# Read Me

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## Module Introduction

1. Amazon Simple Queue Service (SQS)

   We get the tweet data from tweet stream, and send the message to SQS queue.

2. Amazon Worker Environment Tiers

   We receive the message from the SQS using the worker environment tiers. We deploy the worker on elastic bean stalk, and worker installs a daemon on each Amazon EC2 instance in the Auto Scaling group to process Amazon SQS messages in the worker environment tier. The daemon pulls data off the Amazon SQS queue, inserts it into the message body of an HTTP POST request, and sends it to our SNS servlet URL path on elastic bean stalk.

3. Alchemy Sentiment API

   We get sentiment of each tweet based on Alchemy API, and present circles of which the color is based on sentiments.

   ```
   String sentiment =
   alchemyObj.TextGetTextSentiment(text).getElementsByTagName("type").item(0
   ).getTextContent();
   ```

4. Amazon Simple Notification Service (SNS)

   Firstly, we subscribe a servlet to the SNS service. Then when the worker thread finishes processing the sentiment, it will publish the sentiment notification. And the servlet will get the notification. Then the servlet will call the function of websocket to update the data of front end.

5. Server Side Event

   We add a listener at the client side to receive server-sent events.

   ```
   var eventSource = new EventSource(“EventTrigger”)
   eventSource.onmessage = function(event){
     // deal with event.data
   }
   ```

6. Websocket

   After the servlet call the static function of websocket, it will sendText the message to the front end and trigger the selection of items from the database and the update of the map.

7. Heatmap Sentiment

   We add three heatmap layers onto the map with different colors.

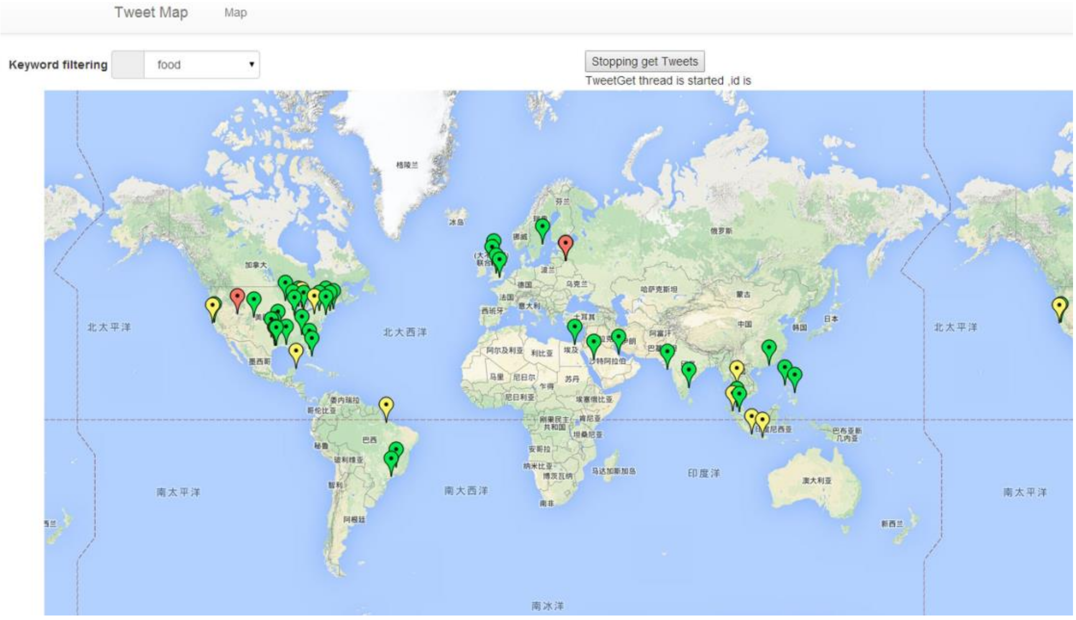
heatmap[i].set('gradient', heatColor[i]);
So different colors of heat data represent different sentiment.

8. Sentiment Trend

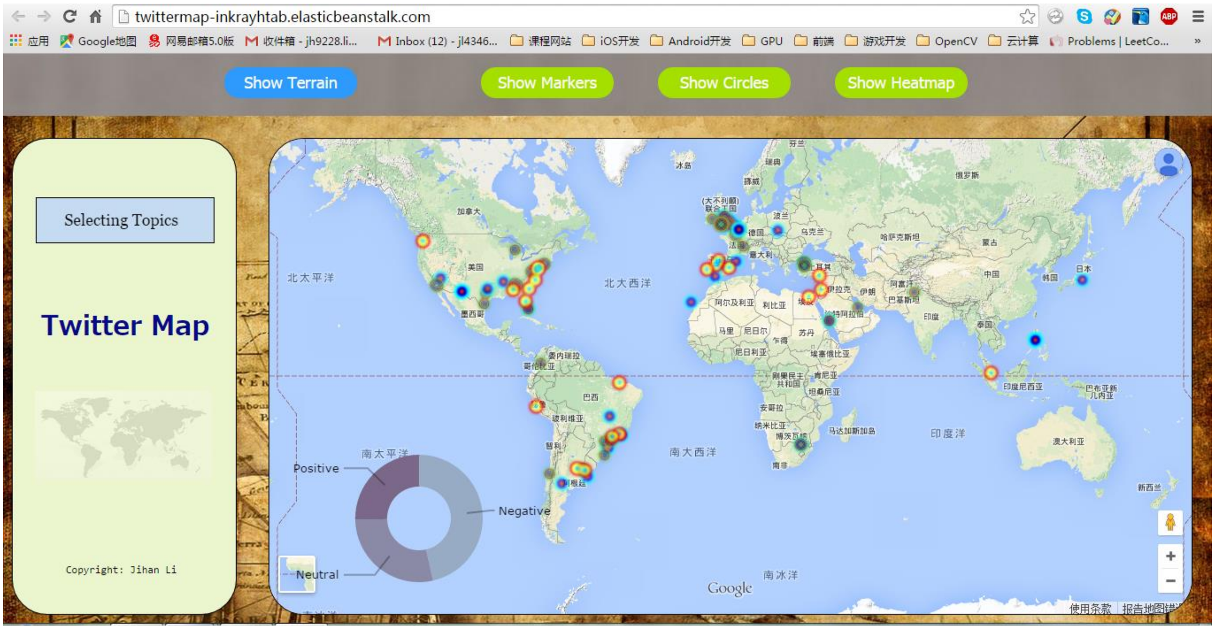
We use a d3.js pie chart to present the ratio of current sentiments. It changes with the twit streams. You can see the sentiment trend in real time.

## Result

This is the result of the version 1 (sever side events).



This is the result of the version 2 (websocket).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