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Similarity and Segmentation for Electronic Dance Music

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Goal

Electronic Dance Music (EDM) → Mobile App →
- Similar tempo
- Similar timbre
- Similar rhythm
- ...

Methodology
SimMixer
iPad test app for timbre similarity

- database contains 1295 EDM songs
- segmented into 22745 segments
- each segment is represented by 31 timbre descriptors
- SimMixer is a tool to explore and validate the timbre similarity algorithms
Research Issues
Segmentation

• Detection of first downbeat
  • typical EDM structure starts with bass drum
  • critical step for the detection of the structure

Figure 1: Detection of first downbeat
Research Issues
Segmentation

- Segment boundaries fine-tuning
  - segmentation algorithm detects timbre changes
  - segment boundaries in EDM are known to usually coincide with beats

Figure 2: Segment boundaries fine-tuning

Development

- Work method
  - develop a working algorithm
  - test feasibility
  - test usability
  - develop product(s)

![Tool Chain Diagram]

Figure 3: Tool Chain
Lessons Learned

- Optimized implementation can only start after the algorithm is done (lost quite some time implementing sub-algorithms that in the end are not used).

- Important to establish ground truth / reference early on, but a problem is that it may not be clear what exactly needs to be researched / developed (for instance: problem of segmentation).

- Plan research sub-projects carefully, to allow implementation to start asap and increase involvement by industrial partner.
Conclusion

- University vs (small) Company
- Science vs Commerce
- Science - Company - Audience
Horizon

- Intelligent mobile music tools