

# BizSA: Webapp to Visualise ABSA of Customer Reviews

Student: Liew Shaw Kee

Supervisor: A/P Erik Cambria

## Problem Statement and Objectives:

One of the subtasks of Aspect-Based Sentiment Analysis (ABSA) is Aspect-Category-Opinion-Sentiment (ACOS) Quadruple Extraction which is the extraction of aspect category, aspect term, opinion term and sentiment polarity. The identification of implicit terms, for both aspect terms and opinion terms, and detection of the aspect categories presented in the data made ACOS particularly challenging. Unsupervised models have trouble detecting aspect terms and categories according to how the user might want to define and group them while supervised models mostly require large amount of labelled training data which is time-consuming and labor-intensive to generate.

Hence, this project aims to develop a toolkit named BizSA to enable users to perform ACOS without a need for labelled training data. The model used in BizSA is GPT-3, which is a generative pre-trained transformer capable of performing a wide variety of tasks including NLP and ABSA tasks. BizSA consists of a web application that is developed using Flask and Plotly so that users can visualise the output of the analysis in the form of graphs.

## BizSA Web App

### Important Features:

- ✓ Customisation of examples as part of the prompt for GPT-3

First Example

Text (e.g., This product is good and perform well. It is cheap too.)

Aspect 1 (e.g. Product) | Category 1 (e.g. General) | Seg 1 (e.g. product is good) | Sentiment 1 (e.g. Positive)

Aspect 2 (e.g. Product) | Category 2 (e.g. Performan) | Seg 2 (e.g. perform well) | Sentiment 2 (e.g. Positive)

Aspect 3 (e.g. Product) | Category 3 (e.g. Price) | Seg 3 (e.g. It is cheap) | Sentiment 3 (e.g. Positive)

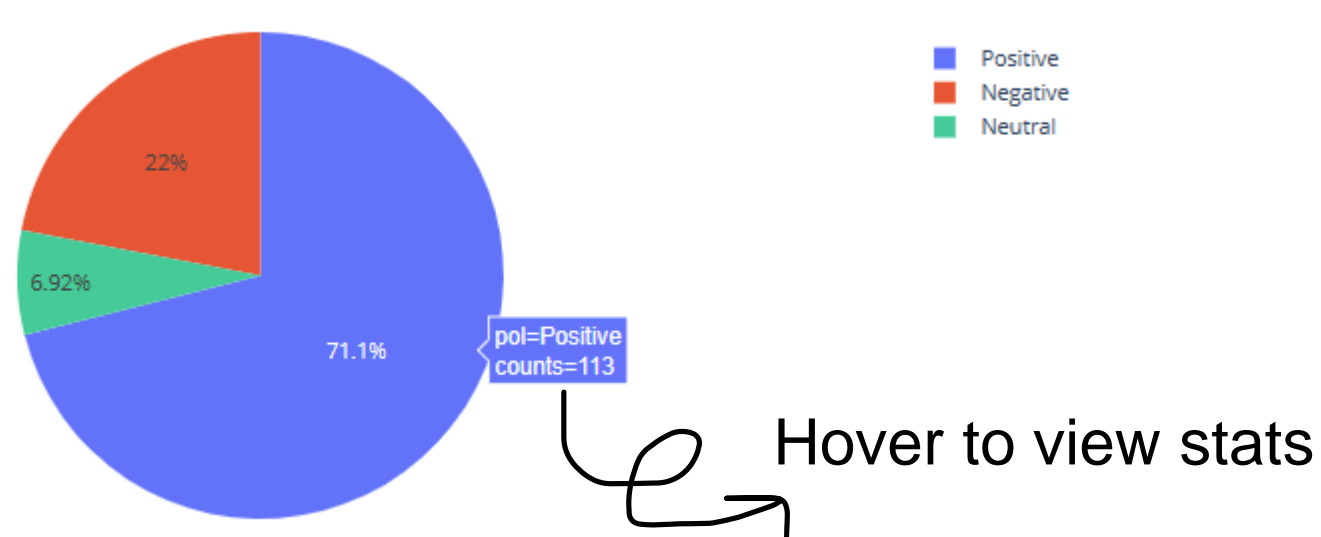
- ✓ Visualisation of output of analysis with graphs

### Type of Graphs Available:

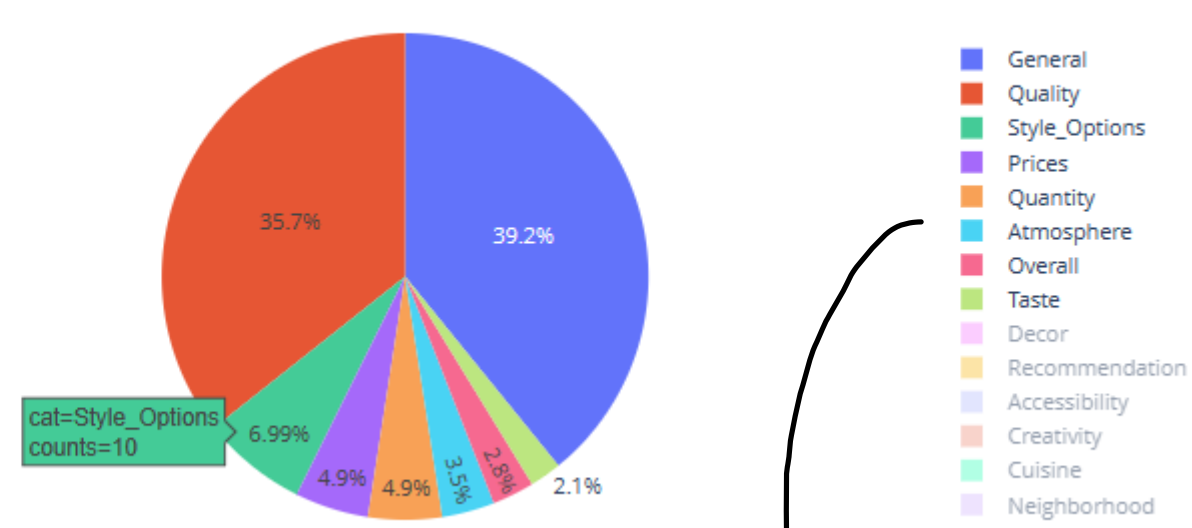
From top to bottom, right to left

1. Overview of number of polarity sentiments
2. Overview of number of categories
3. Overview of number of aspect terms
4. Categories vs Polarity graph
5. Aspect Terms vs Polarity graph
6. Categories vs Aspect Terms graph

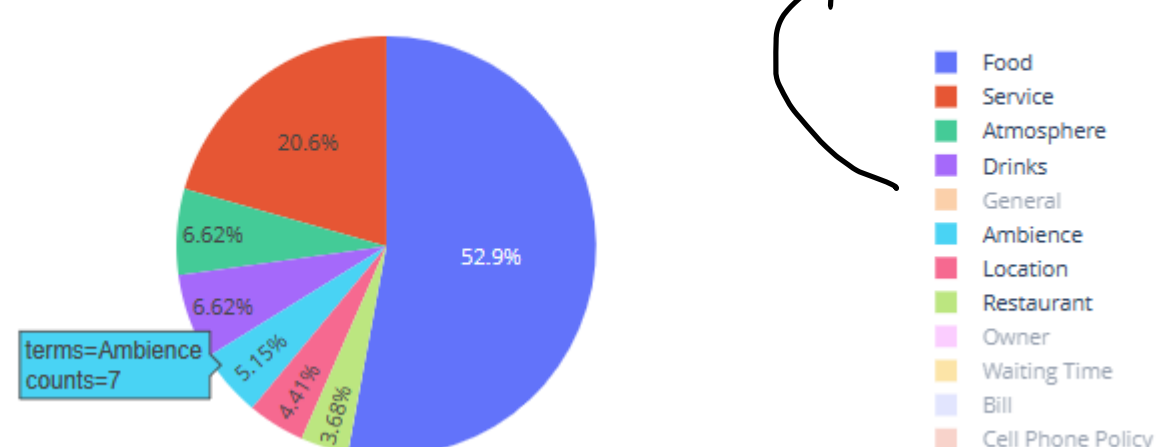
Polarity Count



Categories Count



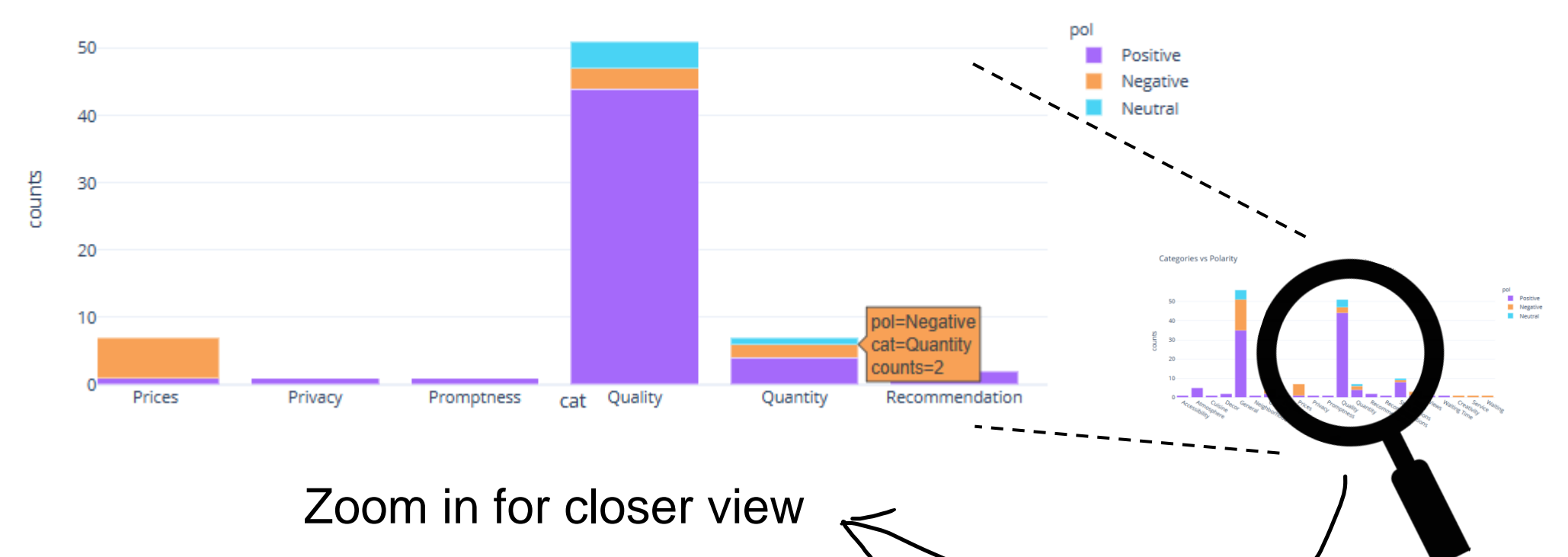
Terms Count



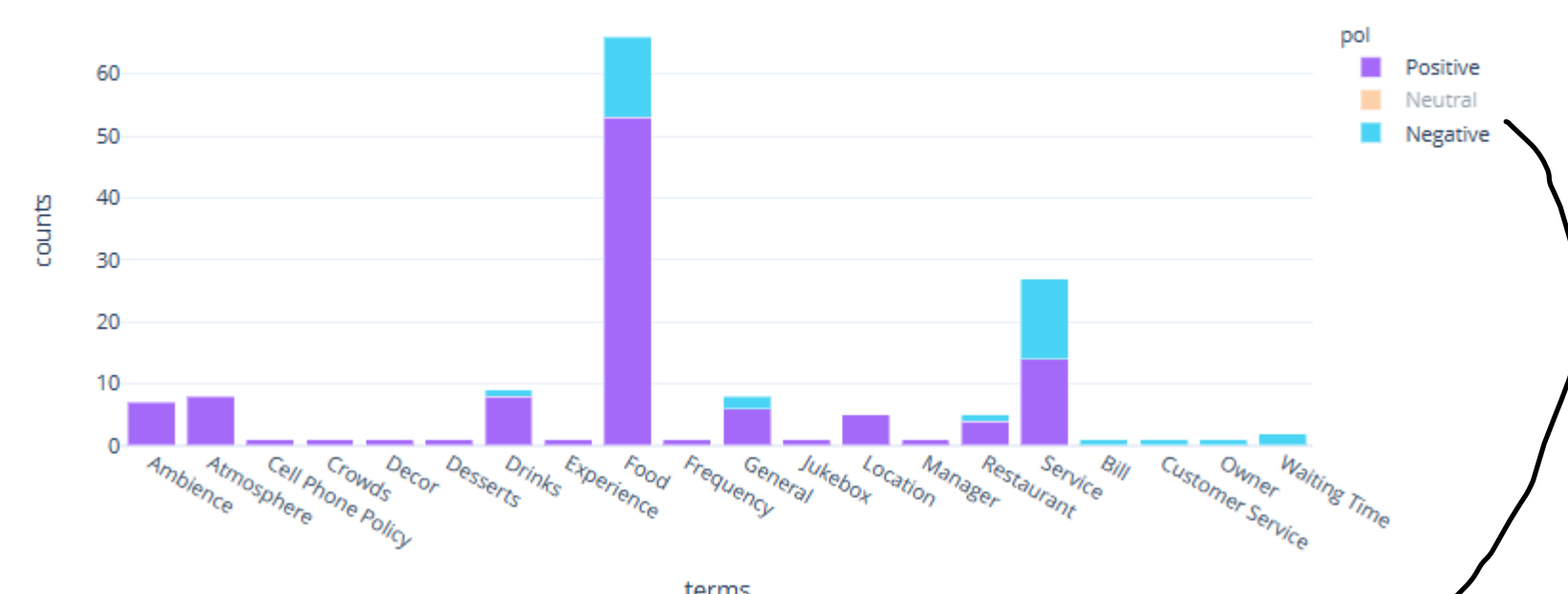
## Why GPT-3?

- ✓ Pre-trained with large amount of data
  - One of the largest language model
- ✓ Able to perform few shots learning with prompt design
  - Can generate desired outputs with just a few examples
  - Lesser need for finetuning with labelled data
- ✓ Users can directly use it for downstream task of ACOS
  - Lesser need for finetuning with labelled data

Categories vs Polarity



Aspect Terms vs Polarity



Choose what is important

Categories vs Aspect Terms



Derive important insights  
e.g., Quality of food is more relevant than drinks