

## Lab Assignment 8:

### Question 1: Sentimental analysis using twitter streaming (related to your project)

#### Description:

Here we could successfully accept the twitter stream to our spark system and perform the sentiment analysis on it using the Stanford core NLP. Here we shall take the twitter streams, convert the rdd's to string and send it to the Stanford core NLP for sentiment analysis.

#### Screenshots:

The first screenshot shows the project structure and the initial code setup. The code includes properties for Twitter OAuth credentials and a Spark configuration for a local master. The second screenshot shows the execution of the application, with the console output displaying the processing of a tweet. The tweet text is "RT @SirJadeja: Rohit Sharma and Eden Gardens. Still A Better Love Story Than Virat & Anushka's. :)", and the sentiment is classified as "very positive". The third screenshot shows the processing of another tweet, "Every night i pray the school doesn't start charging for ice", which is classified as "negative".

```
System.setProperty("twitter4j.oauth.consumerSecret", "FH8J6Oo5xUb5w15eV0h7IWlxQeodHrNEJs8IZBIydUQ3iyjXne")
System.setProperty("twitter4j.oauth.accessToken", "880485062-qJV1ieoxBBwJhQpWazoAjoKA5Qbgm6HSyrjSbrPy")
System.setProperty("twitter4j.oauth.accessTokenSecret", "Kq06Fbdo7Pa4aThVvL3AvfOYJyZLr7eBhxRrDlShjfJl1")

val sparkConf = new SparkConf().setAppName("STweetsApp").setMaster("local[*]")

//Create a Streaming Context with 2 second window

Adding annotator sentiment
16/03/10 12:05:40 WARN PTBlexer: Untokenizable: ? (U+D83D, decimal: 55357)
null
@JessMoonlight @SiaFurlerSource @SiasDog @Tinytanium @furlerrainbow @SiaMyLife awh haha thanks! ☺
TweetWithSentiment [line=@JessMoonlight @SiaFurlerSource @SiasDog @Tinytanium @furlerrainbow @SiaMyLife awh haha thanks! ☺, cssClass=sentiment : positive]
Adding annotator tokenize
RT @SirJadeja: Rohit Sharma and Eden Gardens.
Adding annotator split
Still A Better Love Story Than Virat & Anushka's. :)
Adding annotator parse
#INDvsnW
Adding annotator sentiment
16/03/10 12:05:41 INFO MemoryStore: Block input-0-1457633140800 stored as bytes in memory (estimated size 39.8 KB, free 2.3 MB)
16/03/10 12:05:41 INFO BlockManagerInfo: Added input-0-1457633140800 in memory on localhost:58407 (size: 39.8 KB, free: 1125.0 MB)
16/03/10 12:05:41 WARN BlockManager: Block input-0-1457633140800 replicated to only 0 peer(s) instead of 1 peers
16/03/10 12:05:41 INFO BlockGenerator: Pushed block input-0-1457633140800
TweetWithSentiment [line=RT @SirJadeja: Rohit Sharma and Eden Gardens.
Still A Better Love Story Than Virat & Anushka's. :)
#INDvsnW, cssClass=sentiment : very positive]
A candid, vulnerable story that will open your eyes to crisis and tribulations @larobinsl https://t.co/Ns3Q7z4c8f https://t.co/V6-HwY101g
Adding annotator tokenize
Adding annotator split
System.setProperty("twitter4j.oauth.consumerKey", "UanFKOWeTXeekMhrPmXnZq17")
System.setProperty("twitter4j.oauth.consumerSecret", "FH8J6Oo5xUb5w15eV0h7IWlxQeodHrNEJs8IZBIydUQ3iyjXne")
System.setProperty("twitter4j.oauth.accessToken", "880485062-qJV1ieoxBBwJhQpWazoAjoKA5Qbgm6HSyrjSbrPy")
System.setProperty("twitter4j.oauth.accessTokenSecret", "Kq06Fbdo7Pa4aThVvL3AvfOYJyZLr7eBhxRrDlShjfJl1")

val sparkConf = new SparkConf().setAppName("STweetsApp").setMaster("local[*]")

//Create a Streaming Context with 2 second window

Happy Birthday Anita
Adding annotator tokenize
Adding annotator split
Adding annotator parse
Adding annotator sentiment
16/03/10 12:05:39 WARN PTBlexer: Untokenizable: ? (U+D83D, decimal: 55357)
null
Every night i pray the school doesn't start charging for ice
Adding annotator tokenize
Adding annotator split
Adding annotator parse
Adding annotator sentiment
Adding annotator tokenize
Adding annotator split
Adding annotator parse
Adding annotator sentiment
TweetWithSentiment [line=Every night i pray the school doesn't start charging for ice, cssClass=sentiment : negative]
#quote If someone gave me $10,000 to spend on make up I could do it in 10 min
16/03/10 12:05:39 INFO MemoryStore: Block input-0-1457633139200 stored as bytes in memory (estimated size 8.5 KB, free 2.1 MB)
16/03/10 12:05:39 INFO BlockManagerInfo: Added input-0-1457633139200 in memory on localhost:58407 (size: 8.5 KB, free: 1125.2 MB)
16/03/10 12:05:39 WARN BlockManager: Block input-0-1457633139200 replicated to only 0 peer(s) instead of 1 peers
```

**Question 2: Make recommendations (related to your own project)**

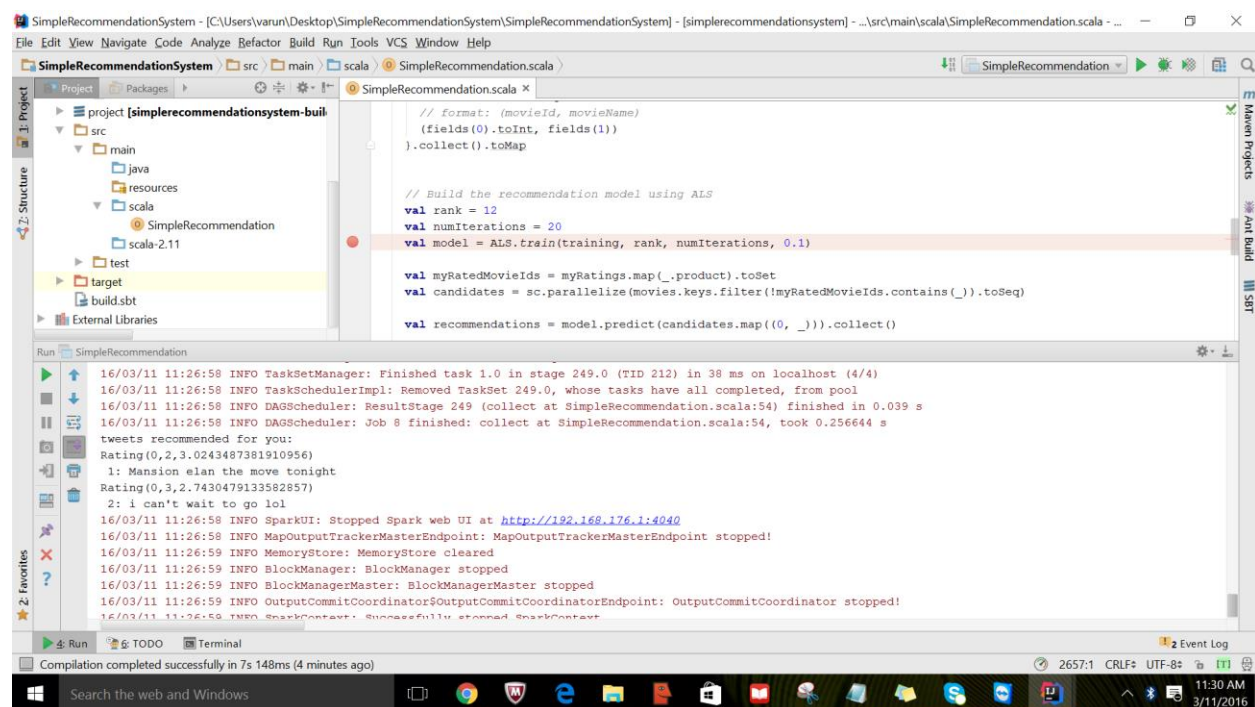
a. Training Data: the Twitter Streaming/categorized data (The categorization here would be from your previous lab 5&6).

b. Testing Dataset e.g., UserId, Category, Rating

c. The rating based on sentiment analysis, retweet count would be interesting.

d. Expected outcome is to make a recommendation based on user profile (e.g., preferences, location, gender, age)

**Description:** Here we had trained the system based on the tweets and had recommended certain tweets of other user based on the groups and we have used the collaborative filtering technique for the same. Here the tweets are stored in a file making the data static however we shall try in our next work to make this data dynamic.

**Screenshots:**

```
// SimpleRecommendationSystem - [C:\Users\varun\Desktop\SimpleRecommendationSystem\SimpleRecommendationSystem] - [simplerecommendationsystem] - ... \src\main\scala\SimpleRecommendation.scala - ...
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

SimpleRecommendationSystem > src > main > scala > SimpleRecommendation.scala > SimpleRecommendation

Project [simplerecommendationsystem-build]
  src
    main
      java
      resources
      scala
        SimpleRecommendation
      test
      target
    build.sbt
  External Libraries

// format: (movieId, movieName)
(fields(0).toInt, fields(1))
}.collect().toMap

// Build the recommendation model using ALS
val rank = 12
val numIterations = 20
val model = ALS.train(training, rank, numIterations, 0.1)

val myRatedMovieIds = myRatings.map(_._product).toSet
val candidates = sc.parallelize(movies.keys.filter(!myRatedMovieIds.contains(_)).toSeq)

val recommendations = model.predict(candidates.map((_, _))).collect()

Run SimpleRecommendation
16/03/11 11:26:58 INFO TaskSetManager: Finished task 1.0 in stage 249.0 (TID 212) in 38 ms on localhost (4/4)
16/03/11 11:26:58 INFO TaskSchedulerImpl: Removed TaskSet 249.0, whose tasks have all completed, from pool
16/03/11 11:26:58 INFO DAGScheduler: ResultStage 249 (collect at SimpleRecommendation.scala:54) finished in 0.039 s
16/03/11 11:26:58 INFO DAGScheduler: Job 8 finished: collect at SimpleRecommendation.scala:54, took 0.256644 s
tweets recommended for you:
Rating(0,2,3.0243487381910956)
1: Mansion elan the move tonight
Rating(0,3,2.7430479133582857)
2: i can't wait to go lol
16/03/11 11:26:58 INFO SparkUI: Stopped Spark web UI at http://192.168.176.1:4040
16/03/11 11:26:58 INFO MapOutputTrackerMasterEndpoint: MapOutputTrackerMasterEndpoint stopped!
16/03/11 11:26:59 INFO MemoryStore: MemoryStore cleared
16/03/11 11:26:59 INFO BlockManager: BlockManager stopped
16/03/11 11:26:59 INFO BlockManagerMaster: BlockManagerMaster stopped
16/03/11 11:26:59 INFO OutputCommitCoordinator$OutputCommitCoordinatorEndpoint: OutputCommitCoordinator stopped!
16/03/11 11:26:59 INFO SparkContext: Successfully stopped SparkContext
Compilation completed successfully in 7s 148ms (4 minutes ago)
2657:1 CRLF UTF-8 11:30 AM 3/11/2016
```

### **3) Twitter trend notification to smartphone/smartwatch**

**Description:** After finishing the sentiment analysis, I had send these over to display on the smartwatch using the Socket Client program.

**Screenshots:**



I'm waiting here: 1234

SiteLocalAddress: 10.99.1.156

#1 from /10.151.6.239:57428

@liltsun I had a friend who bugged me to watch it,  
plus I was looking for one cour shows:nullreplayed:

Hello from Android, you are #1

#2 from /10.151.6.239:57429

@suno\_khamoshii great:nullreplayed: Hello from  
Android, you are #2

#3 from /10.151.6.239:57430

RT @MensHumor: When someone uses  
your driveway to turn around... <https://t.co/XIZSMnEvva>:nullreplayed: Hello from Android, you  
are #3

#4 from /10.151.6.239:57432

Romantic ♡~ <https://t.co/6trZW6n75g>:Tweet-  
WithSentiment [line=Romantic ♡~ <https://t.co/6trZW6n75g>, cssClass=sentiment : positive]replayed:  
Hello from Android, you are #4

#5 from /10.151.6.239:57437

RT @Olivianuzzi: Donald Trump's business career  
and presidential campaign has been based on  
exaggerations and deceptions. <https://t.co/j81P...>:nullreplayed: Hello from Android, you are #5

#6 from /10.151.6.239:57440

if that's what getting bills in the mail feels like,  
I'd rather be homeless:TweetWithSentiment  
[line=if that's what getting bills in the mail feels  
like, I'd rather be homeless, cssClass=sentiment :  
negative]replayed: Hello from Android, you are #6

#7 from /10.151.6.239:57442



#### **4) Searching or recommendation through smartphone/smartwatch**

**Description:** Here we had sent out the results to the smart phones using the socket client connections.

**Screenshots:**

