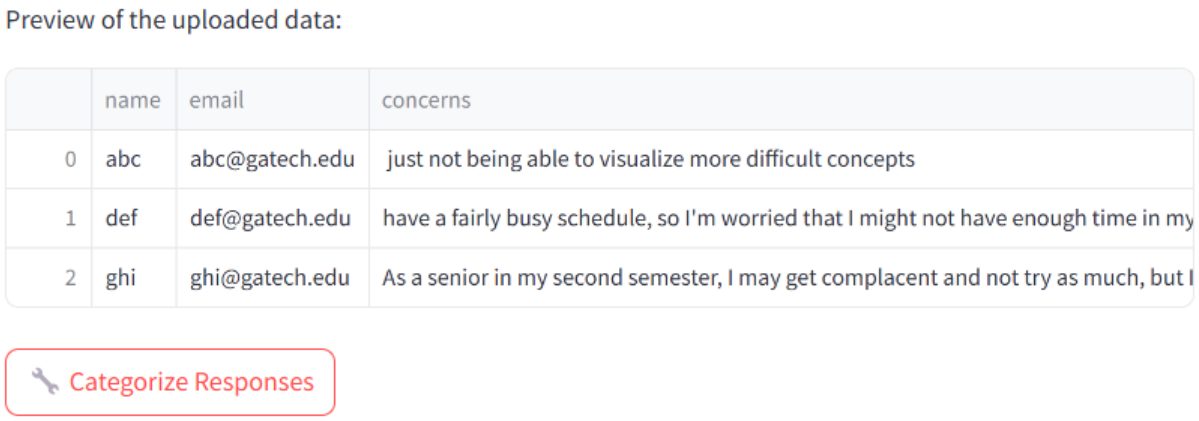

***Figure 3**. Step to 'Categorize Responses'*

After clicking on the highlighted tab, once the backend model processes on the input dataset, a notification in green i.e., 'Responses categorized successfully!' will be visible as shown in Figure 4.

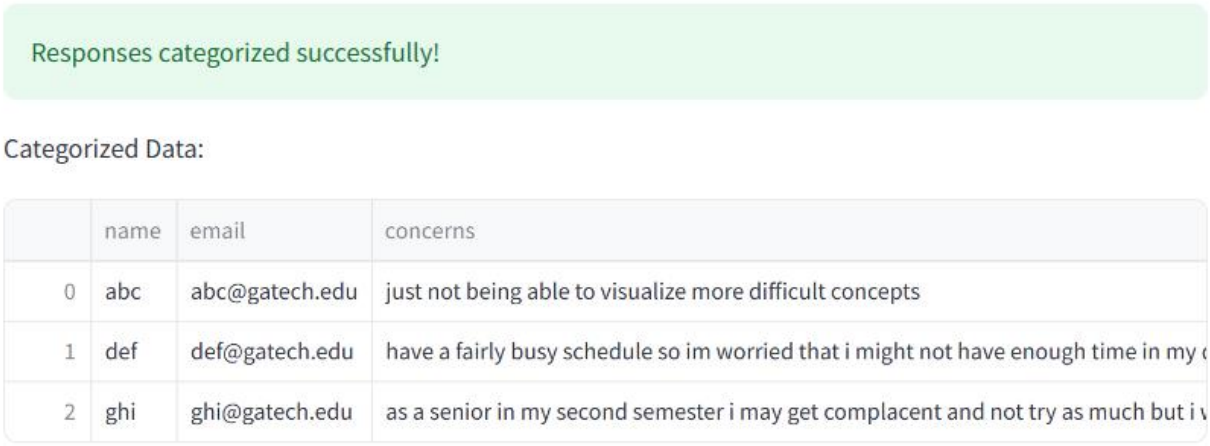

***Figure 4.** Success notification*

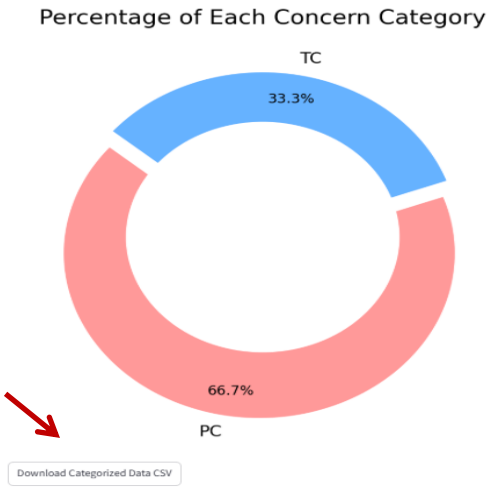

Figure 5. *Step to view the 'Category Distribution' and 'Download Categorized Data CSV'*

Next, click on the 'Download Categorized Data CSV' to save the updated CSV file containing the associated categorized labels as shown in Figure 5.

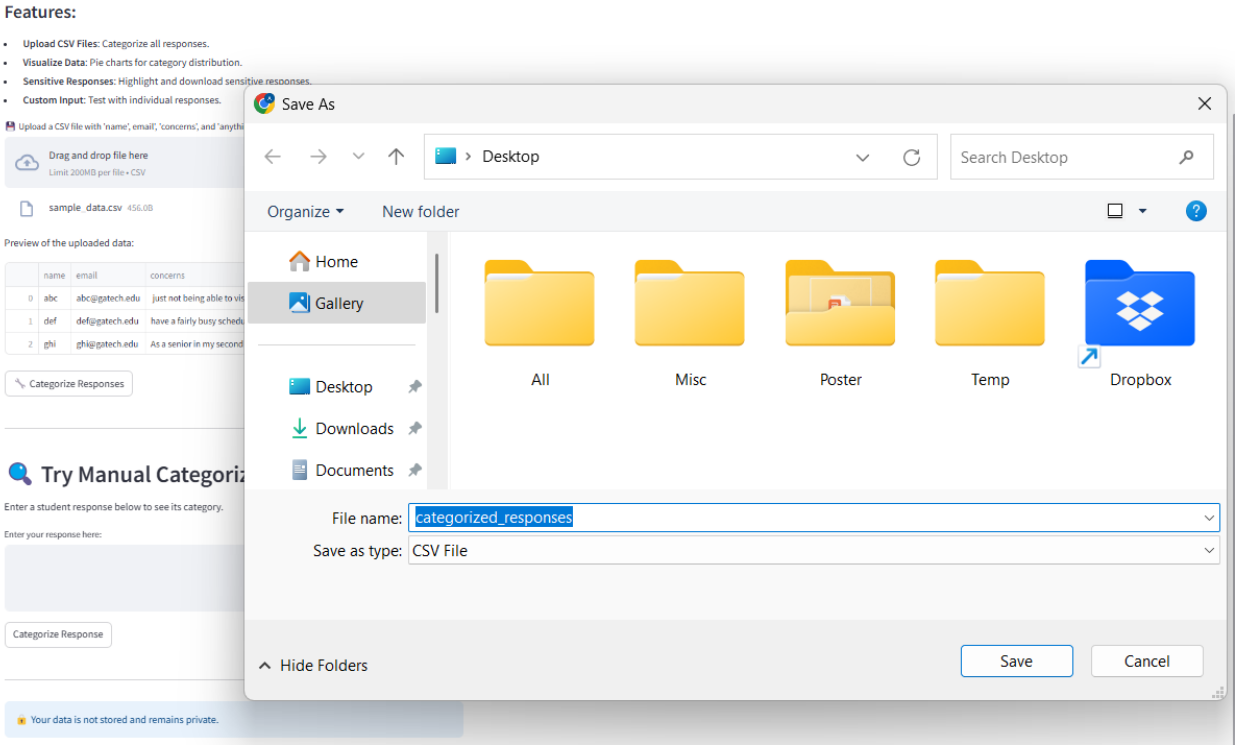

Figure 6. *Save the Categorized Survey Responses*

To exclusively download the sensitive personal concerns data, click on the 'Download Personal Concerns CSV' option.

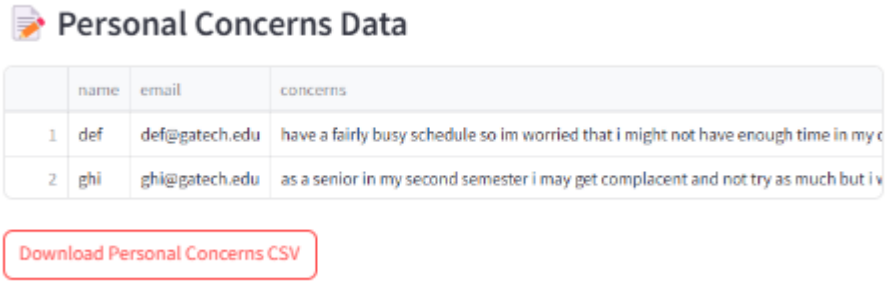

Figure 7. *Step to 'Donwload Personal Concerns CSV'*

3.3 Generate and Send Email Responses

Similar to the previous steps, click on ‘Generate Email Responses and Update CSV’ to generate and download the automated responses generated using the survey response as input and Groq powered Llama 3.1 model to utilize the category information and prompt to generate the content for automated emails.

Once the action for ‘Generate Email Responses and Update CSV’ is executed successfully, a notification in green i.e., ‘Email responses generated and CSV updated’ will be visible as shown in Figure 6.

After verifying the content for the emails, it can be automatically sent to the survey respondents using the ‘Send Emails’ tab.

Figure 8. *Save the Categorized Survey Responses*

4. Troubleshooting & Support

*This section will be populated based on the user testing feedbac

Appendix A: Record of Changes

Table 1 - Record of Changes

Version Number	Date	Author/Owner	Description of Change
1.1	*08/30/2024*	*CMS*	*Modification of the code structure and library requirements*
1.2	*01/16/2025*	*CMS*	*Special character error debugging (pre-processing module)*
1.3	*02/04/2025*	*CMS*	*UI design modification*

Appendix B: Approvals

The undersigned acknowledge that they have reviewed the User Manual and agree with the information presented within this document. Changes to this User Manual will be coordinated with, and approved by, the undersigned, or their designated representatives.

Table 5 - Approvals

Document Approved By	Date Approved
Name: <Name>, <Job Title> - <Company>	Date
Name: <Name>, <Job Title> - <Company>	Date
Name: <Name>, <Job Title> - <Company>	Date
Name: <Name>, <Job Title> - <Company>	Date

*This section will be populated based on the user testing feedback.