
Musical Analysis of the Electronic Dance Music

Seminar: Topics in Computer Music

Author:

Boris Lyubenov
Matr.Nr. 318450
boris.lyubenov@rwth-aachen.de

Supervisor:

Prof. Dr. Paolo Bientinesi

Date of presentation
RWTH Aachen

Content

1.

Introduction and History of EDM

2.

Music Equipment

3.

Main Characteristics of EDM

4.

EDM Genres and Subgenres

5.

Algorithmic view on EDM

6.

Social Impact of EDM

7.

Conclusion and Future Work

Introduction and History of EDM

What is Electronic Dance Music?

- Broad term encompassing a wide range of musical genres
- Utilization of electronic technologies
- Live performance and role of the DJ
- Relationship to the dance floor

Origins of Electronic Dance Music

- Creation of the gramophone 1887
- Role of the jukebox in America 1920s
- First documented DJ playing 1943 United Kingdom
- First radio DJs events in America 1950s
- Discothèques in Europe 1960s

Introduction and History of EDM

The Disco Era

- First established on the dance floor, followed by later production
- Remixing of Disco singles firstly by Tom Moulton
 - Problem due to record sizes → switch to twelve-inch singles
- Disco records not really electronic
 - Usually created with session musicians
- Preserving Disco in the late 70s
 - Paradise Garden, New York City

Introduction and History of EDM

Further development of EDM

- House Music in the 80s
 - Chicago, USA
- Techno in the mid 80s
 - Officially established by a record company in 1988
- Jungle and Drum&Base early 90s
 - Developed in England
- Hardcore early 90s
 - Paradise Garden, New York City

Music Equipment

Less traditional music instruments

- Very expensive and hard to use in the 1970s
- Price-drop after the entrance of Roland



Roland TR-909 drum machine early 80s



State of the art Pioneer DJ equipment used by David Guetta

Main Characteristics of EDM

Basics

Tempo – How fast is a music piece performed

- Measured in beats per minute (BPM)

Beat – The steady pulse of the music

- Usually defined by the bass line and drums

Rhythm – The pattern within each measure

- In 4/4 we have 4 beats per measure but not always 4 notes

Main Characteristics of EDM

Tempo

- Usually fast, mostly in the range 120-150 BPM
- Some subgenres higher than 160 BPM

Beat

- Often similar to other non-EDM musical genres

Rhythm

- Rhythmical diversity, two main types:
 - Syncopated
 - Diatonic

Main Characteristics of EDM

Clear separation between the musical layers:

- Unlike other musical genres
- Listener can easily distinguish each layer

Two main types of EDM according to the beat:

- Breakbeat driven
 - Originate from live percussion (a whole drum set)
 - Main characteristic is irregularity
- Four-on-the-floor based

EDM Genres and Subgenres

Disco Music

- Relatively “slow” tempo for EDM around 120 BPM
- Four-on-the-floor based
- Sounds resemble real instruments
- Less accent on the drums compared to techno and more session musicians involved

EDM Genres and Subgenres

Techno Music

- Tempo mostly within 130-150 BPM, faster than Disco
- Four-on-the-floor based
- Usually no conventional instruments – a more mechanical sound
- “Drums are the music”

EDM Genres and Subgenres

Jungle and Drum&Base

- Very fast tempo
 - Jungle around 150-170 BPM
 - Drum&Base around 160-190 BPM
- Breakbeat driven
- Influence from other genres
 - Reggae motives often part of Jungle
- No solid boundary between them

Algorithmic view on EDM

How to detect different EDM Genres?

Currently no known algorithm for a complete detection

HOWEVER,

Existing algorithms may be used as a start

- Detecting Tempo
- Downbeat Detection for Jungle and Drum&Base
- Beat Detection Algorithms

Social Impact of EDM

- Importance of naming subgenres
 - A market “trick” to draw attention to something new
 - Record buyers search for new genres
 - Renaming of subgenres so that they sell
- Music usually appealing to younger individuals from urban communities
- Relation to the fashion industry
- Many subgenres are closely linked with drug usage

Conclusion

EDM – a huge musical genre

- Combines elements from different genres
- Over 300 subgenres and counting
- Big social impact since the 80s

Relation to Computer Science research

- Developing an algorithm for EDM detection is challenging but desirable task
 - Based on the music-theoretical knowledge mathematical models can be defined
 - However, no guarantee for exact precision

Thank you for your attention!

Literature

- [1] Mark. J. Butler, *Unlocking the Groove: Rhythm, Meter and Musical Design in Electronic Dance Music*. School of Music, Indiana University (2003).
- [2] Kimbrew, McLeod, *Genres, Subgenres, Sub-Subgenres and More: Musical and Social Differentiation Within Electronic/Dance Music Communities*. *Journal of Popular Music Studies*, 13 (2001), pp. 59-75.
- [3] Endris, R. Ryan, *Music Theory for Beginners*, LLC, 2015