CS5560 Hackathon – Coding

**Recommender Algorithm Coding:**

1. **Recommendation Coding:**

**Ref:** <http://www.javacodegeeks.com/2013/10/creating-an-on-line-recommender-system-with-apache-mahout.html>

**package** rajesh;

**import** java.util.List;

**import** java.util.ArrayList;

**import** org.apache.mahout.cf.taste.Recommender.RecommendedItem;

**import** org.apache.mahout.cf.taste.common.TasteException;

**public** **class** Recomd2 {

**public** **static** String[] getBlst(String usrNam, Model model)

**throws** TasteException {

List<String> Blst = **new** ArrayList<String>();

**try** {

List<RecommendededItem> bussiness\_list = model.model().Recomd2(model.getStrTolng().toLongID(usrNam), 10);

**for** (RecommendeedItem business : bussiness\_list) {

Blst.add(model.getStrTolng().toStringID(

business.getItemID()));

}

} **catch** (TasteException er) {

**throw** er;

}

**return** Blst.toArray(**new** String[Blst.size()]);

}

dataModel = **new** FileDataModel(file)

userSimilarity = **new** PearsonCorrelationSimilarity(dataModel)

neighborhood = **new** NearestNUserNeighborhood(25, userSimilarity, dataModel)

recommender = **new** GenericUserBasedRecommender(dataModel, neighborhood, userSimilarity)

**public** **static** **void** main(String[] args) {

Model modl = **new** Model();

**try** {

String[] list = getBussinessList(usrNam, modl);

System.*out*.println("Recomd song for " + usrNam

+ " \n\n");

**for** (String res : list) {

System.*out*.println(res);

}

} **catch** (TasteException e) {

e.printStackTrace();

}

}

}

1. **Model Coding:**

**Ref:** <http://www.javacodegeeks.com/2013/10/creating-an-on-line-recommender-system-with-apache-mahout.html>

**package** rajesh;

**import** java.io.FileInputStream;

**import** java.io.File;

**import** java.io.InputStreamReader;

**import** java.io.FileReader;

**import** java.util.ArrayList;

**import** java.io.Reader;

**import** java.util.List;

**import** java.util.HashMap;

**import** java.util.Map.Entry;

**import** java.util.Map;

**import** org.apache.mahout.cf.taste.impl.common.FastByIDMap;

**import** org.apache.commons.csv.CSVParser;

**import** org.apache.mahout.cf.taste.impl.Recommender.GenericPreference;

**import** org.apache.mahout.cf.taste.impl.Recommender.GenericDataRecommender;

**import** org.apache.mahout.cf.taste.impl.Recommender.MemoryIDMigrator;

**import** org.apache.mahout.cf.taste.impl.Recommender.GenericUserPreferenceArray;

**import** org.apache.mahout.cf.taste.impl.similarity.LogLikelihoodSimilarity;

**import** org.apache.mahout.cf.taste.impl.recommender.GenericBooleanPrefItemBasedRecommender;

**import** org.apache.mahout.cf.taste.Recommender.Preference;

**import** org.apache.mahout.cf.taste.Recommender.DataRecommender;

**import** org.apache.mahout.cf.taste.recommender.Recommender;

**import** org.apache.mahout.cf.taste.Recommender.PreferenceArray;

**public** **class** Recomd1 {

**private** Recommender recommender = **null**;

**private** Datamodel Recomd1;

**private** MemoryIDMigrator strlng = **new** MemoryIDMigrator();

**public** MemoryIDMigrator getstrlng() {

**return** strlng;

}

**public** Recommender Recomd1()

{

String[] lines;

**try** {

Map<Long, List<Preference>> usrPrefList = **new** HashMap<Long, List<Preference>>();

CSVParser csv = **new** CSVParser(**new** InputStreamReader(

**new** FileInputStream(

"/home/rajesh/Desktop/KDM/exam/midterm1/Music\_Rating.csv"),

"UTF-8"));

csv.getlines();

String dataModel = **new** FileDataModel(file)

String userSimilarity = **new** LogLikelihoodSimilarity(dataModel)

String neighborhood = **new** NearestNUserNeighborhood(25, userSimilarity, dataModel)

String recommender = **new** GenericBooleanPrefUserBasedRecommender(dataModel, neighborhood, userSimilarity)

List<Preference> usrPrefen;

**while** ((lines = csv.getlines()) != **null**) {

String user\_id = lines[0];

String bussiness\_id = lines[1];

**if**(Integer.parseInt(lines[2])>=4)

{

**long** userLong = strlng.toLongID(user\_id);

strlng.storeMapping(userLong, user\_id);

**long** bussinessLong = strlng.toLongID(bussiness\_id);

strlng.storeMapping(bussinessLong, bussiness\_id);

**if** ((usrPrefen = usrPrefList.get(userLong)) == **null**) {

usrPrefen = **new** ArrayList<Preference>();

usrPrefList.put(userLong, usrPrefen);

}

usrPrefen.add(**new** GenericPreference(userLong, bussinessLong, 1));

}

}

// Gets 10 recommendations

val result = recommender.recommend(userId, 10)

// sorted from the highest score

result.foreach(r => println(r.getItemID() + ": " + r.getValue()))

FastByIDMap<PreferenceArray> prefrenceHashMap = **new** FastByIDMap<PreferenceArray>();

**for** (Entry<Long, List<Preference>> entry : usrPrefList.entrySet()) {

prefrenceHashMap.put(entry.getKey(),**new** GenericUserPreferenceArray(entry.getValue()));

}

Recomd1 = **new** GenericDataModel(prefrenceHashMap);

recommender = **new** GenericBooleanPrefItemBasedRecommender(Recomd1,**new** LogLikelihoodSimilarity(Recomd1));

} **catch** (Exception e) {

e.printStackTrace();

}

**return** recommender;

}

}

**Coding for mobile App:**

1. **Display Message Activity:**

**package** com**.**example**.**midterm**;**

**import** java.util.ArrayList**;**

**import** java.util.HashMap**;**

**import** java.util.List**;**

**import** android.app.Activity**;**

**import** android.content.Context**;**

**import** android.os.Bundle**;**

**import** android.view.View**;**

**import** android.webkit.WebView**;**

**import** android.widget.AdapterView**;**

**import** android.widget.ArrayAdapter**;**

**import** android.widget.ListView**;**

**public** **class** **DisplayMessageActivity** **extends** Activity **{**

**private** WebView web**;**

@Override

**protected** **void** **onCreate(**Bundle savedInstanceState**)** **{**

**super.**onCreate**(**savedInstanceState**);**

setContentView**(**R**.**layout**.**activity\_listviewexampleactivity**);**

web **=** **(**WebView**)**findViewById**(**R**.**id**.**webView1**);**

web**.**loadUrl**(**MusicActivity**.**url**);**

**final** ListView listview **=** **(**ListView**)** findViewById**(**R**.**id**.**list2**);**

String**[]** recommendation **=** getIntent**().**getStringArrayExtra**(**"result"**);**

**final** ArrayList**<**String**>** list **=** **new** ArrayList**<**String**>();**

**for** **(int** i **=** 0**;** i **<** recommendation**.**length**;** **++**i**)** **{**

list**.**add**(**recommendation**[**i**]);**

**}**

**final** StableArrayAdapter adapter **=** **new** StableArrayAdapter**(this,**

android**.**R**.**layout**.**simple\_list\_item\_1**,** list**);**

listview**.**setAdapter**(**adapter**);**

listview**.**setOnItemClickListener**(new** AdapterView**.**OnItemClickListener**()** **{**

@Override

**public** **void** **onItemClick(**AdapterView**<?>** parent**,** **final** View view**,**

**int** position**,** **long** id**)** **{**

**final** String item **=** **(**String**)** parent**.**getItemAtPosition**(**position**);**

view**.**animate**().**setDuration**(**2000**).**alpha**(**0**)**

**.**withEndAction**(new** Runnable**()** **{**

@Override

**public** **void** **run()** **{**

list**.**remove**(**item**);**

adapter**.**notifyDataSetChanged**();**

view**.**setAlpha**(**1**);**

**}**

**});**

**}**

**});**

**}**

**private** **class** **StableArrayAdapter** **extends** ArrayAdapter**<**String**>** **{**

HashMap**<**String**,** Integer**>** mIdMap **=** **new** HashMap**<**String**,** Integer**>();**

**public** **StableArrayAdapter(**Context context**,** **int** textViewResourceId**,**

List**<**String**>** objects**)** **{**

**super(**context**,** textViewResourceId**,** objects**);**

**for** **(int** i **=** 0**;** i **<** objects**.**size**();** **++**i**)** **{**

mIdMap**.**put**(**objects**.**get**(**i**),** i**);**

**}**

**}**

@Override

**public** **long** **getItemId(int** position**)** **{**

String item **=** getItem**(**position**);**

**return** mIdMap**.**get**(**item**);**

**}**

@Override

**public** **boolean** **hasStableIds()** **{**

**return** **true;**

**}**

**}**

**}**

1. **Main Activity:**

**package** com**.**example**.**midterm**;**

**import** java.io.IOException**;**

**import** java.io.InputStream**;**

**import** org.apache.http.HttpEntity**;**

**import** org.apache.http.HttpResponse**;**

**import** org.apache.http.client.ClientProtocolException**;**

**import** org.apache.http.client.HttpClient**;**

**import** org.apache.http.client.methods.HttpPost**;**

**import** org.apache.http.impl.client.DefaultHttpClient**;**

**import** android.app.Activity**;**

**import** android.content.Intent**;**

**import** android.os.AsyncTask**;**

**import** android.os.Bundle**;**

**import** android.view.Menu**;**

**import** android.view.View**;**

**import** android.widget.AdapterView**;**

**import** android.widget.AdapterView.OnItemClickListener**;**

**import** android.widget.ArrayAdapter**;**

**import** android.widget.ListView**;**

**import** android.widget.Toast**;**

**public** **class** **MainActivity** **extends** Activity **{**

**private** ListView lv**;**

**public** **static** String url **=** ""**;**

@Override

**protected** **void** **onCreate(**Bundle savedInstanceState**)** **{**

**super.**onCreate**(**savedInstanceState**);**

setContentView**(**R**.**layout**.**activity\_main**);**

lv **=** **(**ListView**)**findViewById**(**R**.**id**.**listView1**);**

String**[]** values **=** **new** String**[**100**];**

**for(int** i**=**0**;**i**<**100**;**i**++){**

values**[**i**]** **=** "User "**+**i**;**

**}**

ArrayAdapter**<**String**>** adapter **=** **new** ArrayAdapter**<**String**>(this,**

R**.**layout**.**list\_item**,** R**.**id**.**label**,** values**);**

lv**.**setAdapter**(**adapter**);**

lv**.**setOnItemClickListener**(new** OnItemClickListener**()** **{**

@Override

**public** **void** **onItemClick(**AdapterView**<?>** arg0**,** View arg1**,** **int** arg2**,**

**long** arg3**)** **{**

Toast**.**makeText**(**MainActivity**.**this**,** "clicked user"**+** arg2**,** Toast**.**LENGTH\_SHORT**).**show**();**

MovieRecommenderClass task **=** **new** MovieRecommenderClass**(new** CompleteListener**(){**

@Override

**public** **void** **onReccomendationComplete(**String**[]** arg0**)** **{**

System**.**out**.**println**(**"completed"**);**

Intent intent **=** **new** Intent**(**MainActivity**.**this**,** DisplayMessageActivity**.**class**);**

*// String message = editText.getText().toString();*

*//intent.putExtra(EXTRA\_MESSAGE, message);*

intent**.**putExtra**(**"result"**,** arg0**);**

startActivity**(**intent**);**

**}**

**});**

task**.**execute**(new** String**[]{**arg2**+**""**});**

**}**

**});**

**}**

@Override

**public** **boolean** **onCreateOptionsMenu(**Menu menu**)** **{**

*// Inflate the menu; this adds items to the action bar if it is present.*

getMenuInflater**().**inflate**(**R**.**menu**.**main**,** menu**);**

**return** **true;**

**}**

**class** **MovieRecommenderClass** **extends** AsyncTask**<**String**,** Void**,** String**>{**

**private** CompleteListener listener**;**

**public** **MovieRecommenderClass(**CompleteListener listener**){**

**this.**listener **=** listener**;**

**}**

@Override

**protected** String **doInBackground(**String**...** params**)** **{**

StringBuilder stringBuilder **=** **new** StringBuilder**();**

**try** **{**

String zipcode **=** params**[**0**];**

zipcode **=** zipcode**.**replaceAll**(**" "**,**"%20"**);**

url **=** "http://10.205.0.48:8080/FirstRestWebService/rest/json/music/" **+**zipcode**.**trim**();**

System**.**out**.**println**(**url**);**

HttpPost httppost **=** **new** HttpPost**(**url**);**

HttpClient client **=** **new** DefaultHttpClient**();**

HttpResponse response**;**

stringBuilder **=** **new** StringBuilder**();**

response **=** client**.**execute**(**httppost**);**

HttpEntity entity **=** response**.**getEntity**();**

InputStream stream **=** entity**.**getContent**();**

**int** b**;**

**while** **((**b **=** stream**.**read**())** **!=** **-**1**)** **{**

stringBuilder**.**append**((char)** b**);**

**}**

**}** **catch** **(**ClientProtocolException e**)** **{**

e**.**printStackTrace**();**

**}** **catch** **(**IOException e**)** **{**

e**.**printStackTrace**();**

**}**

String result **=** stringBuilder**.**toString**();**

System**.**out**.**println**(**result**);**

**return** result**;**

**}**

@Override

**protected** **void** **onPostExecute(**String resul**)** **{**

**super.**onPostExecute**(**resul**);**

**try{**

*//Toast.makeText(MainActivity.this, "result"+ resul, Toast.LENGTH\_SHORT).show();*

listener**.**onReccomendationComplete**(**resul**.**split**(**" "**));**

**}catch(**Exception e**){**

e**.**printStackTrace**();**

**}**

**}**

**}**

**interface** **CompleteListener{**

**public** **void** **onReccomendationComplete(**String**[]** result**);**

**}**

**}**

1. **Music Activity:**

**package** com**.**example**.**midterm**;**

**import** android.app.Activity**;**

**import** android.content.Intent**;**

**import** android.os.Bundle**;**

**import** android.view.View**;**

**import** android.widget.Button**;**

**import** android.widget.EditText**;**

**public** **class** **MusicActivity** **extends** Activity **{**

EditText et**;**

Button bt**;**

**public** **static** String url **=** ""**;**

@Override

**protected** **void** **onCreate(**Bundle savedInstanceState**)** **{**

*// TODO Auto-generated method stub*

**super.**onCreate**(**savedInstanceState**);**

setContentView**(**R**.**layout**.**rajesh\_layout**);**

bt **=** **(**Button**)**findViewById**(**R**.**id**.**button1**);**

et **=** **(**EditText**)**findViewById**(**R**.**id**.**editText1**);**

bt**.**setOnClickListener**(new** View**.**OnClickListener**()** **{**

@Override

**public** **void** **onClick(**View arg0**)** **{**

url **=** "http://10.205.0.48:8080/FirstRestWebService/rest/json/musicdata/" **+**et**.**getText**().**toString**().**trim**();**

Intent intent **=** **new** Intent**(**MusicActivity**.**this**,** DisplayMessageActivity**.**class**);**

*// String message = editText.getText().toString();*

*//intent.putExtra(EXTRA\_MESSAGE, message);*

intent**.**putExtra**(**"result"**,** **new** String**[]{**""**});**

startActivity**(**intent**);**

**}**

**});**

**}**

**}**