

Project Proposal

1. Name, Contact info (e.g. email/phone).

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2. Title of the project

An ETL-Driven Sentiment Analysis for Crafting Actionable Insights

3. High level description of the project: what question or problem are you addressing?

Question: How can we use customer review texts, which are rich in information but disorganized and difficult to analyze, to gain actionable insights into the positive and negative aspects of a product, and subsequently improve customer satisfaction and brand equity?

I want to create a customer review analysis process in order to provide deeper insight into online product reviews. This would involve creating an ETL pipeline to acquire the data via web scraping, and applying sentiment analysis techniques to the data in order to identify common themes and issues in the reviews. Finally I will build an interactive integrated dashboard to visualize sentiment distribution, trends over time, and key insights.

4. What type of data science task is it?

ETL process (Extract, Transform, Load)

Web Scraping

Data Processing

Natural Language Processing

Database System Design, Implementation and Management

Data Visualization

5. Data: Brief description of data. How big do you expect the data will be? Is amount of your data too big or too small? If you're web-scraping or collecting data, how long do you expect to collect the data?

The data will consist of the text of customer reviews scraped from three to five webpages using a web-scraping program. Because I am keeping the number of products small, I do not anticipate the dataset to be too large. I plan to spend up to two weeks establishing and implementing a web-scraping program to acquire the data before moving on to data cleaning, transformation and analysis.

6. How will you analyze the data? What machine learning methods do you plan to use, and/or what business intelligence aspect do you plan on incorporating?

Once I establish my ETL pipeline and extract my data, I plan to implement sentiment analysis techniques to the cleaned data. I will also design an interactive dashboard in Tableau to incorporate a business intelligence aspect to the project.

7. Describe any anticipated difficulties and problems. Discuss how you may overcome the problems.
 - Timeline: as discussed, I will be unable to do onscreen work for 1 week near the beginning of the project. I plan to mitigate this by ensuring my project is approved and in progress before that week begins, and creating a project schedule and adhering to it as closely as possible, so that I don't fall too far behind.
 - I am unfamiliar with some of the libraries, packages, and tools I plan to use, which may mean that I need some trial and error before I understand how to use them
8. Suggest a timeline for the project. This should be a weekly breakdown of what you plan on doing each week.

Week	Week Plan	Tasks
1	Project Planning and Kickoff	<ul style="list-style-type: none"> - Define project goals, objectives, success criteria - Identify target review pages - Plan architecture of ETL pipeline and database
2	Data Collection and Database Setup	<ul style="list-style-type: none"> - Set up web scraping to collect customer review data - Create script to fetch and store raw text in database - Set up database system
3	Data Preprocessing	<ul style="list-style-type: none"> - Clean and preprocess raw text data (e.g. stripping and lowercasing, html tag removal, tokenization) - Implement stopword removal and lemmatization
4	Feature Extraction and Loading	<ul style="list-style-type: none"> - Extract relevant features (keywords, phrases etc.) from text - Load preprocessed data into database
5	Sentiment Analysis	<ul style="list-style-type: none"> - Determine sentiment analysis technique (e.g. VADER, TextBlob) and prepare models
6	Sentiment Analysis	<ul style="list-style-type: none"> - Apply sentiment analysis to preprocessed review data - Explore results with EDA
7	Dashboard Prototyping	<ul style="list-style-type: none"> - Develop dashboard prototype with current sentiment analysis results and placeholders for future analysis
8	Presentation Preparation	<ul style="list-style-type: none"> - Create presentation materials - Deliver presentation

9. Create GitHub repository for your Practicum project. Add this proposal, begin a ReadMe document, and begin adding your data to your repository. Add a link to your GitHub repository to this document.

https://github.com/kmg-regis/kmg_regis_msde_practicum_1