

Prototype system to recommend appropriate amount of independent musicians who matched user's preference

Tomofumi UETAKE and Seiya KIYOHARA

School of Business Administration,
Senshu University
2-1-1 Higashimita Tama-ku Kawasaki 214-8580, Japan
uetake@isc.senshu-u.ac.jp

Abstract

Recently we can easily get music information at home. Furthermore, by using "independent music community site" on Internet, we can easily get songs of independent musicians. However, it is very difficult for us to look for the musician who matched one's preference. Because there is a great deal of number of the musicians, and a genre of a song is various. In this paper, we analyze the independent community music site in Japan and clarify the characteristics of the information about registered independent musicians. And, based on this analysis, we propose the system to recommend an appropriate amount of independent musicians who matched user's preference without requiring user's extra effort.

Keywords: recommender systems, content-based filtering, information retrieval

1 Introduction

Recently we can get music information at home easily (e.g. it is represented by "iTunes music store" of Apple company (<http://www.apple.com/jp/itunes/>)). Furthermore, by using the "independent music community site" on Internet, we can easily get songs of independent musicians (including amateur musicians) that acquisition was difficult before. For example, these sites are "GARAGEBAND (<http://www.garageband.com/>)", "CD Baby (<http://cdbaby.com/>)" in U.S.A. and "muzie (<http://www.muzie.co.jp/>)", "BANDEST (<http://www.gaou.ne.jp/bandest/>)" in Japan (see Figure 1).



Figure 1: Independent music community site

However, it is very difficult for us to look for the musician who matched one's preference. Because there is a great deal of number of the musicians, and a genre of a song is various. Therefore, the system to recommend appropriate amount of independent musicians who matched user's preference effectively is needed.

There is the recommendation algorithm that uses existing music genre. But there are too many independent musicians to match by using this algorithm. The recommend algorithm that uses a keyword (such as a musician's name, a title of a song) is insufficient to recommend unknown independent musicians. There is the algorithm that recommends a musician by using downloads ranking or users' rating, but it is difficult to recommend independent musicians who matched user's preference by this algorithm.

There are some recommender systems [1]. For example, there are "liveplasma (<http://www.liveplasma.com/>)" which visualizes relationships between musicians, "Pandora (<http://www.pandora.com/>)" which uses content-based filtering algorithm, "Last.fm (<http://www.last.fm/>)" which uses collaborative filtering algorithm and "tapestry (<http://tapestry.allmusic.com/>)" which uses the database made by the expert. However, these systems are insufficient to recommend independent musicians, because there are the problem of "cold start" [2] and the problem of "trustworthiness" of another user [3].

By these reasons, we think that the simple content-based filtering is better to recommend independent musicians than the complex collaborative filtering. In this paper, we analyze the "muzie" and clarify the characteristics of the information about registered independent musicians. And, based on this analysis, we propose the system to recommend appropriate amount of independent musicians who matched user's preference without requiring user's extra effort.

2 Analysis of the independent music community site

In this paper, we focus on the independent music community site "muzie" and analysis this site. Because the "muzie" is the biggest independent music community site in Japan. This site offers a new "place of activity" for independent musicians and enables "an encounter" with new music through the Internet. This site has 17748 musicians and 119407 songs on February 26, 2007. Moreover, around 100 songs registration increases every day.

A musician introduction page in "muzie" is a self-report page and includes "self introduction", "group member introduction", "musical instrument", "music-style (music genre)", "affected musicians", "career", "homepage URL", "e-Mail address", and "BBS URL". In this paper, we focused on "music-style", "affected musicians" and "homepage", because these are important information for judging a musician (see Figure 2).

We analyzed 11919 musician introduction pages in “muzie” (see Table 1). Although there was some untrustworthy information, many musicians described useful information in their own introduction page. On the other hand, many musicians had their own homepage, but there was not much useful information for judging a musician.

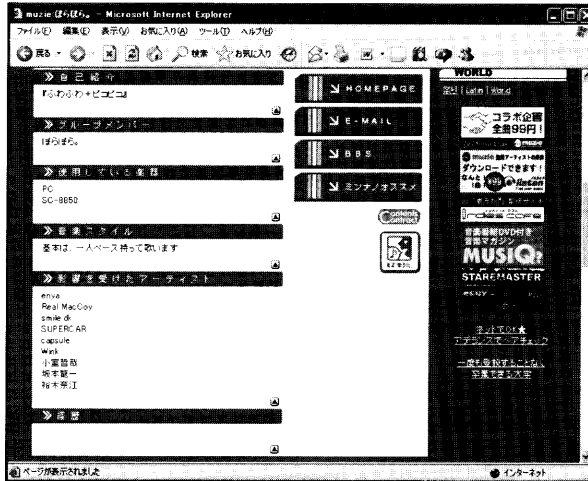


Figure 2: A musician introduction page in “muzie”

Table 1. The analysis of the musician introduction page in “muzie”

<i>Description rate of music-style</i>	82.6 %
<i>Description rate of affected musicians</i>	63.1 %
<i>Homepage possession rate</i>	65.8 %

As a result of our analysis, we clarify that we can recommend independent musicians who matched user's preference by using the contents of the musician introduction page in “muzie”.

3 Algorithm to recommend appropriate amount of independent musicians

3.1 Basic idea to recommend independent musicians who matched user's preference

When we judge (like or dislike) a musician, we usually consider various information generally such as quality of voice, a chord progression, music-style looks and performance technique. In addition, music information includes many qualitative elements. So, it is not appropriate for judging a musician by quantifying each element.

We sometimes quote one's favourite famous musician to explain one's favourite musician. And, one's favourite famous musician usually reflects one's favourite musician. Therefore, the user tends to prefer independent musicians who are affected by one's favourite famous musician. By using this method, we can recommend independent musicians who matched user's preference by using one's favourite famous musician. Some independent music community sites already use this method.

But it is difficult to recommend appropriate amount of independent musicians by using this method. If there are too many recommended independent musicians, it becomes difficult for a user to choose it. If there are few recommended independent musicians, it is difficult for a user to choose independent musicians who matched user's preference. Furthermore, appropriate amounts of

recommended musicians are often different by a user and his/her situation. Therefore, a function to adjust (decrease/increase) the number of recommended musicians easily is needed.

3.2 Proposal of the algorithm to adjust the number of recommended musicians

We propose the algorithm to adjust (decrease/increase) the number of recommended musicians by using the "musicians related to one's favourite musician"¹ (see Figure 3). This is because we think that we can express various characteristics of the musician by using his/her related musicians.

(a) Algorithm to decrease the number of recommended musicians

A musician usually has some characteristics. And the characteristics of a musician to pay attention to by a user are often different. We think that we can express characteristics of the musician with his/her related musicians. We propose the algorithm to decrease the number of recommended musicians using "AND search" by letting a user choose a famous musician related to one's favourite famous musician.

(b) Algorithm to increase the number of recommended musicians

It is probable that a musician related to the favourite musician is also a favourite musician. So, we propose the algorithm to increase the number of recommended musicians using "OR search" by letting a user choose a famous musician related to one's favourite famous musician.

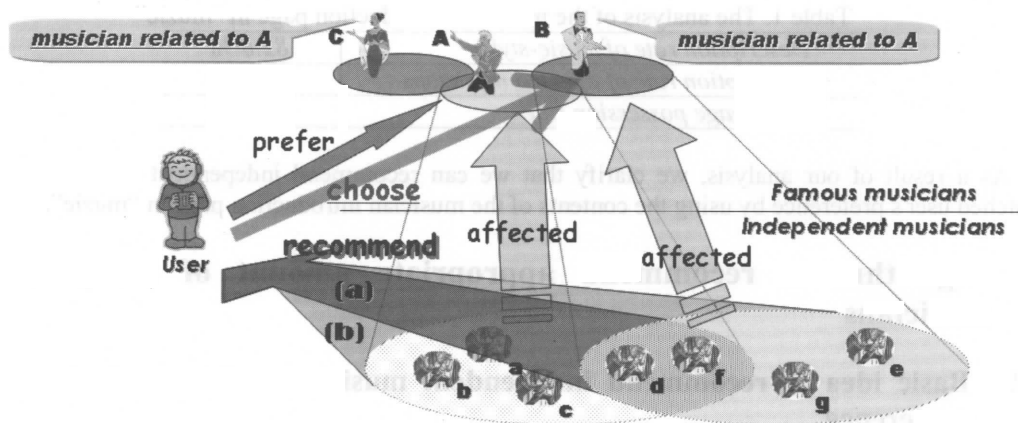


Figure 3: Algorithm to adjust the number of recommended musicians

4 Evaluation and Conclusion

We built the prototype system to evaluate the effectiveness of our algorithm. The database of related musicians was built with the information of the "Yahoo! Music's recommended related musician (<http://music.yahoo.co.jp/>)".

Five students used our prototype system and evaluated the effectiveness of our system by a questionnaire. We had five students of Senshu university judge (like or dislike) 10 musicians whom

¹ The "musicians related to one's favourite musician" mean "musicians whom he/she affected", "musicians who were affected", "musicians with friendship" and "musicians who belonged to the same group".

they chose in random and recommended by our system. As a result, they liked about 30% of musician whom they chose in random. On the other hand, they liked about 60% of musician recommended by our system.

Moreover, they commented following features of our system.

- It is effective to recommend musicians who matched user's preference by using user's favourite famous musician and their related famous musicians.
- It is easy to use this system, because there are no difficult operations.
- It is still difficult to adjust the number of the recommended musicians.

Although we must improve our algorithm, these results show that our prototype system can recommend the appropriate amount of independent musicians who matched user's preference without requiring user's extra effort by using the user's favourite famous musician and his/her related famous musicians.

5 Future works

Our system recommends appropriate amount of independent musicians who matched user's preference by using user's favorite famous musicians. So, it is difficult for a user to look for musicians of an unknown genre. It is necessary to solve this problem in future. In addition, independent musicians sometimes include a lot of musicians of bad quality. So, we will also have to improve recommendation algorithm in future (e.g. applying peer & expert ratings, popularity indicators, etc.).

References

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