

Chapter 103

Overview of Approaches and Future Challenges for Development of Music Recommendation Socio- Technical Systems

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ABSTRACT

This paper analyses the position of music recommendations in the wider context of music information behavior research and proposes five music information behavior dimensions: socio-cognitive information experience, information seeking, information retrieval, recommendations, and content consumption and analysis. It examines different approaches in the development of music recommendation systems (RS) which are applicable to all types of web information resources. These approaches are classified as content-based, collaborative, demographic, knowledge-based, meta-data-based, emotion-based and context-based, while the hybrid approach to RS development combines two or more approaches into one. Also, recent developments in the domain of music recommendations are discussed in detail. Finally, challenges and opportunities for collaboration between the scientific and the commercial communities on the development of new RS models are being explored.

INTRODUCTION

Music and technology and the never-ending interplay of these two seemingly disparate areas, have coexisted well, from the time when the first phonogram, radio wave emission and recording became possible, to the present day of computers that compose professional music with no human intervention, such as the computational system for the automatic composition of music (that writes pieces for the London Symphony) developed by Malaga University scientist Francesco Vico (New Scientist, 2012).

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Overview of Approaches and Future Challenges

However, with the democratization of technology and the production of technological tools for creating music and with the Internet as an almost free distribution platform, we are facing a paradox in the global music system. On the one side, the leading global recording companies are struggling to keep their business operations profitable, while, on the other side, we have never seen in history such a huge number of new recordings available to the public. The last digital music report published by IFPI (IFPI Digital Music Report, 2013), addresses the rapid growth of streaming music services, which, instead of selling music, they sell access to millions of songs stored in their databases, made available for a fixed monthly fee, usually ranging from 5 to 10 euros a month. Since these sources have such a huge number of tracks available the question is how we learn about such large amounts of music and how we select songs that align with our tastes.

Nowadays, as it is impossible to learn in a non-Internet human way, we have to turn to machine learning techniques that can help us take full advantage of such big collections and extract additional value for every stakeholder involved. One issue that has been highlighted in recent years has been the impact of unauthorized downloading of music which has led to strong anti-piracy campaigns and to the decrease of illegal use of music online (IFPI Digital Music Report, 2013). However, according to a recent statistical survey conducted in Japan (Kendall, 2012) after the introduction of a very rigorous law with hefty fines for online content piracy, legal music consumption actually decreased, and people showed less interest in music. Thus if law is not the factor that increases sales, what are the factors that do so? As music is more about experience and intangible human values, not just about owning a piece of music, we may turn our focus at how technology has shaped the whole experience of using music in the Internet age. With the development of commercial online music services that offer music streaming, with a reasonable monthly fee, such as Spotify or Deezer, users have now turned to legal music sources. One of the reasons for such a turn is the quality of the interface providing users with a more pleasurable experience than just downloading enormous megabytes of music files and storing them on a hard drive (usually without having been tagged well, with different bitrates and without any covers and lyrics). In addition, the possibility of sharing music with friends online just by clicking a “share” button or discussing the selected music with strangers, while listening to it, and the opportunity to build individual playlists or even act as a personal radio station having music whenever needed, makes this experience even more advanced and different from offline music practices.

Lev Manovich specified such tendencies in his book *The Language of New Media* (Manovich, 2001, p. 199) pointing out that users gain random access to new media objects (such as online music) via browsing and searching rather than through the guided ways that traditional communication media forms have offered before the advent of the Internet. For example, listening to the radio meant that the radio show host played music in a linear order. In the world of new media, users can create their own databases of songs. In addition, the open nature of the Web, as medium that can always be edited, means that Web sites are always changing with new elements added anywhere over time. Thus it is not possible to keep a coherent narrative; in other words, the Web follows an unreal and intangible narrative. However, it is not possible to create a good music experience without music information filtering systems that act as our digital (albeit unreal) music guides. For example, music recommender systems that provide collaborative or content-based filtering and predict user preferences for a music item have become very popular among music information users.

What music recommender algorithms should do is support the freedom of the end users, but still keep them happy and intrigued by the novelty and serendipity that new music can provide. Brian P. W. Whitman (2013), in his blog post proposed the care and scale concept: “Scale is easy to explain:

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