THE M.A.H.A. INITIATIVE

TO RECOMMEND A RECOMMENDER

RECOMMENDER #1: MARKOV CHAIN

$$P(\text{Alternative}|\text{Pop}) = \frac{P(\text{Alternative}, \text{Pop})}{P(\text{Pop})}$$

$$\approx \frac{\text{\# of people who have been to both Alternative and Pop concerts}}{\text{\# of people who have been to Pop concerts}}$$

▸ Construct the stochastic matrix to represent the conditional probability that what an individual would go to next, given his/her previous history of events. Here we use the population frequency as a proxy.

▸ As a new customer comes in, we base our recommendation on what we know about the customer.

▸ For example…

	ADULT CONTEMPORARY	ALTERNATIVE ROCK	BALLET/DANCE	CHILDREN	CHILDREN'S THEATRE	CLASSICAL/SYMPHONIC
ADULT CONTEMPORARY	0.527559055	0.12598425	0.0078740157	0	0	0
ALTERNATIVE ROCK	0.005270092	0.79710145	0.0009881423	0	0	0
BALLET/DANCE	0.018181818	0.05454545	0.7818181818	0	0	0
CHILDREN	0.000000000	0.00000000	0.0000000000	0	0	0
CHILDREN'S THEATRE	0.000000000	0.00000000	0.0000000000	0	0	0
CLASSICAL/SYMPHONIC	0.000000000	0.00000000	0.0000000000	0	0	0
CLASSICAL/VOCAL	0.000000000	0.04347826	0.0000000000	0	0	0
COMEDY	0.011627907	0.10465116	0.0116279070	0	0	0
COUNTRY	0.012216405	0.13263525	0.0017452007	0	0	0
FESTIVALS	0.000000000	0.00000000	0.0000000000	0	0	0
FUNK	0.000000000	0.00000000	0.0000000000	0	0	0
GOSPEL	0.000000000	0.00000000	0.0000000000	0	0	0
HEAVY METAL	0.018367347	0.14081633	0.0000000000	0	0	0
JAZZ	0.000000000	0.00000000	0.0000000000	0	0	0

JOSH = 1 ROCK/POP CONCERT, IN WEST?

First Iteration:
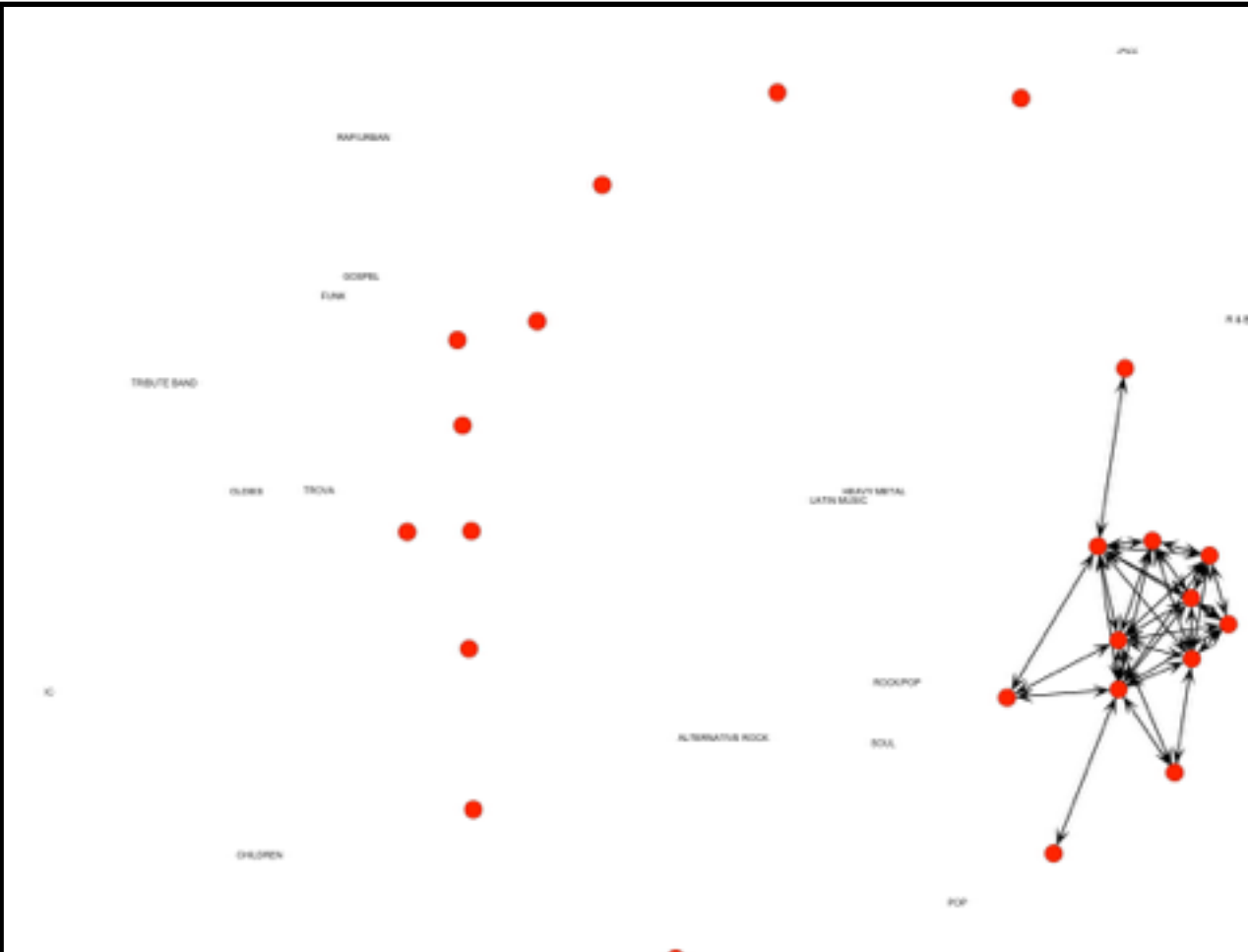
P(South ROCK/POP) = 0.05871725

P(West ROCK/POP) = 0.5998193

P(West LATIN MUSIC) = 0.02168022

Fourth Iteration:

P(West ALT. ROCK) = *0.0905227*

P(West ROCK/POP) = 0.2005241

P(SE ROCK/POP) = 0.09211755

	Canada ADULT CONTEMPORARY	Canada ALTERNATIVE ROCK	Canada BALLET/DANCE	Canada CLASSICAL/VOCAL
Canada ADULT CONTEMPORARY	1	0.0000000000	0	0
Canada ALTERNATIVE ROCK	0	0.7101449275	0	0
Canada BALLET/DANCE	0	0.0000000000	0	0
Canada CLASSICAL/VOCAL	0	0.0000000000	0	1
Canada COUNTRY	0	0.0000000000	0	0
Canada FUNK	0	0.0000000000	0	0
Canada HEAVY METAL	0	0.0000000000	0	0
Canada ROCK/POP	0	0.0110497238	0	0
Canada TRIBUTE BAND	0	0.0000000000	0	0
Midwest ADULT CONTEMPORARY	0	0.0000000000	0	0
Midwest ALTERNATIVE ROCK	0	0.0031055901	0	0
Midwest BALLET/DANCE	0	0.0000000000	0	0
Midwest CHILDREN'S THEATRE	0	0.0000000000	0	0

	ADULT CONTEMPORARY	ALTERNATIVE ROCK	BALLET/DANCE	CHILDREN	CHILDREN'S THEATRE	CLASSICAL/SYMPHO
ADULT CONTEMPORARY	0.527559055	0.12598425	0.0078740157	0	0	0
ALTERNATIVE ROCK	0.005270092	0.79710145	0.0009881423	0	0	0
BALLET/DANCE	0.018181818	0.05454545	0.7818181818	0	0	0
CHILDREN	0.000000000	0.00000000	0.0000000000	0	0	0
CHILDREN'S THEATRE	0.000000000	0.00000000	0.0000000000	0	0	0
CLASSICAL/SYMPHONIC	0.000000000	0.00000000	0.0000000000	0	0	0
CLASSICAL/VOCAL	0.000000000	0.04347826	0.0000000000	0	0	0
COMEDY	0.011627907	0.10465116	0.0116279070	0	0	0
COUNTRY	0.012216405	0.13263525	0.0017452007	0	0	0
FESTIVALS	0.000000000	0.00000000	0.0000000000	0	0	0
FUNK	0.000000000	0.00000000	0.0000000000	0	0	0
GOSPEL	0.000000000	0.00000000	0.0000000000	0	0	0
HEAVY METAL	0.018367347	0.14081633	0.0000000000	0	0	0
JAZZ	0.000000000	0.00000000	0.0000000000	0	0	0

RECOMMENDER #2: AFFINITY ANALYSIS

- Make recommendations based on people who exhibit similar consumer behaviors with a given customer

- Calculate the propensities for a set of n customers to go to a list of k artists

- For each pair of customers, calculate the affinity score between them

- Affinity score is the sum of the squared differences between two customers' vectors of propensity probabilities

- For each customer, we make recommendations for her/him based on people who are the most similar to them

- For example, for customer "00e968539df49b82ef5b", the person that is the most similar to him/her is customer "00fbb971ac6aebf74133". (They have the lowest score of 0.0225

	5 Seconds of Summer	AC/DC	Adele	Billy Joel	Black Sabbath	BRAND NEW	Brian Wilson	Bry Ada
00e968539df49b82ef5b	0.045	0.000	0.000	0.000	0.000	0.045	0.000	
00fbb971ac6aebf74133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
018e81a7dd19df65af54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
01aa0718ea1aac6b1c67	0.000	0.000	0.000	0.077	0.000	0.000	0.000	
01c78385b684291025a6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
01d5e4296d77eac47010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
01e25ca99b42ae73ab29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
02ccedc05a649dfbd5c9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0342db525e7677add53c	0.000	0.000	0.000	0.000	0.000	0.100	0.000	
03a95437906e1f88313a	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
03d93532ac1e92274ce8	0.000	0.000	0.000	0.000	0.091	0.000	0.000	
03eb9f8f05b22b60aa71	0.000	0.000	0.000	0.045	0.000	0.000	0.000	
04faa215045845fa4ee7	0.200	0.000	0.000	0.000	0.000	0.000	0.000	
066e5945d4a83d117844	0.000	0.000	0.083	0.000	0.000	0.000	0.000	
0698cbb153e43e53e7b9	0.000	0.000	0.000	0.000	0.167	0.000	0.000	
06b6eed19e0fda826a7a	0.000	0.000	0.000	0.000	0.000	0.100	0.000	

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  [1] 0.00000000 0.02251901 0.02462810 0.02720386 0.02886105 0.03
  [9] 0.03378635 0.03408480 0.03423849 0.03463932 0.03477961 0.03
 [17] 0.03636207 0.03719008 0.03719008 0.03747625 0.03794906 0.03
 [25] 0.03951446 0.03962810 0.03968983 0.03977961 0.04014578 0.04
 [33] 0.04081216 0.04081216 0.04099174 0.04123304 0.04132231 0.04
 [41] 0.04235537 0.04280992 0.04298669 0.04338126 0.04349846 0.04
 [49] 0.04377583 0.04390083 0.04417355 0.04430535 0.04448605 0.04
 [57] 0.04519628 0.04537021 0.04545455 0.04586267 0.04586267 0.04
 [65] 0.04634800 0.04690083 0.04709022 0.04722550 0.04722550 0.04
 [73] 0.04744095 0.04803719 0.04803719 0.04807081 0.04815315 0.04
 [81] 0.04908079 0.04922967 0.04922967 0.04945764 0.04945764 0.04
 [89] 0.04958678 0.04962810 0.04995354 0.05087810 0.05091317 0.05
 [97] 0.05093608 0.05093608 0.05093608 0.05140936 0.05144628 0.05
[105] 0.05235537 0.05235537 0.05270891 0.05300878 0.05300878 0.05
[113] 0.05315784 0.05315784 0.05318108 0.05318634 0.05331497 0.05
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