

Accelerometer (browser)

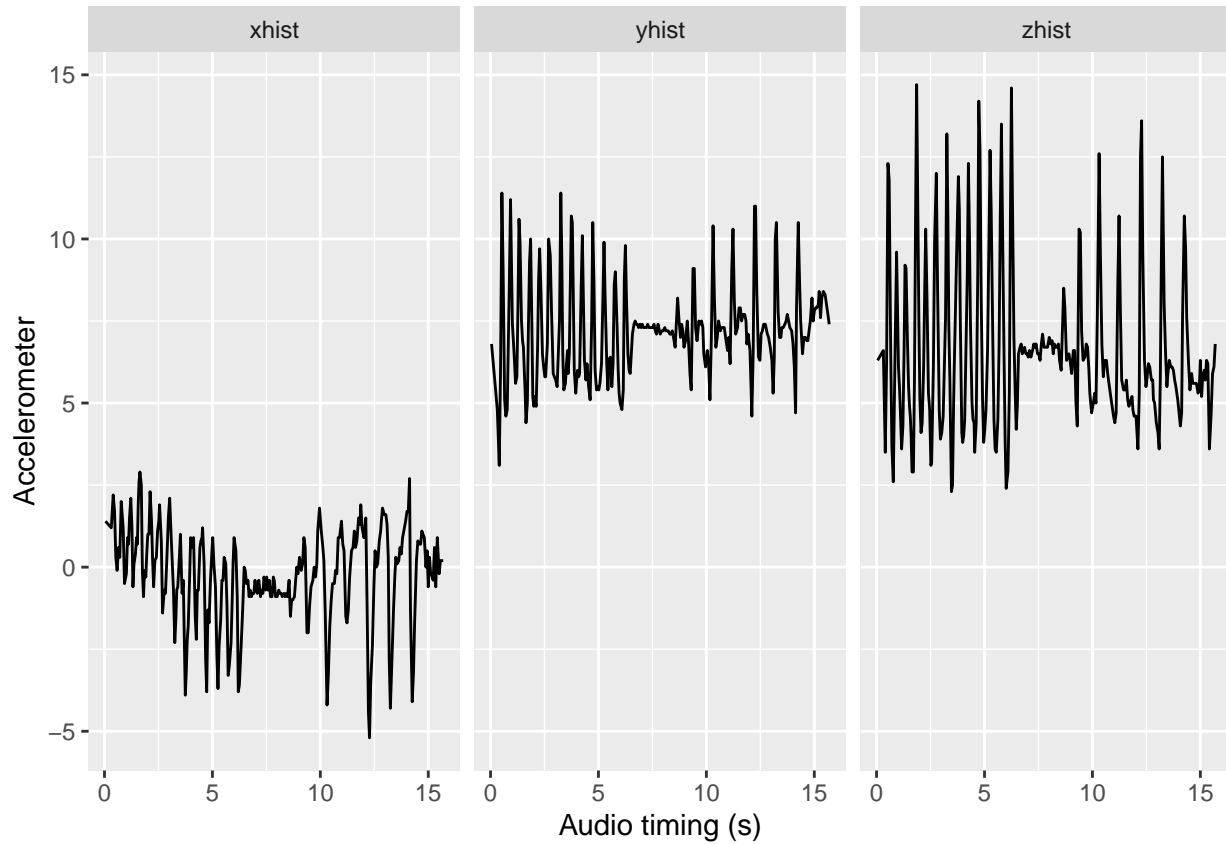
Sampling rate accuracy

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Setup

When the user presses the “Start” button, a song starts playing and accelerometer data starts being collected along axis x , y and z . Sampling occurs every 60ms, and everytime it occurs, I monitor timing through 1) UNIX epoch (ms since 1.1.1970); and 2) amount of time passed in the song. That way I have 2 time-stamps associated with each accelerometer reading.



Analyses

Here I analyse the consistency of these readings.

Difference between time elapsed from audio-time and UNIX epoch

```
time_elapsed = max(dt$thist) - min(dt$thist) #time elapsed from UNIX epochs  
time_elapsed - ((max(dt$audiohist) - min(dt$audiohist))*1000)
```

```
## [1] 2.666
```

Sampling rate (difference between ideal and observed)

```
sampling_frequency = 60  
expected_sr = 1000/sampling_frequency  
actual_sr = (1000*length(dt$thist))/time_elapsed  
  
expected_sr - actual_sr
```

```
## [1] 0.2399032
```

Consistency of inter-sampling intervals

Here I calculated the amount of time passed between samples n and $n + 1$ (difs).

```
sum(difs) == time_elapsed
```

```
## [1] TRUE
```

Mean time (ms) between samples (Expected was 60)

```
mean(difs)
```

```
## [1] 61.11406
```

Dispersion measures

```
sd(difs)
```

```
## [1] 17.15479
```

```
max(difs)
```

```
## [1] 266.1
```

```
min(difs)
```

```
## [1] 39.4
```