## 📄 Project Documentation

**Title:** AI-Based Outreach Message Generator  
**Author:** Srushti Waichal  
**Date:** August 2025

**1. Introduction**

The **AI Outreach Message Generator** is a web-based application designed to help automate and personalize lead outreach communication. By uploading a CSV file containing business or customer data, users can generate individual, AI-generated outreach messages tailored for each contact or lead. These messages are then compiled into a downloadable PDF file for further use.

This tool is especially useful for sales teams, recruiters, marketers, or students building outreach portfolios. It leverages OpenAI’s GPT-4o model to create highly contextual and human-like messages based on the input data.

**2. Objective**

* Automate the generation of personalized outreach messages.
* Simplify the process using a web interface with CSV upload support.
* Integrate OpenAI GPT models for intelligent language generation.
* Output results in a well-formatted PDF document.

**3. System Overview**

The application follows a simple **upload-process-generate-download** workflow:

1. **User uploads** a CSV file through the web interface.
2. The server **parses each row** from the CSV file.
3. Each row's data is sent to **OpenAI GPT-4o** to generate a personalized message.
4. All messages and their related data are **compiled into a PDF**.
5. The PDF is returned to the user as a downloadable file.

**4. Features**

* 📤 CSV Upload interface (no strict schema required)
* 🤖 GPT-4o-based AI message generation
* 📄 Output PDF creation using xhtml2pdf
* 🔒 Secure API key handling via .env
* 🧼 Clean UI built using Bootstrap 5
* 🛠️ Error-handling for file issues, API limits, and parsing

**5. Technology Stack**

| **Component** | **Tool/Library** |
| --- | --- |
| Language | Python 3.x |
| Web Framework | Flask |
| AI Service | OpenAI GPT-4o |
| PDF Generation | xhtml2pdf |
| File Parsing | pandas |
| Environment | python-dotenv |
| UI Styling | Bootstrap 5 |
| Deployment | Localhost or Cloud (Render, etc.) |

**6. Installation Instructions**

**Prerequisites**

* Python 3.8 or higher
* OpenAI account with valid API key

**Setup Steps**

git clone https://github.com/yourusername/lead-bot-app.git

cd lead-bot-app

pip install -r requirements.txt

**.env File**

Create a .env file in the project root:

OPENAI\_API\_KEY=your\_openai\_api\_key\_here

🚨 Never share your API key or commit it to GitHub.

**Run the App**

python app.py

Go to: http://localhost:5000 in your browser.

**7. Usage Instructions**

**1. Upload CSV**

* File should be in .csv format.
* Example structure:

| **account** | **sector** | **year\_established** | **revenue** | **employees** | **office\_location** | **subsidiary\_of** |
| --- | --- | --- | --- | --- | --- | --- |
| Acme Corp | Manufacturing | 1995 | $50M | 500 | Chicago | Global Holdings |
| DataWave Inc | IT Services | 2010 | $25M | 200 | New York |  |

You may include any number of columns — the app will handle dynamic input.

**2. Generate PDF**

* Click **Generate PDF**.
* Download will start automatically once processing is done.

**8. Code Structure**

lead-bot-app/

├── app.py # Main Flask application

├── templates/

│ └── index.html # Bootstrap UI for file upload

├── .env # API key storage

├── requirements.txt # Python libraries

└── README.md # Project documentation

**9. Key Components Explained**

**generate\_outreach\_message(row)**

* Takes a dictionary of input fields.
* Constructs a natural-language prompt.
* Sends it to OpenAI for response.
* Returns the generated message.

**generate\_pdf(records)**

* Accepts a list of dictionaries with original data + message.
* Builds HTML with the data and message content.
* Converts it into a PDF using xhtml2pdf.

**10. Error Handling**

| **Error Type** | **Response** |
| --- | --- |
| Invalid CSV | Returns "Please upload a valid CSV file." |
| Parsing Failure | Tries different delimiters; displays error message |
| OpenAI Quota Exceeded | Shows relevant OpenAI error message |
| No File Uploaded | Form validation ensures .csv is selected |

**11. Limitations**

* Requires internet access to call OpenAI API
* Limited by OpenAI's usage quota
* Currently only supports .csv files (no Excel)

**12. Future Enhancements**

* Support for .xlsx files
* In-app preview before PDF download
* Editable templates for outreach tone
* Language translation support
* Rate limiting or API usage indicator

**13. Conclusion**

This AI Outreach Generator offers a simple yet powerful way to personalize communication at scale using artificial intelligence. It reduces the manual effort involved in drafting outreach emails and ensures that each message is data-driven and unique to its recipient.

**14. Appendix**

**Sample Prompt Sent to GPT:**

Write a personalized, concise outreach message based on the following details:

Account: Acme Corp

Sector: Manufacturing

Revenue: $50M

Employees: 500

Office location: Chicago

Subsidiary of: Global Holdings

**Sample Output Message:**

Hi Team Acme Corp,

I’m reaching out after learning about your strong presence in the manufacturing sector. With your base in Chicago and a solid team of 500, we believe there’s a great synergy between our services and your operations under Global Holdings. I'd love to explore potential collaboration opportunities.

Best regards,

[Your Name]