MICHIGAN STATE UNIVERSITY

Project Plan Presentation

The Summarizer

The Capstone Experience

Team Auto-Owners

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From Students…
…to Professionals

Project Sponsor Overview

- Fortune 500 Company
- A++ rating by AM Best Company
- Started in 1916 and now has over 48,000 agents
- Main headquarters in Lansing, Michigan

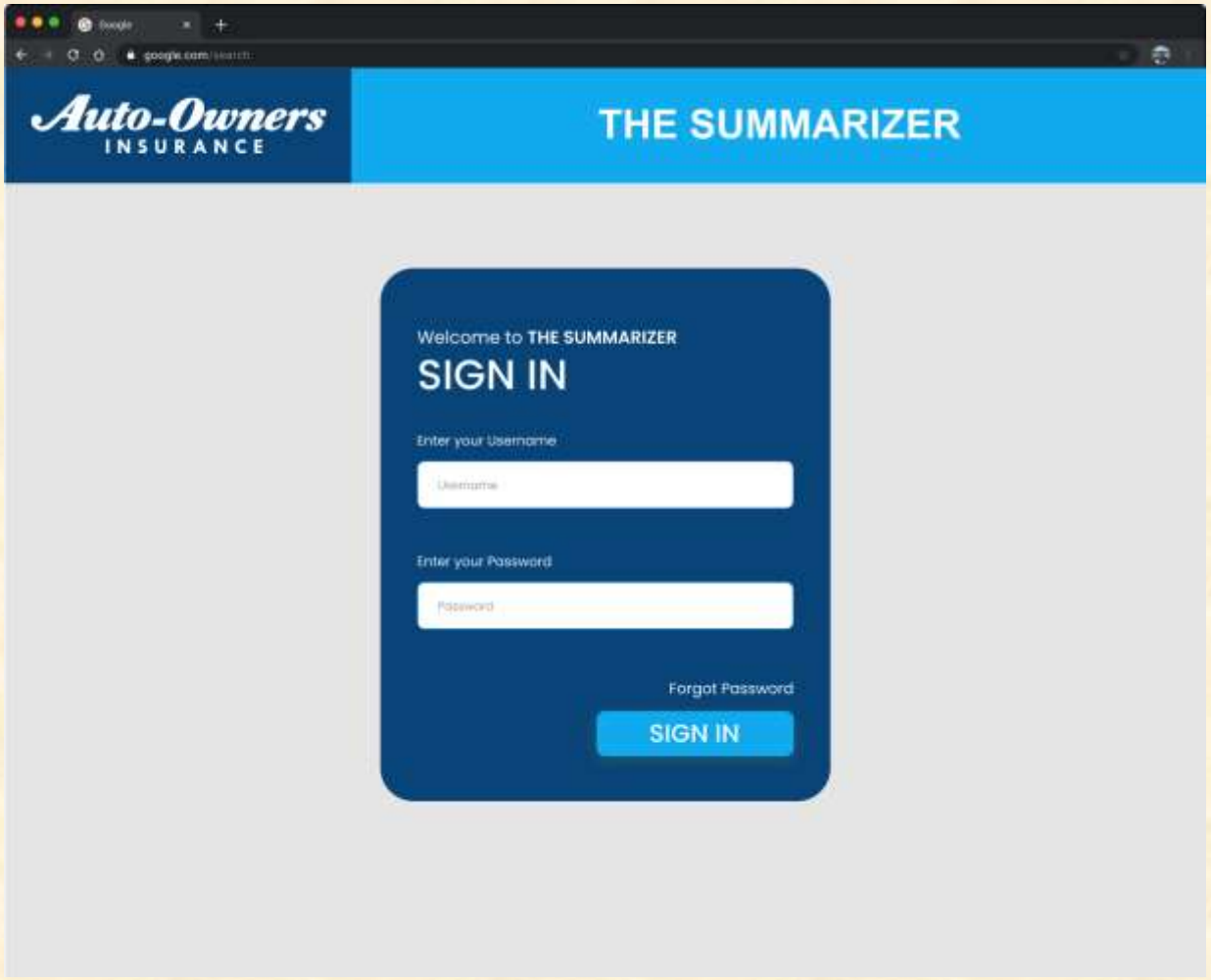
Project Functional Specifications

- Better analysis and decision making for customers' and employees' needs
  - Reviewing all the text and analyzing key metrics from a large amount of documents.
- A time-consuming and labor-intensive task
  - Manually processing; Large text; No standardization
- An automated and more efficient web application
  - Quickly summarize documents, extract relevant key metrics, and analyze the sentiment from them.
- Knowing the positive and negative part of their current service and product
- Log in -> submit file -> check report -(if admin)-> access history reports

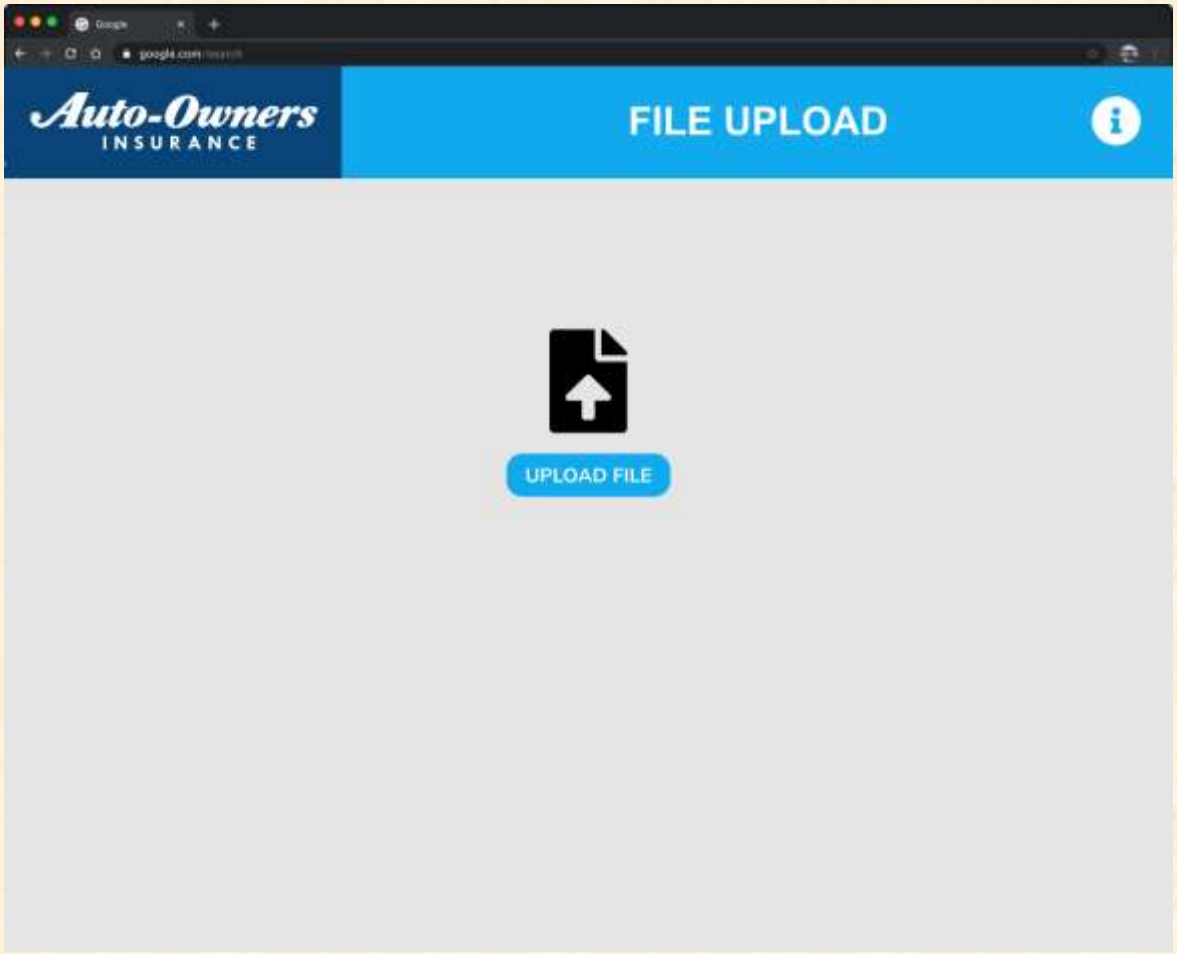
Project Design Specifications

- Major Features:
  - Login page, file upload page, file processing report, text analysis report (with sentiment analysis), summarization report
- Vertical sidebar navigation menu
- Information symbol for project explanation

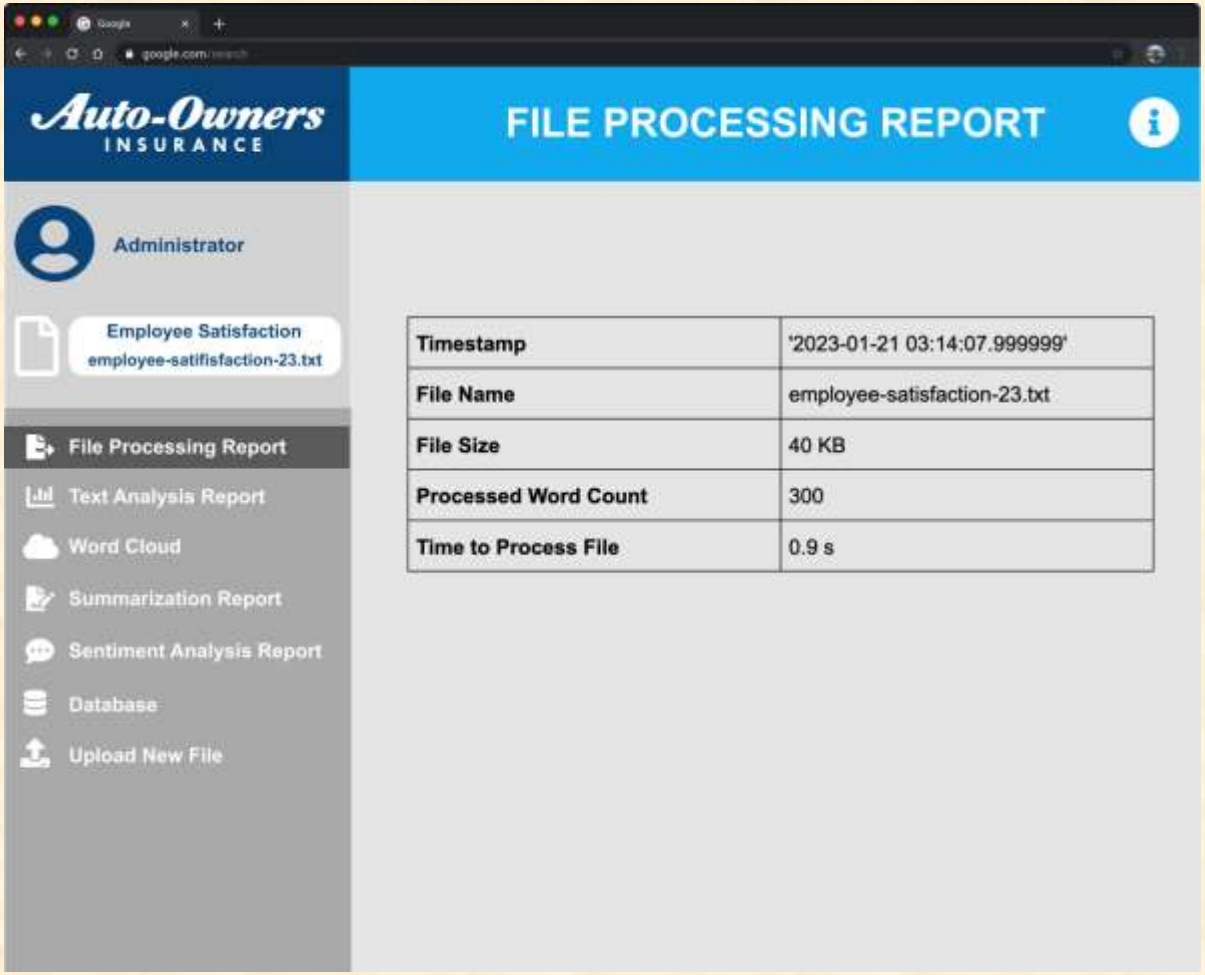
Screen Mockup: Login Page



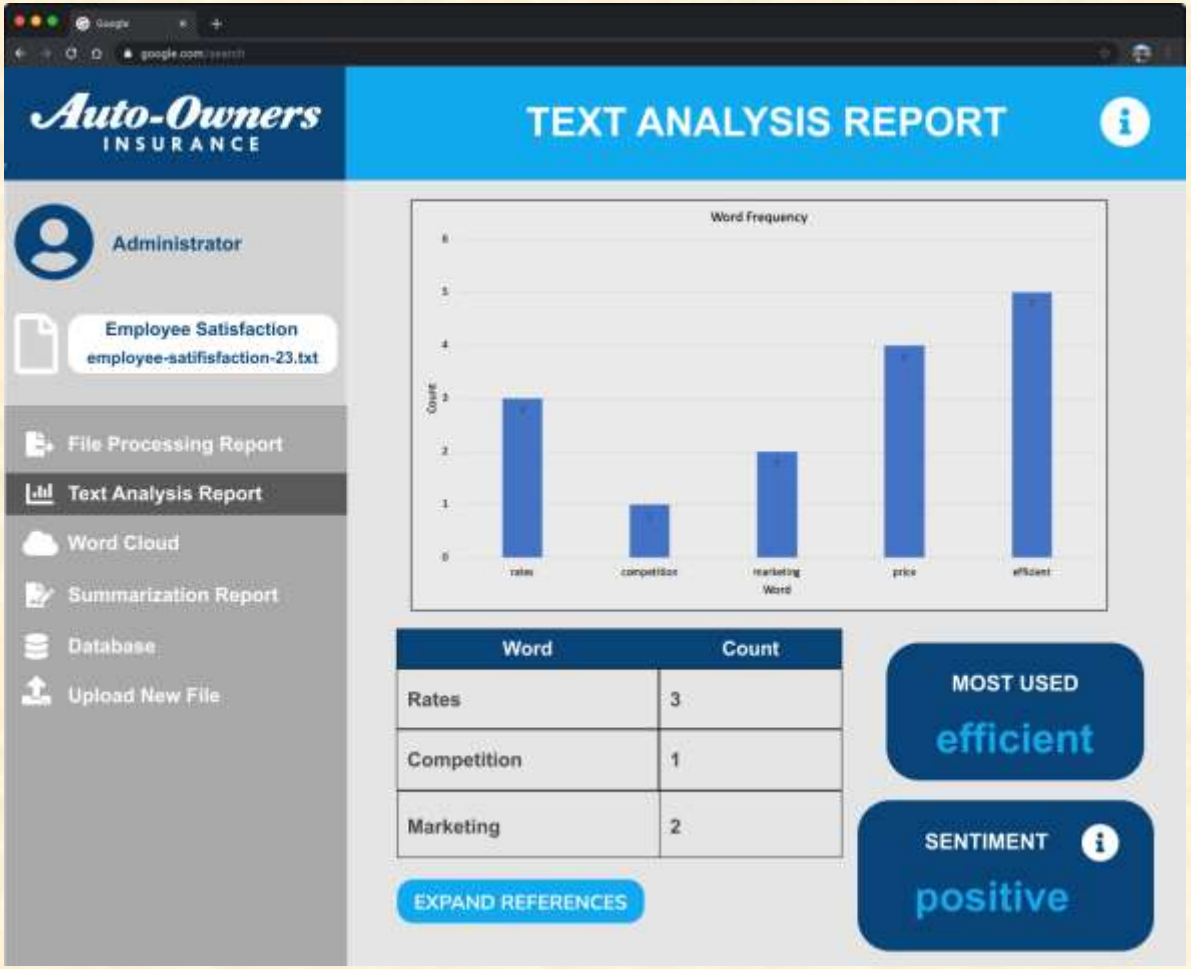
Screen Mockup: File Upload



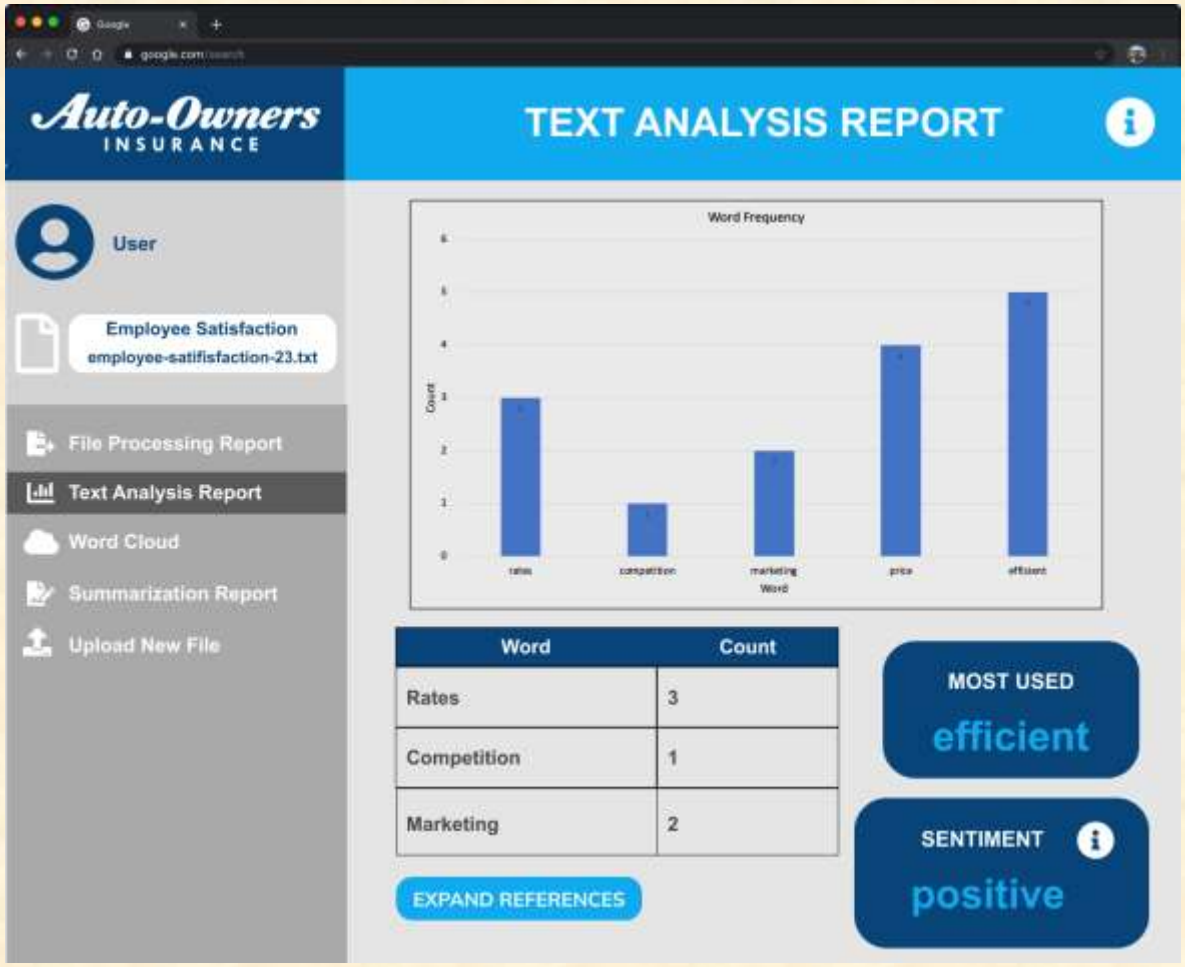
Screen Mockup: File Processing



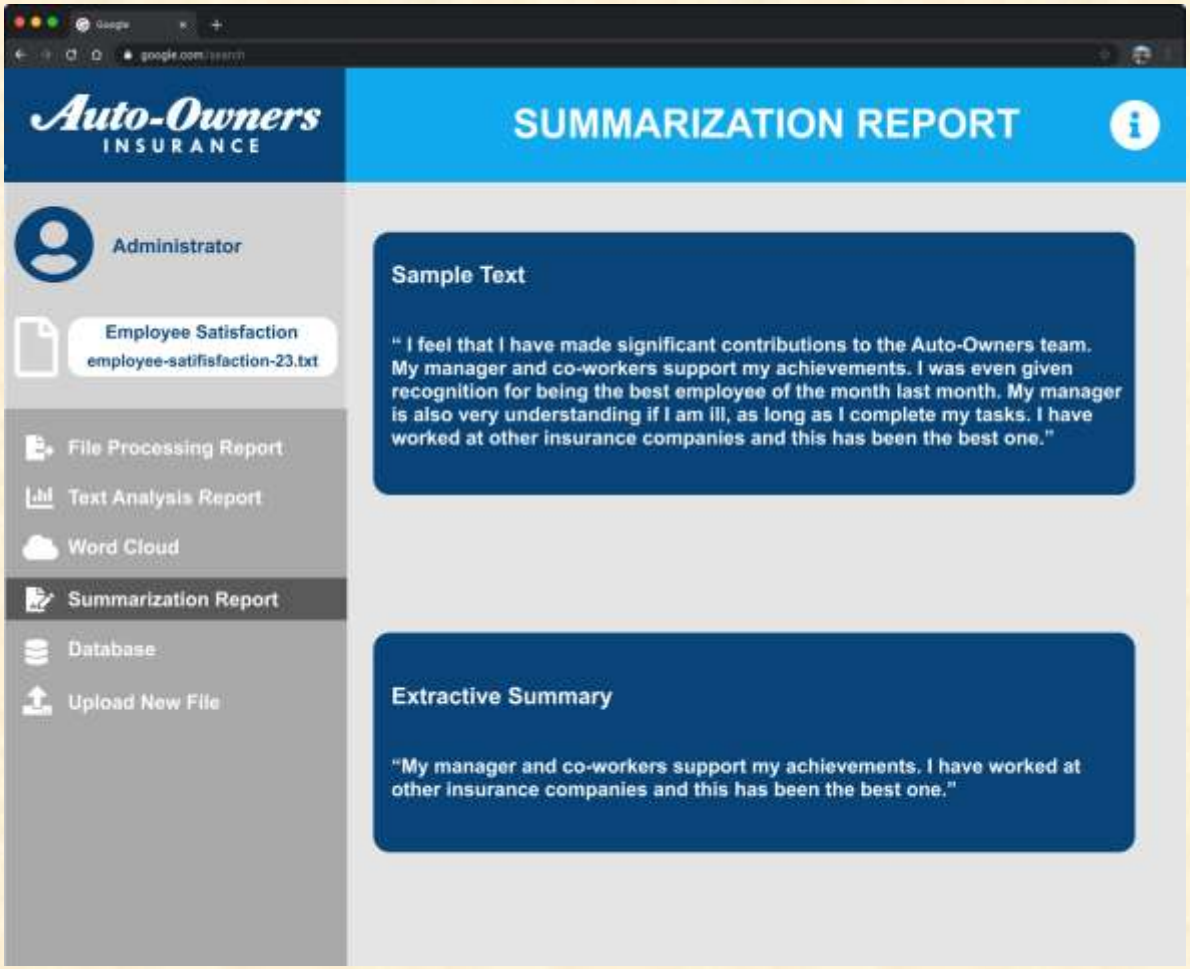
Screen Mockup: Text Analysis



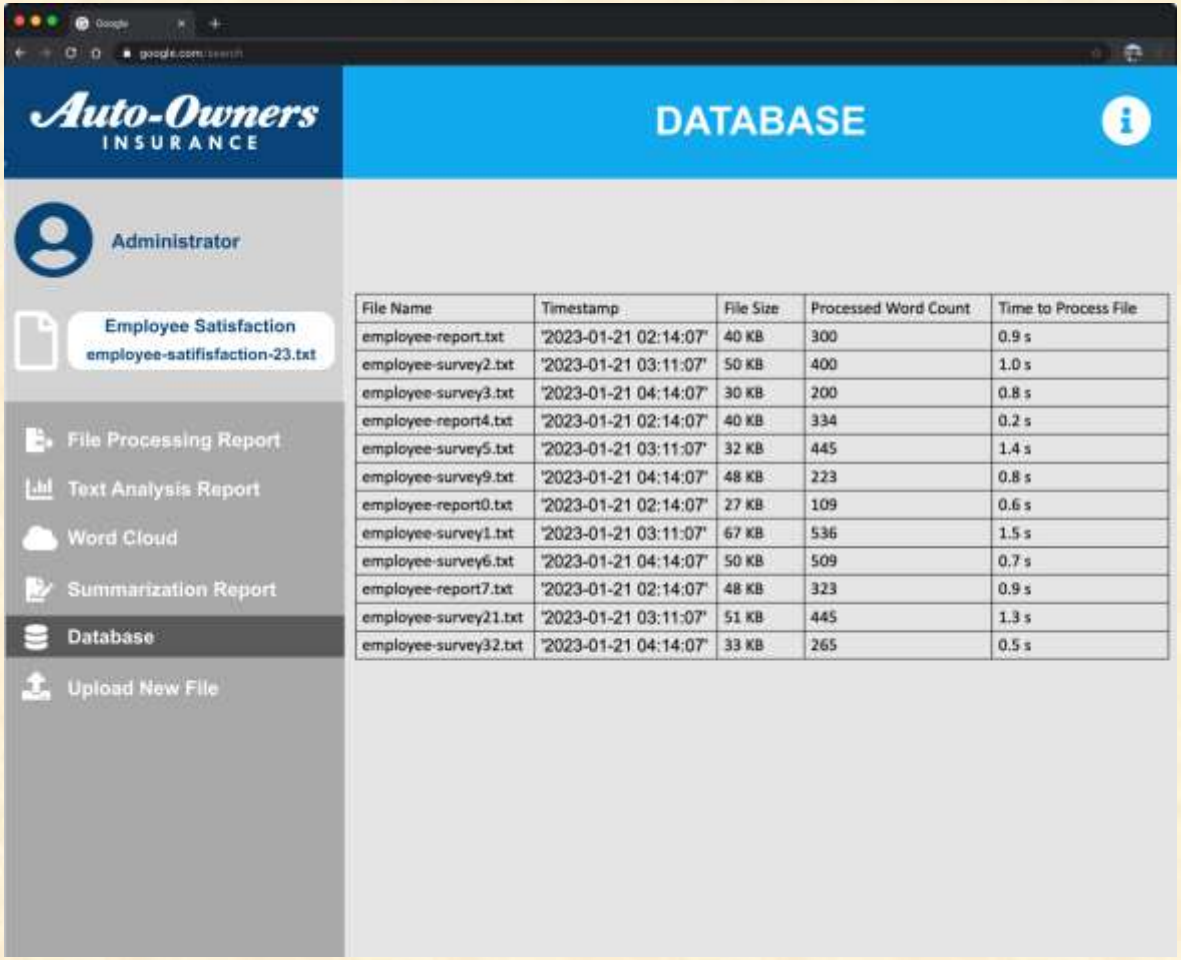
Screen Mockup: User View



Screen Mockup: Summarization Report



Screen Mockup: Database

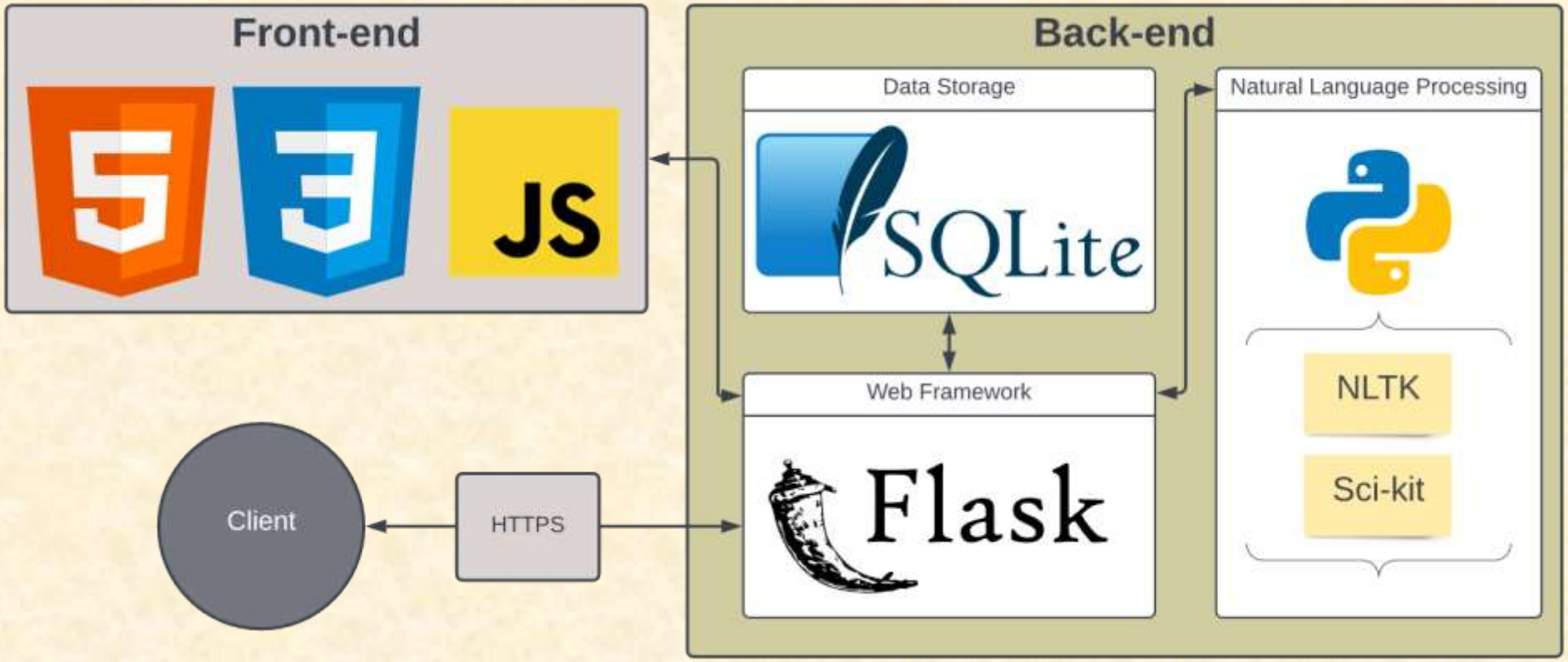


File Name	Timestamp	File Size	Processed Word Count	Time to Process File
employee-report.txt	'2023-01-21 02:14:07'	40 KB	300	0.9 s
employee-survey2.txt	'2023-01-21 03:11:07'	50 KB	400	1.0 s
employee-survey3.txt	'2023-01-21 04:14:07'	30 KB	200	0.8 s
employee-report4.txt	'2023-01-21 02:14:07'	40 KB	334	0.2 s
employee-survey5.txt	'2023-01-21 03:11:07'	32 KB	445	1.4 s
employee-survey9.txt	'2023-01-21 04:14:07'	48 KB	223	0.8 s
employee-report0.txt	'2023-01-21 02:14:07'	27 KB	109	0.6 s
employee-survey1.txt	'2023-01-21 03:11:07'	67 KB	536	1.5 s
employee-survey6.txt	'2023-01-21 04:14:07'	50 KB	509	0.7 s
employee-report7.txt	'2023-01-21 02:14:07'	48 KB	323	0.9 s
employee-survey21.txt	'2023-01-21 03:11:07'	51 KB	445	1.3 s
employee-survey32.txt	'2023-01-21 04:14:07'	33 KB	265	0.5 s

Project Technical Specifications

- Lightweight
- Front-end
  - HTML5, CSS, JavaScript
- Back-end
  - Flask – connects events from front-end to back-end
  - SQLite – serverless database
  - Python Libraries – NLTK, Sci-Kit

Project System Architecture



Project System Components

- Hardware Platforms
  - No hardware platforms
- Software Platforms / Technologies
  - HTML, CSS, JavaScript
    - Develop and style the front-end of our website
  - Flask
    - Easy to use, microframework in python
  - Python
    - Used for back-end text processing
    - Sci-Kit and NLTK
  - SQLite
    - Used as a simple way to implement a database

Project Risks

- Developing a Sentiment Analysis Model
  - The team is unfamiliar with how to create sentiment analysis model and maximize its performance
  - Begin by researching common sentiment models/techniques and implement simple versions. Then develop more complex models and compare the simple baseline results
- Performing Abstractive Text Summarization
  - The team is unsure how to create a successful abstractive text summarizer
  - We will implement quick and simple models at first and test them on small pieces of text
- Machine Learning Performance on Large Documents
  - The models need to process documents of up to 100 pages quickly and effectively
  - We will use large text files from the Canterbury corpus to frequently test the speed of the models on large documents as we develop them
- Acquiring Relevant Data for Machine Learning
  - The team doesn't have access to Auto-Owners corporate data for training the machine learning models
  - We will combine several public datasets made of different types of text to create a more generalized model

Questions?