

Senior Design

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Test Plan and Results

Overall Test Plan

Our testing plan will consist of two main parts. First, we will test each of the individual components of the system. Then, we will test how the system works together as a whole. Due to the possibility of receiving large amounts of data from the APIs, we will focus on testing system performance and efficiency to ensure that the system won't crash with a large response. In addition to testing that we get the expected response with normal inputs, we will also test error handling for abnormal inputs and inputs that exceed boundary limits.

Test Case Descriptions

SA1.1 Sentiment Analysis Test 1

SA1.2 This test will ensure the sentiment analysis fits with real-world trends

SA1.3 This test will require at least five examples of human validation with the sentiment results retrieved from the AI.

SA1.4 Inputs: The inputs for this test will be the query input data required for a Twitter API call.

SA1.5 Outputs: The outputs of this test will be the sentiments guessed by the AI.

SA1.6 Normal

SA1.7 Blackbox

SA1.8 Performance

SA1.9 Unit Test

SA1.10 Results: The sentiment analysis has predicted expected sentiment scores in-line with human-made observations.

SA2.1 Sentiment Analysis Test 2

SA2.2 This test will be used to ensure that sentiment can be assigned to each tweet in a large dataset in a reasonable amount of time.

SA2.3 This test will pull the stored twitter data response and update each tweet with the associated sentiment.

SA2.4 Inputs: Mock Twitter API data response

SA2.5 Outputs: Updated stored twitter data

SA2.6 Normal

SA2.7 Blackbox

SA2.8 Performance

SA2.9 Unit Test

SA2.10 Results: All twitter data was updated in under 5 seconds

MDF1.1 Map Display Feature Set Test 1

MDF1.2 This test will ensure that customizable returns are implemented and return the specified customized configurations.

MDF1.3 This test will be a manual, making sure all customizable configurations are functional and saved to the end result.

MDF1.4 Inputs: The inputs to this test will be the customized configurations.

MDF1.5 Outputs: The outputs to this test will be the map and the corresponding features specified with configurations.

MDF1.6 Normal

MDF1.7 Blackbox

MDF1.8 Functional

MDF1.9 Unit/Integration Test (Making sure configs are functional and that they are displayed on the map correctly)

MDF1.10 Results: All configurations are functional and visible in the returned map

MDF2.1 Map Display Feature Set Test 2

MDF2.2 This test will ensure accessibility features are present for our returned result

MDF2.3 This test will make sure that both the accessibility features present are understandable and present with all other features.

MDF2.4 Inputs: The inputs for this test are the results for the map.

MDF2.5 Outputs: The outputs for this test are the accessibility features tied with the map features.

MDF2.6 Normal

MDF2.7 Blackbox

MDF2.8 Functional

MDF2.9 Unit Test

MDF2.10 Results: The accessibility feature makes the information clear without needing to use our primary results.

RA1.1 Relevance Algorithm Test

RA1.2 This test will ensure that the relevance algorithm is correct.

RA1.3 This test will run the relevance algorithm on the twitter data set to ensure that the correct weight is given to each tweet.

RA1.4 Inputs:

- a) Popular Tweet from an account with a large following
- b) Unpopular Tweet from an account with a large following
- c) Popular Tweet from an account with a small following
- d) Unpopular Tweet from an account with a small following

RA1.5 Outputs:

- a) Relevance coefficient of 5
- b) Relevance coefficient of 1
- c) Relevance coefficient of 3
- d) Relevance coefficient of 1

RA1.6 Normal

RA1.7 Whitebox

RA1.8 Functional

RA1.9 Unit Test

RA1.10 Results: Correct relevance for all inputs.

TF1.1 Time Frame Test

TF1.2 This test will ensure that the user can enter in a time frame and only receive data from the specified range.

TF1.3 This test will try valid and invalid time frame inputs and check to see if either all the tweets received are in the correct time frame or if error handling was done correctly based on the input.

TF1.4 Inputs:

- a) Correct short time frame: 11/1/22 to 12/1/22

- b) Correct long time frame: 1/1/18 to 1/1/23
- c) Incorrect time frame: Future dates: 1/1/24 to 1/1/25
- d) Incorrect time frame: End date is after start date: 1/1/23 to 12/1/22

TF1.5 Outputs:

- a) Twitter data from 11/1/22 to 12/1/22
- b) Twitter data from 1/1/18 to 1/1/23
- c) Error is displayed to the user that the time frame is invalid
- d) Error is displayed to the user that the time frame is invalid

TF1.6 Normal and Abnormal

TF1.7 Blackbox

TF1.8 Functional

TF1.9 Unit Test

TF1.10 Results: For the correct inputs the returned twitter data is correct. For incorrect inputs an error appears on the screen.

DE1.1 **Display Entries Test**

DE1.2 This test will ensure that users will view valid entries for comparison page/modal.

DE1.3 This test will ensure that users will be able to select two locations and view viable information in the comparison. (valid entries)

DE1.4 Inputs: Selected locations.

DE1.5 Outputs: Properly displayed entries.

DE1.6 Normal

DE1.7 Blackbox

DE1.8 Functional

DE1.9 Unit Test

DE1.10 Results: Both locations display valid data for comparison.

LS1.1 **Location Selection Test 1**

LS1.2 Ensure users can select locations for comparison.

LS1.3 This test will ensure that users can simultaneously select two locations without error.

LS1.4 Inputs: Locations selected.

LS1.5 Outputs: Locations displayed in comparison.

LS1.6 Normal

LS1.7 Blackbox

LS1.8 Functional

LS1.9 Unit Test

LS1.10 Results: Both locations that are selected are displayed.

LS2.1 **Location Selection Test 2**

LS2.2 This test will ensure that the location selection times are swift.

LS2.3 This test will measure the response times of the selection and display of locations are swift.

LS2.4 Inputs: Selected locations .

LS2.5 Outputs: Appropriate response times based on locations selected.

LS2.6 Normal

LS2.7 Blackbox

LS2.8 Performance

LS2.9 Unit Test

LS2.10 Results: Locations selected return valid entries in a timely manner.

MD1.1 Map Data Test 1

MD1.2 This test will ensure that the data we display on the map is correct

MD1.3 This test will run the same query and test to see if the data is being displayed on the map the same way.

MD1.4 Inputs: The inputs for this test will be the query about a given business.

MD1.5 Outputs: The map that displays the sentiment of the businesses held by the public according to our data.

MD1.6 Normal

MD1.7 Blackbox

MD1.8 Functional

MD1.9 Unit/Integration Test

MD1.10 Results: The Maps will look the same with the same dataset and query used everytime.

MD2.1 Map Data Test 2

MD2.2 This test will ensure that the map is correctly displaying data.

MD2.3 This test will run a list of queries with multiple different datasets.

MD2.4 Inputs: The inputs for this test will be the queries used and the unprocessed datasets.

MD2.5 Outputs: The map display of sentiment analysis data requested by the queries.

MD2.6 Normal

MD2.7 Blackbox

MD2.8 Functional

MD2.9 Unit Test

MD2.10 Results: The map displays all of the requested information for each dataset correctly.

MDC1.1 Map Data Correctness Test

MDC1.2 This test will ensure that the map's query is correct.

MDC1.3 This test will run a query on each of the possible inputs for a dataset, and then we will check what is being displayed on the map with what the actual dataset states.

MDC1.4 Inputs: The inputs for this test will be the query used and the unprocessed dataset.

MDC1.5 Outputs: The map displayed with business marked with sentiment analysis.

MDC1.6 Normal

MDC1.7 Blackbox

MDC1.8 Performance

MDC1.9 Unit Test

MDC1.10 Results: The map display will match with the information found in the dataset.

MF1.1 Map Functionality Test

MF1.2 This test will ensure that the map is displaying all necessary parts and functionalities.

MF1.3 This test will run multiple queries and datasets and check to ensure that all of the clickable elements open correctly and the map functioning correctly.

MF1.4 Inputs: The map created by datasets and queries.

MF1.5 Outputs: map functionality including markers which can be opened, the ability to zoom and scroll over the map, as well as locate a specific area with ease.

MF1.6 Normal

MF1.7 Blackbox

MF1.8 Functional

MF1.9 Unit Test

MF1.10 Results: The map functions properly.

Test Case Matrix

Test Name	Normal / Abnormal	Blackbox / Whitebox	Functional / Performance	Unit / Integration
SA1	Normal	Blackbox	Performance	Unit
SA2	Normal	Blackbox	Performance	Unit
MDF1	Normal	Blackbox	Functional	Unit/Integration
MDF2	Normal	Blackbox	Functional	Unit
RA1	Normal	Whitebox	Functional	Unit
TF1	Both	Blackbox	Performance	Unit
DE1	Normal	Blackbox	Functional	Unit
LS1	Normal	Blackbox	Functional	Unit
LS2	Normal	Blackbox	Performance	Unit
MD1	Normal	Blackbox	Functional	Unit/Integration
MD2	Normal	Blackbox	Functional	Unit
MDC	Normal	Blackbox	Performance	Unit
MF	Normal	Blackbox	Functional	Unit