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Introduction

Over the past decades Electronic Dance Music (EDM) has gained substantial popularity in the world of music. The different subgenres of EDM have formed many cultural communities around them and continue to influence the direction in which music evolves.

This paper provides an analysis of the EDM genre. Firstly, it features historical facts related to EDM and its creation followed by a description of the genre itself with its musical characteristics. Secondly, this paper also comments on the instruments used to create EDM. After that, it describes some of the most popular subgenres of EDM with their similarities and differences. Before finishing with a short conclusion and statement regarding possible future work directions, this paper also features a section related to the social aspect of EDM.

History of EDM

This section provides a short and by any means not a complete history of EDM. It features the main moments and subgenres which defined EDM through the years.

Currently EDM is one of the most popular musical genres throughout the world but from a historical perspective its origins can be traced back to the USA. It is claimed that the activity of dancing to a certain piece of music has led to the creation of EDM [1]. This shows the close relation between EDM and the invention of the phonograph in 1877 and the gramophone ten years after that. The two inventions allowed

people to be able to dance to music which was not played live. However, it took years to make those inventions accessible so that people could easily play vinyls.

When speaking of EDM many individuals will associate it with the main performer - the DJ and his mixing board. The role of the DJ is very important as he is the figure between the producer and the audience. The first documented appearance of a Disk Jockey dates back to 1943 in the UK. Later, in the beginning of the 1950s DJs became popular in the USA because of radio events they were used to promote.

However, it was only after the boom of the disco music that EDM became famous. It all started from bars called "discotheques" which originated in France. They provided a new and appealing environment for their customers which could be easily distinguished by the powerful lighting and sound systems. These clubs promoted dancing like it had been never done before. During the late 1960s "discotheques" had already spread to the UK and America and later in the beginning of the 1970s the first documented EDM genre - disco was born. In its early days disco was only an underground phenomenon among African-American and gay communities. It originates from New York clubs as a mixture of funk and soul played by DJs.

Like most music genres popularity of EDM started to grow after record companies began to show interest in it. This happened in the mid 1970s, and shortly after, disco gained popularity among people from different social communities. It was the first music genre that brought people to the idea of going to a club in order to dance. Yet, there was movement against it and at the

end of the 1970s it started losing popularity and slowly returned to being an underground phenomenon.

Although it disappeared from the global scene, disco was used as a foundation to create many more EDM subgenres. In the early 1980s house was born. Its name comes from the location it was firstly developed - the house of DJ Frankie Knuckles in Chicago [1]. At the same time techno was created in Detroit. Both house and techno became popular after their introduction to the UK in the mid 1980s. After that the two EDM subgenres became the most common club music throughout Europe.

In the 1990s a big change in EDM occurred as the number of subgenres grew substantially. In the first part of the decade jungle and drum'n'bass were created which feature reggae elements. Also the 1990s saw the birth of trance, progressive house, deep house, two-step and etc.

Starting with the disco era in the 1960s EDM has proven to be one of the fastest developing genres in the musical industry. Since its creation EDM sums up over 300 subgenres. The popularity of EDM makes researching it a desirable task and also challenging due to the diversity between the subgenres.

What is EDM?

The goal of this section is to provide a more technical view on EDM by commenting on its main features and music equipment used for the creation of it.

Characteristics of the Genre

When commenting on musical characteristics one of the first ones that come to mind is the tempo of the corresponding genre. For EDM it is very distinctive. Usually EDM music pieces have a relatively high and steady tempo. In most cases it is around 129-150 beats per minute (BPM). However there are some EDM subgenres where the tempo exceeds 180 BPM.

Another distinctive characteristic of EDM is the rarity of vocals in the music pieces. Usually no more than a single word or vocal phrase appears in an EDM song.

One further characteristic of EDM is the tendency that some layers are outside the meter of a song. This is very common in EDM played in raves and dance clubs and leads people to believe that they are outside of reality. There is also a noticeable distinction between the different layers which is not typical for other music genres like, for instance, classic rock. The used musical instruments regardless whether they are traditional or simulated via the mixing board of the DJ have very distinctive timbers and registers and are heard as individual layers rather than merged into groups.

EDM can be also evaluated in terms of the beat [1]. That is the steady pulse of the music. In fact, there two types of beats that occur in EDM according to which subgenres can be defined into two groups. The first ones are four-on-the-floor based. They are even and the use only one drum instrument, whereas the second group - break-beat driven EDM include a whole drum set and are usually uneven.

Music Equipment

A further distinctive characteristic of EDM is the equipment used to create the musical pieces. When speaking about musical instruments and equipment most individuals will think of guitars, drums, piano, violin and etc. In EDM, however, the use of traditional music instruments is very often replaced by the use of electronic ones such as sampler-sequencer, drum machine, bass line generator and drum machine.

Nowadays DJs use a vast array of technology in order to create their music. They have at their disposal features such as beat matching and automatic tempo adjustment. However, in the early days of EDM DJs used only simple equalizers and turntables which played vinyls. This was not because of the lacking technological advance, but mostly due to the high pricing. Close



Figure 1: A Roland TR-909 drum machine.

to the birth of house and techno, the prices of EDM equipment dropped substantially after the entrance of Roland in the market [1]. Figure 1 shows an example drum machine which was sold in the early 1980s.

With the technological improvements throughout the years EDM equipment has become more and more capable. Currently DJ equipment allow the use of digital effects such as tremolo, vibrato, reverb, distortion and etc.

Subgenres of EDM

EDM has over 300 subgenres. This section comments on four of the most popular and important to its history. Firstly disco is presented, followed by techno and finally, this section ends with jungle and drum'n'bass.

Disco

Disco is considered to be the founder genre of EDM. Tempo-wise it is one of the slower EDM types with around 120 BPM. Unlike most EDM subgenres disco very often features session musicians. Disco belongs to the four-on-the-floor driven EDM type, however, there is less accent on the drum pattern compared to later EDM subgenres like house or techno.

A further characteristic of disco music is syncopation which occurs in multiple tracks. Syncopation can be described as the appearance of unex-

pected beats throughout a music piece [1]. This is a characteristic typical for breakbeat driven music, which makes disco easily recognizable.

Techno

One of the most popular EDM subgenres during the 1980s was techno. Unlike disco it uses less conventional instruments and therefore has less traditional and a more mechanical sound. In terms of tempo it is considerably faster than disco at around 130-150 BPM.

A very distinctive characteristic of techno is the big accent which is thrown on the drum patterns. Some listeners are reported to having said "Drums are the music" regarding techno [1].

Some techno tracks are known to feature breakdowns. These are long periods in which the bass drum is removed and is especially common in live sessions as it gathers the attention of the club dancer.

However, techno shares a similarity with disco as it is also four-on-the-floor based. Not only that, but syncopation is sometimes also part of techno.

Jungle and Drum'n'Bass

The existence of jungle and drum'n'bass is very controversial as many claim that they represent the same EDM subgenre. However, in the literature there have been some small distinctions between them [1]. For instance, drum'n'bass is claimed to be faster with its tempo of 160-190 BPM, leaving jungle with no more than 170 BPM. However, there are also claims that the existing of both subgenres is a product of a marketing strategy for naming musical genres [2].

Compared to the two previously discussed EDM subgenres jungle and drum'n'bass are very different. Firstly they are both breakbeat driven. The drum patterns usually originate from old funk records with accelerated tempo. Also, a very distinctive characteristic is the influence of reggae motives in both subgenres which makes them easily discoverable.

Social Impact of EDM

Like many popular music genres EDM has proven capable of forming communities around its many subgenres. From the beginning on it started as an underground type of music with disco, but in the 1980s it managed to catch the attention of the most part of the modern world.

Since EDM managed to form communities, it showed and continues to show a big marketing potential. Many recording studios and marketing companies use EDM to sell their products to the fans. However, communities are not formed only because of the appealing music. The naming of EDM subgenres has proven to be a crucial factor as well [2]. When a new name in the EDM arrives even if it does not encompass a new type of music it immediately gets the attention of record buyers. That may be the case with drum'n'bass and jungle.

EDM was created in the underground communities and continues to be popular among them. This is considered to be one of the reasons for the linkage between EDM and drug abuse. One of the challenges of the modern world is to prevent that, however, this is a challenging task as this has been a trend since the creation of EDM.

Conclusion and Future Work

This paper presented a short music analysis of the EDM genre. It aimed to allow people with no music degree and little knowledge on music to understand the main events and technical features of EDM.

Research in this area is a challenging task due to the vast diversity of EDM subgenres. However, it can also be rewarding as with each step further researchers are approaching the possibility of creating an algorithm for the detection of EDM. Currently there is no such algorithm in the literature, but there are some which can be used as starting points for further research.

For instance, the tempo is one of the most distinctive characteristics of EDM in general. That

is why the proposed algorithm for tempo detection can be very helpful [3]. Also there are currently implemented versions of different beat detection algorithms [4].

To sum up, further research into the EDM analysis and possible algorithms for detection is a promising direction and with the current technology it is becoming a more realistic task than ever to create such an algorithm.

References

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