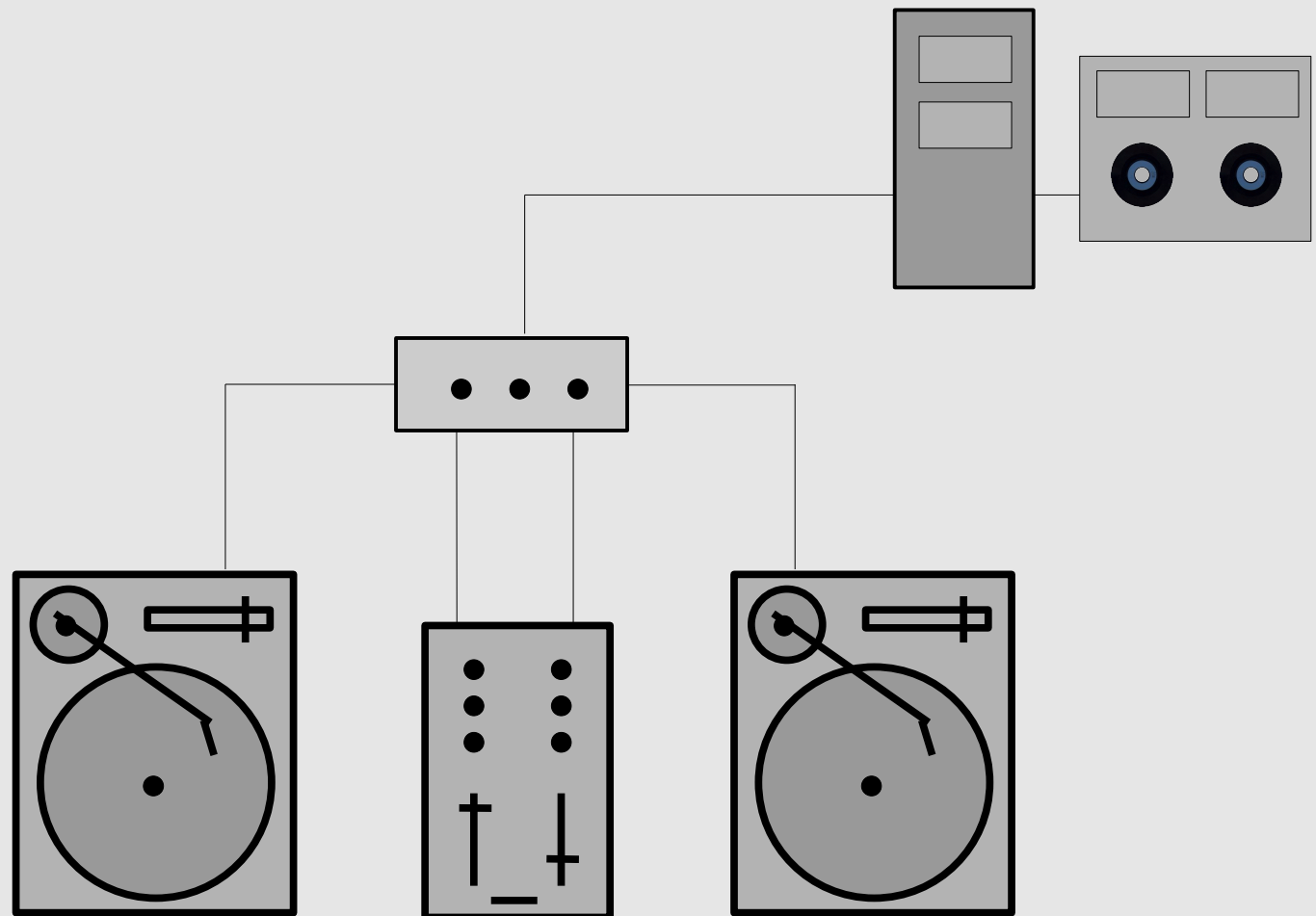


Digital-scratch

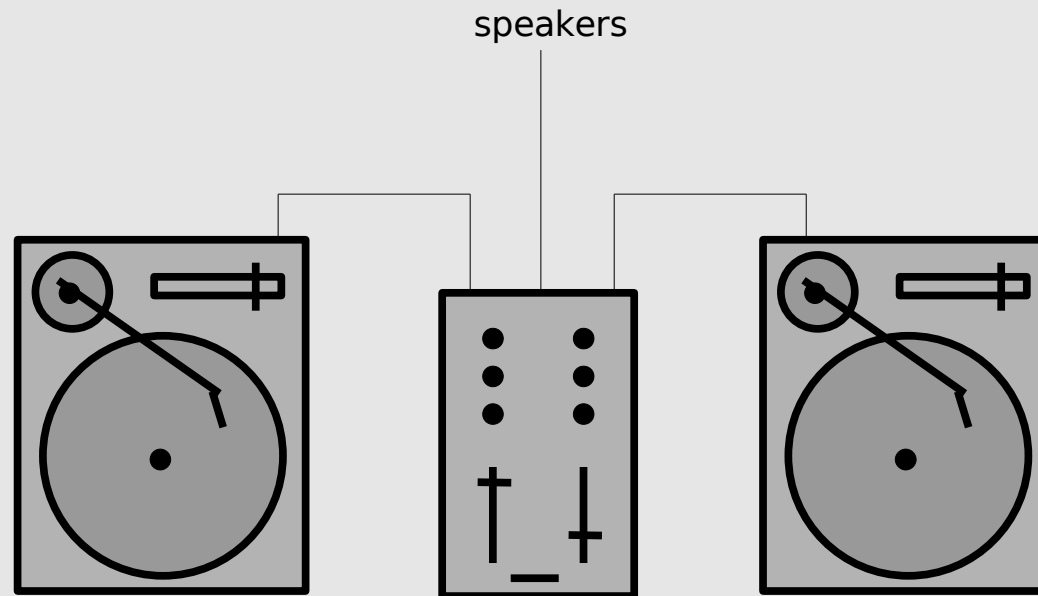
A software for motion detection on vinyl turntable





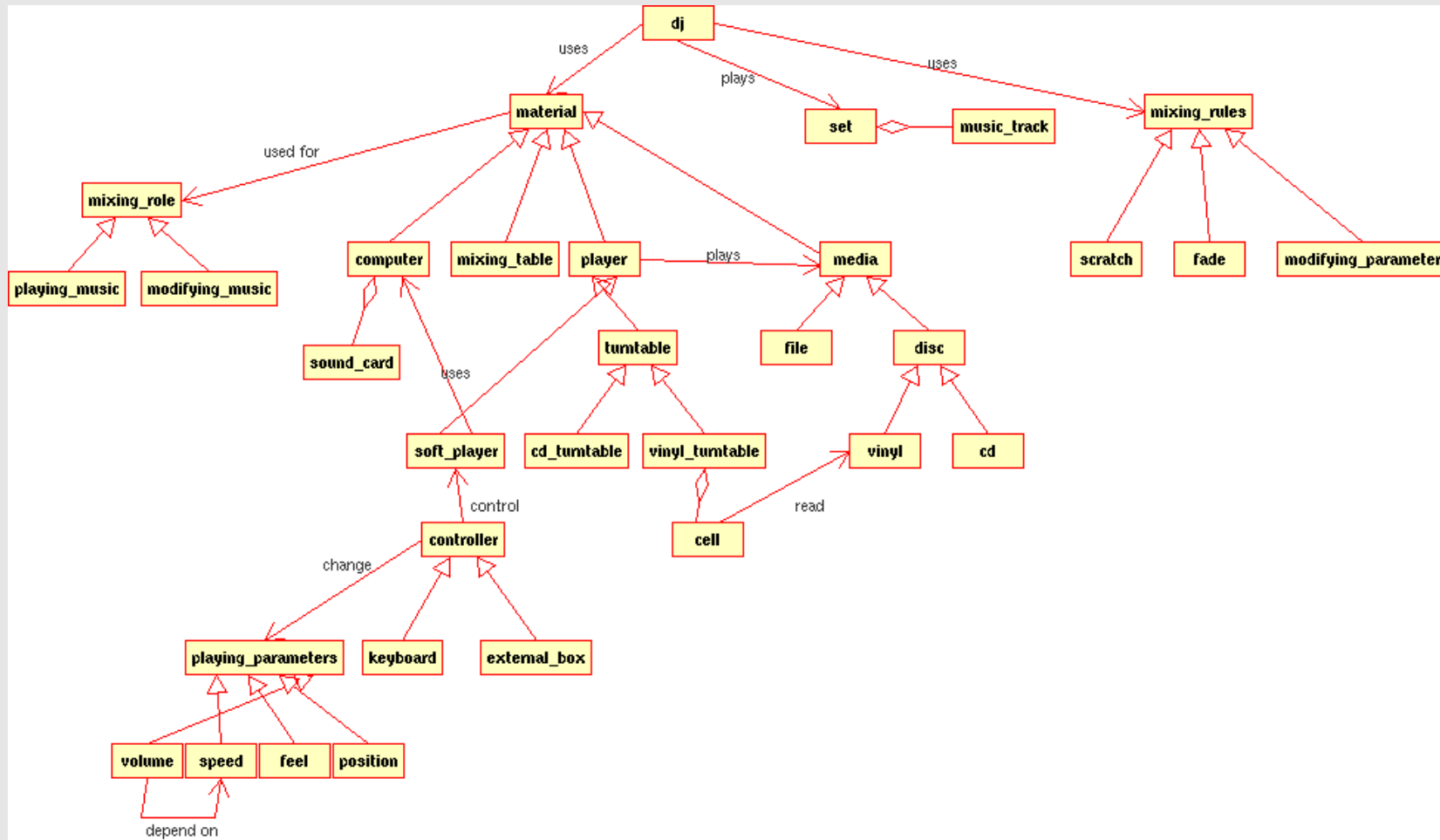
Introduction

1. DJ
activity
2. Problem
audio files
3. Solution
motion detection
4. Demo
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity



What do a DJ ?

1. DJ
activity
2. Problem
audio files
3. Solution
motion detection
4. Demo
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity





Problematic

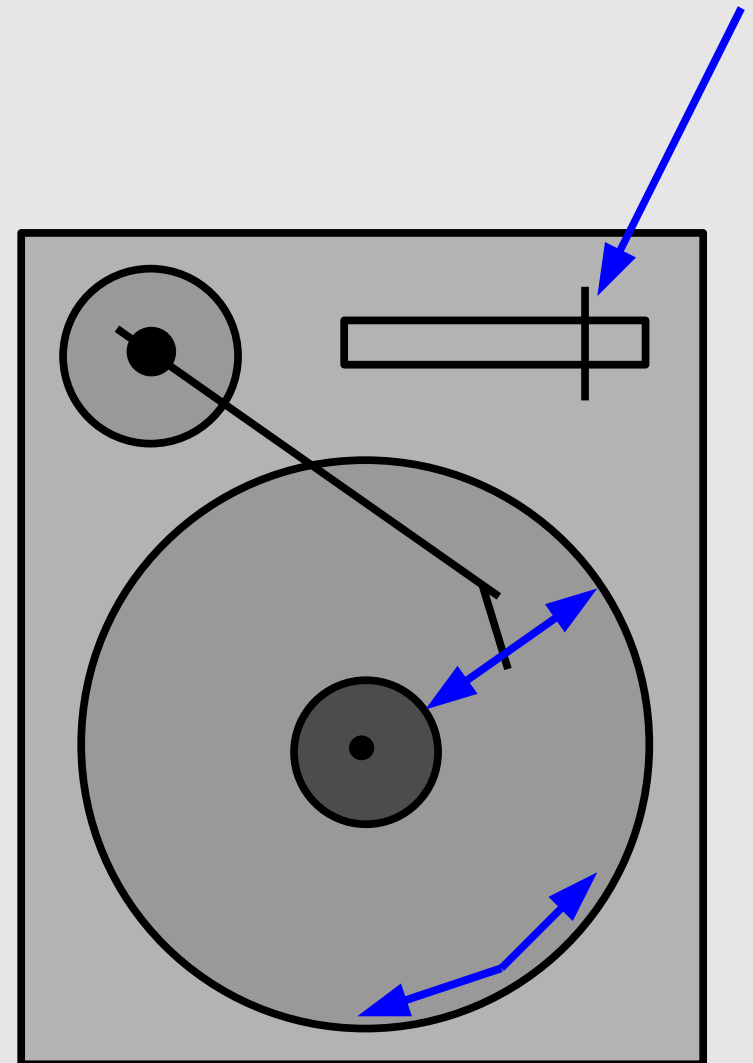
1. DJ
activity
2. Problem
audio files
3. Solution
motion detection
4. Demo
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity

- now you can find a lot of music in digital audio file (mp3, ogg, flac, ...)
- all music tracks are not on vinyl disc
- vinyl turntable give an incredible feeling (not the same with CD or software players)
- a lot of Djs want not to change their habits

Solution

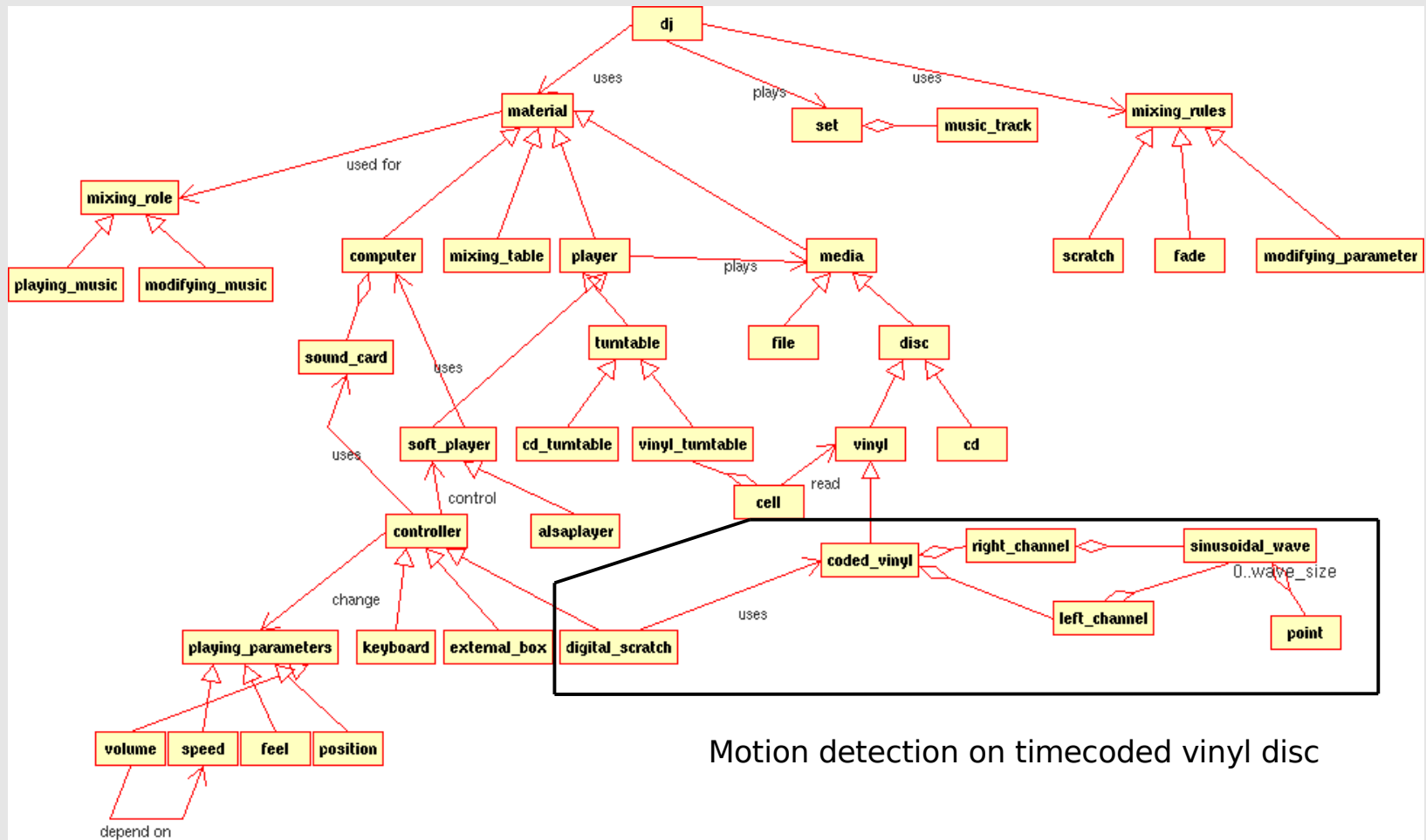
A solution : detect motions of vinyl disc and drive a software player.

- detect speed
- detect direction
- detect needle position
- existing solutions :
 - Stanton FinalScratch
 - Rane Serato Scratch Live
 - MixVibes DVS
 - ...



Solution

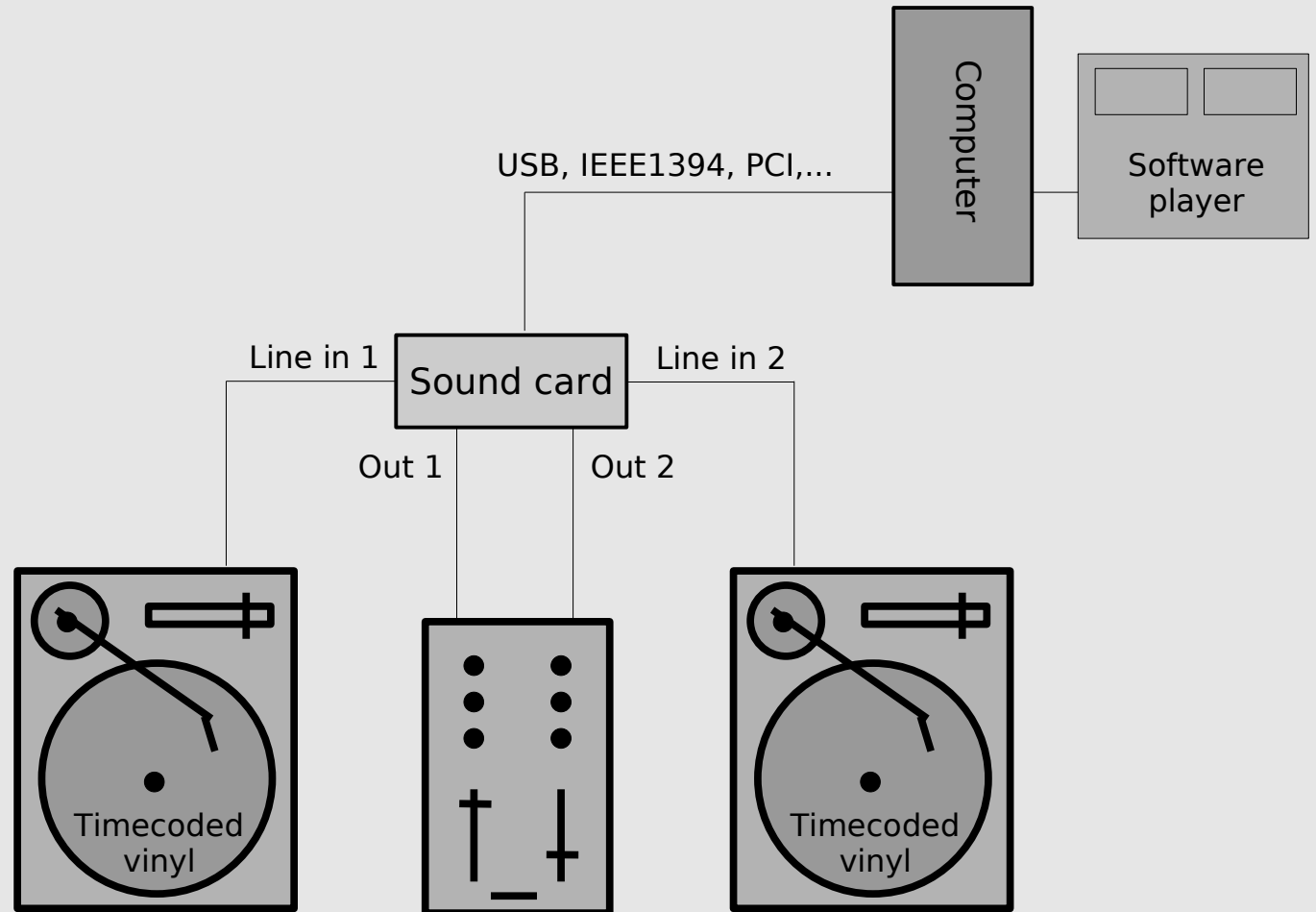
1. DJ
activity
2. Problem
audio files
3. Solution
motion detection
4. Demo
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity





Solution

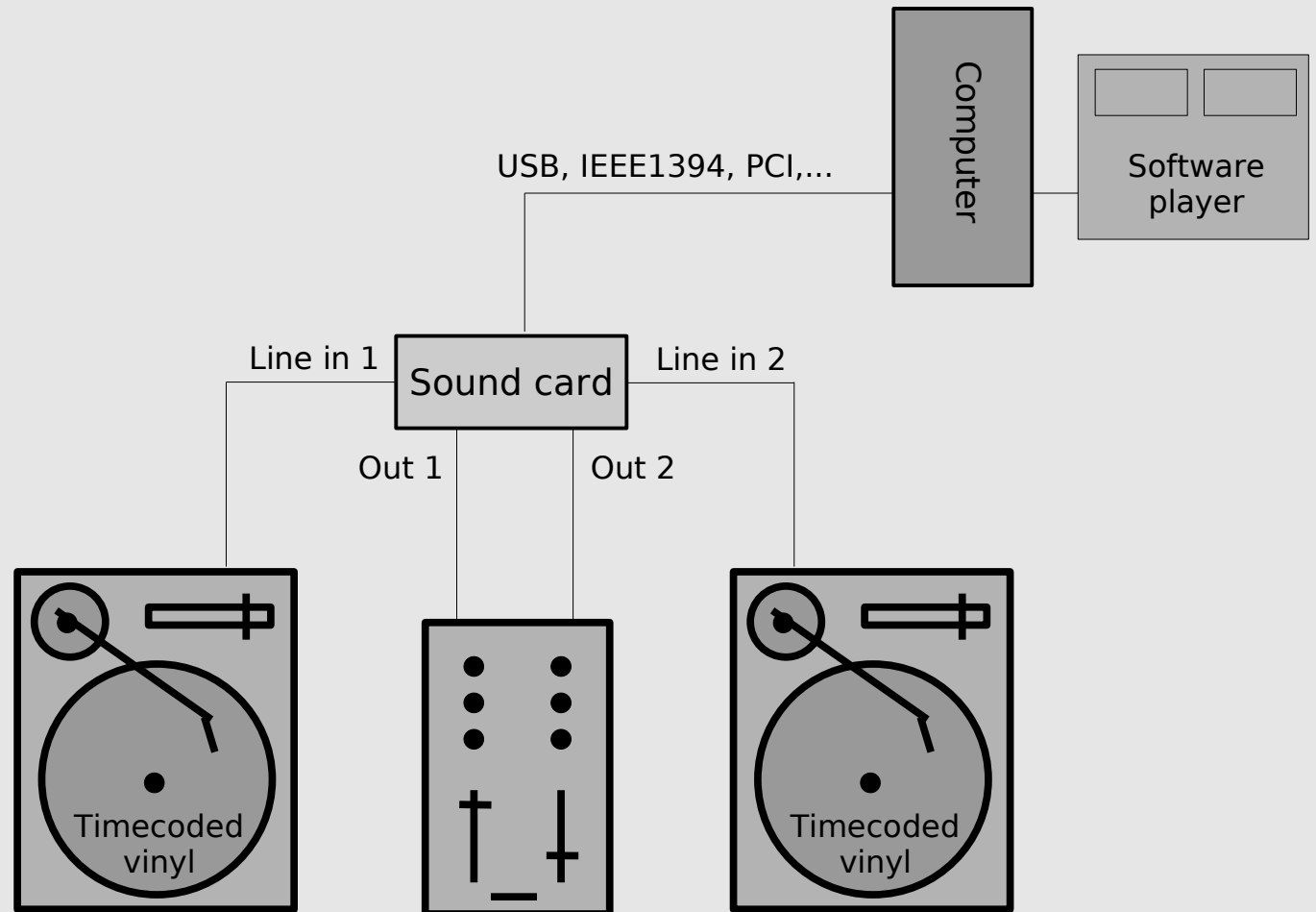
1. DJ :
activity
2. Problem :
audio files
3. Solution :
motion detection
4. Demo :
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity



Demo

- 1. DJ activity
- 2. Problem audio files
- 3. Solution motion detection
- 4. Demo mix activity
- 6. Digital-scratch how it works ?
- 7. Digital-scratch implementation
- 8. Demo scratch activity

Mix activity :
=> change vinyl speed and needle position

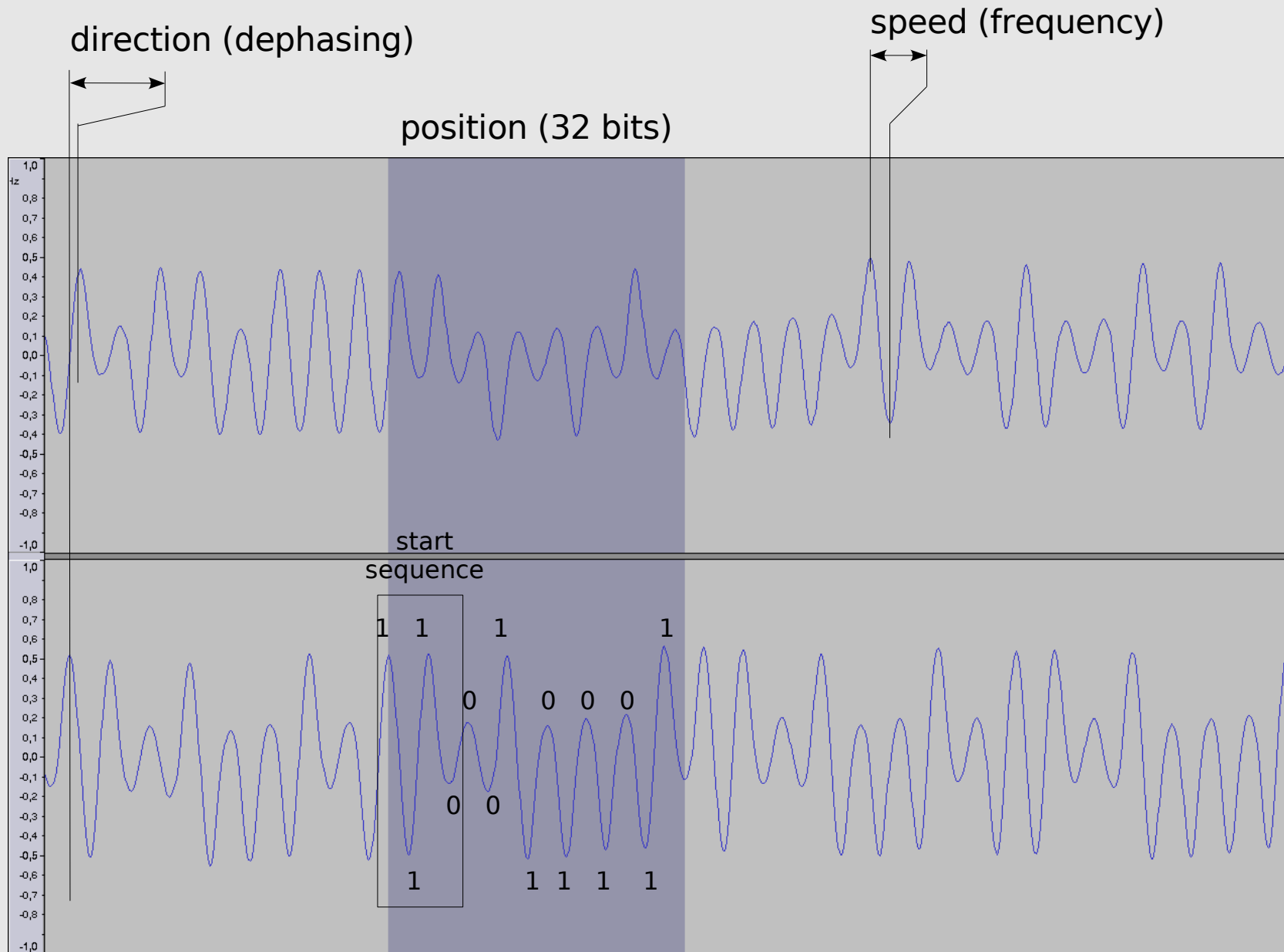




How it works ?

1. DJ activity
2. Proble audio files
3. Solution motion detection
4. Demo mix activity
6. Digital-scratch how it works ?
7. Digital-scratch implementation
8. Demo scratch activity

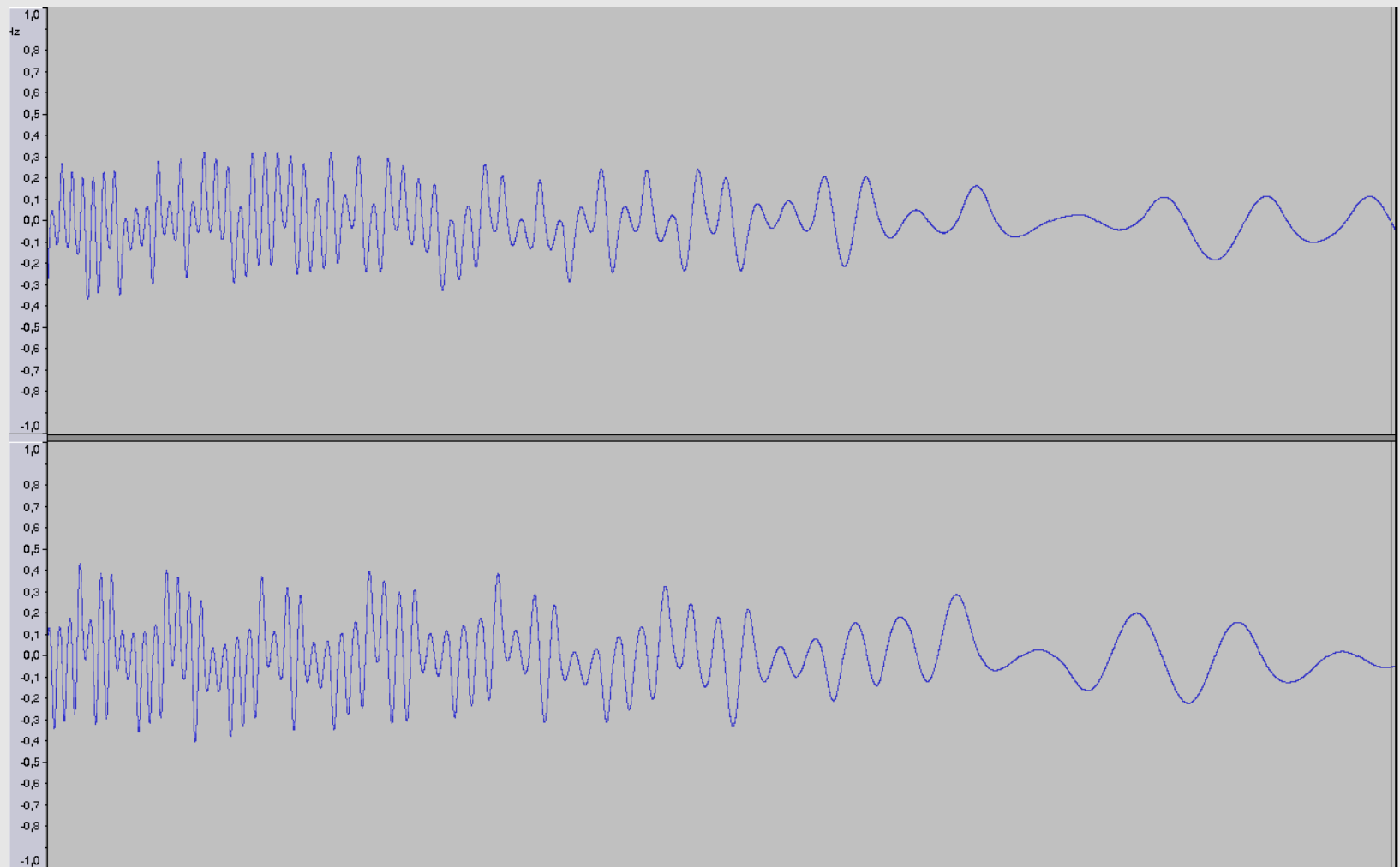
The 'timecoded' vinyl disc :





Constraints

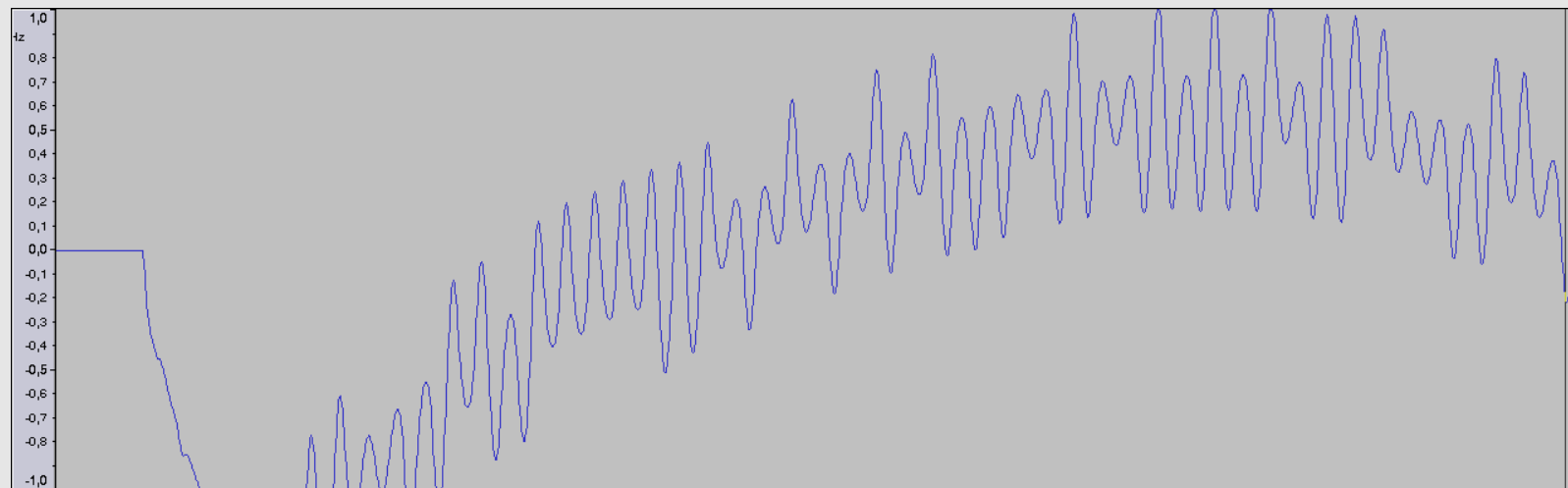
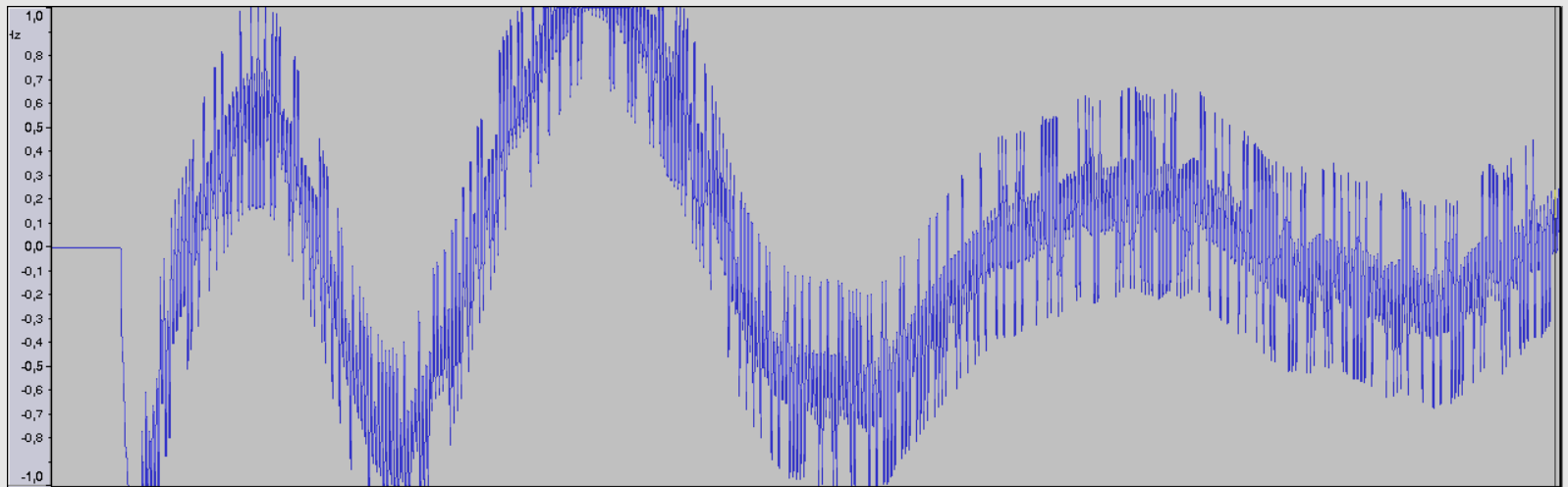
- Detect motions when turntable is going off :
no timecoded input signal
- Use a low-pass filter to avoid high frequencies



Constraints

- 1. DJ *activity*
- 2. Problem *audio files*
- 3. Solution *motion detection*
- 4. Demo *mix activity*
- 6. Digital-scratch *how it works ?*
- 7. Digital-scratch *implementation*
- 8. Demo *scratch activity*

- Detect motions when needle is put on the vinyl disc : signal is very deformed
- Solution : do not use amplitude reference to 0 but use difference between MAXs and MINs





Implementation

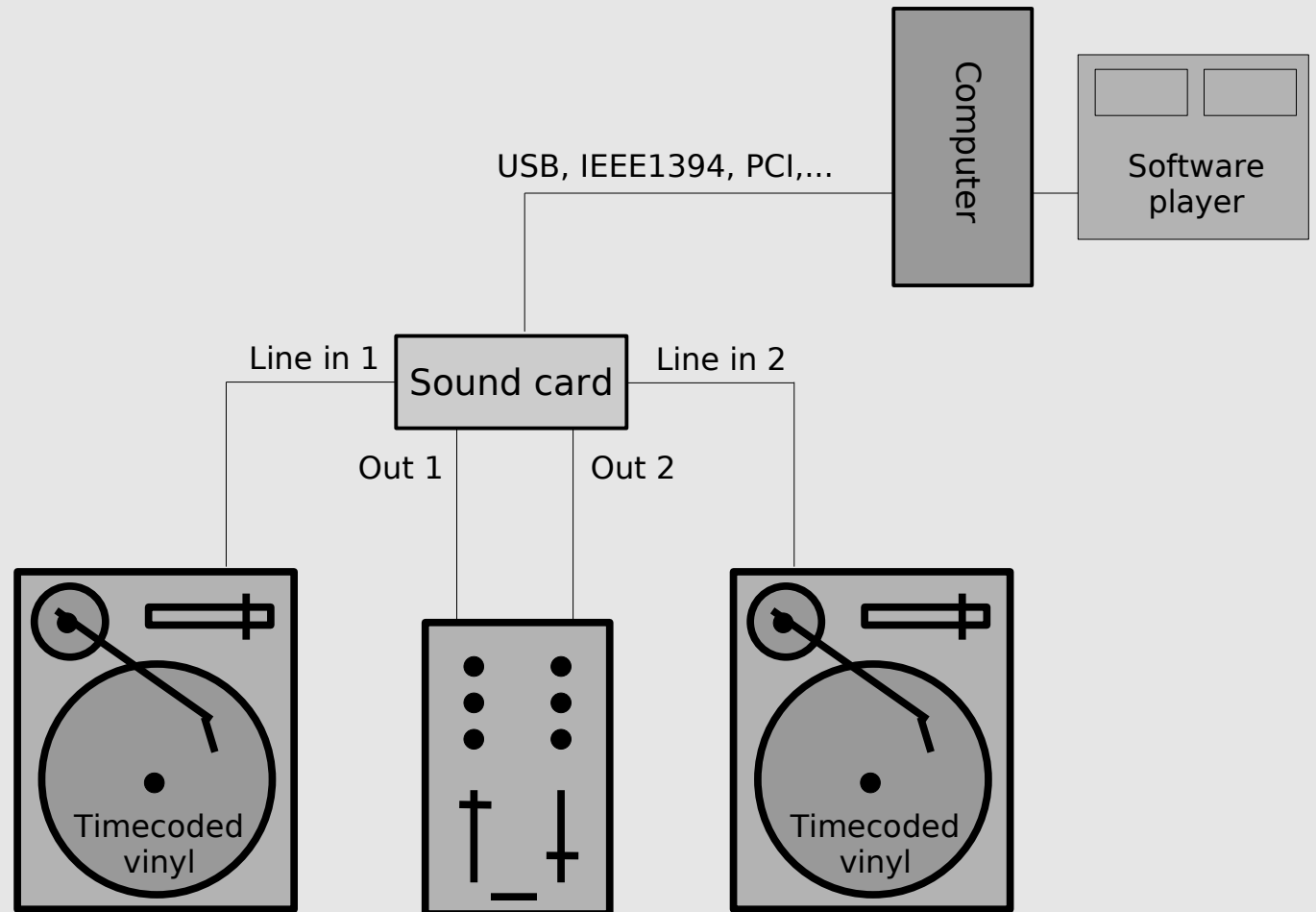
1. DJ
activity
2. Problem
audio files
3. Solution
motion detection
4. Demo
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity

- Platforms : GNU/Linux, MS Windows, OSX
- Tools : C++, autotools
- Libraries : ALSA, Jack, RtAudio
- Audio file player : Mixxx (<http://mixxx.sourceforge.net>)
- Open source : GPL licence
- Revision control : Subversion
- Communication : web-site, mailing-lists

Demo

- 1. DJ activity
- 2. Problem audio files
- 3. Solution motion detection
- 4. Demo mix activity
- 6. Digital-scratch how it works ?
- 7. Digital-scratch implementation
- 8. Demo scratch activity

Scratch activity :
=> change vinyl speed and direction





Question ?

1. DJ
activity
2. Problem
audio files
3. Solution
motion detection
4. Demo
mix activity
6. Digital-scratch
how it works ?
7. Digital-scratch
implementation
8. Demo
scratch activity

