

# Crystal Advanced Analytics



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# Goals And Motivation

Create a system to:

- Allow organizations(Airports) to improve their services based on customers' feedback.
- Show where an organization is performing well and underperforming.
- Identify and analyze the root-cause of underperformance in a particular service.
- Allow the organization to compare its services to that of a competitor.

# Approach

## Web Scraping for data retrieval

- Reporting Platform; BrightLocal
- Data retrieved through API calls.

## Text Classification system

- Use data(reviews/ratings) from BrightLocal
- Sorted into categories
  - 7 World class factors
- Use of Naives Bayes Algorithm with machine learning
- Use of Decision Tree Classifier (Back-up)

# Approach

## Sentiment Analysis

- Identify the attitude/sentiments of the customers through their words and feedback
- Sentiment score assigned to reviews without a rating
- Use of TextBlob library

## Benchmarking Analysis

- Allow businesses to see how they are performing in comparison to their competitors
- Compare a particular service to a competitor's respective service
  - E.g. Comparing MCO's speed to JFK's speed category



# Approach

## Root-Cause Analysis

- Identify the reason behind an underperformance
- Identify keywords and repeating words in negative review



# Novel Feature

The system will:

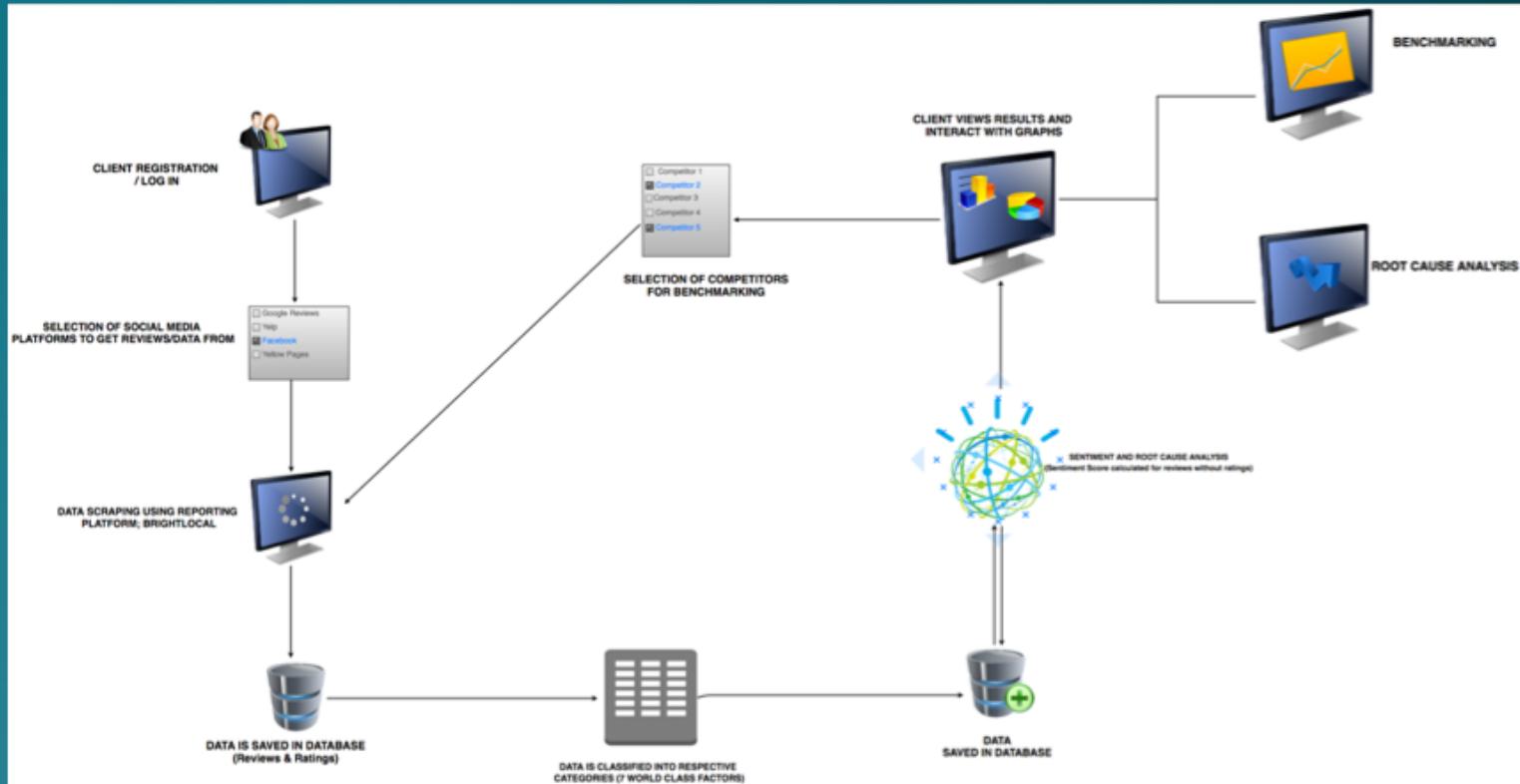
- Allow users to get reviews from multiple social media under one main website
- Reviews will automatically be classified into categories(services)
- Sentiment scores will be assigned to reviews without ratings.
- Identify root cause of under-performance.
- All the features will be available under one platform; Website



# Challenges

- Text classification with machine learning Algorithms
- Sentiment analysis
- Advanced python usage
- Speed and Efficiency
- API endpoints

# Overview Of System Architecture



# Progress Summary

Task	Completion	To do
Implement web scrapper (Use of BrightLocal)	100%	None
Implement Text Classifier	80%	Train with more data. Accuracy at 57% (initially 25%)
Implement sentiment score analyzer	100%	None
Setup up website	60%	Improve Graphs, Add more features
Implement Benchmarking tool	20%	Add option to select from multiple competitors
Implement Root Cause Analysis	0%	Implement root cause analysis. Highlight and keywords





# Milestone 5

- Implement, test and demo root cause analysis
- Improve website GUI to include root cause analysis tool



# Milestone 6

- Add specific features such as review original comments/reviews from customers sorted by categories and ratings/ sentiment score polarity.
- Complete website
- Test/Demo entire system
- Create User Manual
- Create Demo Video