Experimenting with Open Research Experiments
Alexander Refsum Jensenius
Munin Conference, 27 November 2019
Experimenting with Open Research Experiments

Alexander Refsum Jensenius
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HUMAN RHYTHM

- Music
- Motion
- AV Media

TIME
PLEASURE
INTERACTION
STRUCTURE

COGNITION
What?
How?
Application → Research → Output
Open Access
A NIME Reader
Fifteen Years of New Interfaces for Musical Expression

Editors [view affiliations]
Alexander Refsum Jensenius, Michael J. Lyons

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Source files for the anthology A NIME Reader — Fifteen Years of New Interfaces for Musical Expression, edited by Alexander Refsum Jensenius (University of Oslo) and Michael J. Lyons (Ritsumeikan University) and published by Springer in 2017.
Open Access

Open Manuscripts
Introduction

Music Moves. The question that sparked off this project was the simple question why does music make us move?

Why Music Moves?

There has been a lot of research in the field of music-related body movement over the last decades, and the University of Oslo has been at the forefront in the field. The educators in Music Moves have been running a research-based course called “Music and Motion” at the University of Oslo for several years, and were eager to share their ideas more broadly. When the University of Oslo looked for courses to be transformed to online courses, Alexander, Hans and Kristian were easy to ask, and so Music Moves was born!

Overview

Well, we are going to talk about specific concepts. The entrainment process, for example. What makes me nod my head. Terminology such as the difference between motion and action, and gesture. And we are going to talk about the history. Why we have arrived at the situation we have today, for example. Technologies for studying music related body motion. So as you see, you’re going to learn a lot about different types of theoretical approaches to this, methods to use, and, of course, also some of the research that we are producing when we study music related body motion at the University of Oslo. Welcome to Music Moves.
Leanpub

+ Markdown
+ Dropbox
- No version control
- No citations
- Not academic publisher
Gitbook
NIME Conference Cookbook

This book is a semi-public working document for the organization of the NIME conference series. It is split into a section for the chairs of the annual conferences, and another for the officers responsible for the general operations of the community.

If you want comment on anything or get write access to the Cookbook, please get in touch with the chair of the SC.
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Gitbook

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Overleaf
Analysis of the movement-inducing effects of music through the fractality of head sway during standstill

Víctor González Núñez 1, Agata Żelechowska 2, Alexander Rubem Jensenius 3

Received date / Accepted date

Abstract: The links between music and human movement have been shown to provide insight into crucial aspects of human’s perception, cognition, and sensorimotor systems. In this study, we examined the influence of music on movement during standstill by analyzing head sway fractality, with the aim of further characterizing the correspondence between movement, music, and cognition. Eighty-seven participants were asked to stand still as possible for 500 seconds while being presented with alternating silence and musical stimuli. The stimuli were all rhythmic in nature, ranging from a metronome track to complex electronic-dance music. The head position of each participant was captured with an optical motion capture system. Large-scale correlations of head movement were estimated by detrended fluctuation analysis (DFA). The results reported findings from previous work on the movement-inducing effect of music, showing significantly greater head sway and lower head sway fractality during the stimuli. In addition, the patterns across stimuli suggest that there is a two-step adaptation process, with the music stimuli influencing head sway while at the same time fractality modulated movement responses. The results indicate that fluctuations in head movement in both conditions exhibit large-scale correlations, suggesting that the effects of music on head movement depend not only on the value of the most recent measured interval, but also on the values of those intervals at distant times.

Keywords: embedded music cognition - fractals - perception - movement - synchronisation

1BETMO Centre for Interdisciplinary Studies in Rhythm, Time and Motion
Department of Musicology
University of Oslo
Overleaf

+ LaTeX
+ BibTeX
+ Collaborative
- Old school
- No data integration
gibberwocky: New Live-Coding Instruments for Musical Performance

Charlie Roberts
Alexander Refsum Jensenius (University of Oslo)

Abstract
We describe research extending the gibberwocky live-coding environment to integrate with Max/MSP and support MIDI messaging. We discuss lessons learned while performing with gibberwocky, and they informed the addition of animated sparkline visualizations depicting modulations to performers and audiences.

May 15-19, 2017, Aalborg University Copenhagen, Denmark.
Authorea

+ LaTeX & Markdown
+ BibTeX
+ Collaborative
+ Comments
+ Interactivity (kind of)
- Longevity
Jupyter Notebook
In Depth: Linear Regression

Just as naive Bayes (discussed earlier in In Depth: Naive Bayes Classification) is a good starting point for classification tasks, linear regression models are a good starting point for regression tasks. Such models are popular because they can be fit very quickly, and are very interpretable. You are probably familiar with the simplest form of a linear regression model, i.e., fitting a straight line to data but such models can be extended to model more complicated data behavior.

In this section we will start with a quick intuitive walk-through of the mathematics behind this well-known problem, before seeing how before moving on to see how linear models can be generalized to account for more complicated patterns in data.

We begin by:

1. Import the necessary data.
2. Fit the regression.
3. Plot the fit.

```
sklearn.linear_model.LinearRegression()
```

```
plt.scatter(X_train, y_train, color='black')
plt.plot(X_train, y_train_ols, color='blue', linewidth=2.0)
plt.xlabel('Input Value')
plt.ylabel('Output Value')
plt.title('Linear Regression')
plt.show()
```

The line is drawn using the following equation:

```
y = mx + c
```

Where:

- m is the slope of the line
- c is the y-intercept
- x is the input value
- y is the output value

We can use this equation to predict the output value for any given input value.

```
预测值 = m * 输入值 + c
```

Let's change x, y with some values and examine the equation:

```
x = 10
y = 5
```

```
预测值 = 2 * 10 + 3 = 23
```

```
x = 20
y = 10
```

```
预测值 = 2 * 20 + 3 = 43
```

Now let's see how we can use this line to predict the output value for any given input value.
Jupyter notebook

+ Markdown
+ Collaborative (github)
+ Integrated graphs (+ data)
- Citations
- Commenting
Archiving?

Credit, honour and “points”?
Publishing is not only about text...
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Online course in Creative Arts & Media

Music Moves: Why Does Music Make You Move?

Learn about the psychology of music and movement, and how researchers study music-related movements, with this free online course.

Overview  Topics  Start dates  Requirements  Educators  More courses

Duration
6 weeks

Weekly study
3 hours
Music-Related Body Movement

When talking about music we need to agree on the same concepts to avoid misunderstandings. In this video we start off with an introduction to key terminology.

1.11 WHY IS TERMINOLOGY IMPORTANT? ARTICLE
1.12 MUSIC-RELATED BODY MOVEMENT VIDEO (03:22)
1.13 CHECK YOUR KNOWLEDGE - TERMINOLOGY QUIZ
No export in FutureLearn...
Music Moves - a free online course (UniOslo)

Music Moves - a free online course from the University of Oslo:
https://www.futurelearn.com/courses/m...

Music is movement. A bold statement, but one that we will explore together in this free online course.

Together we will study music through different types of body movement. This includes everything from the sound-producing keyboard actions of a pianist to the energetic dance moves in a club.

You will learn about the theoretical foundations for what we call embodied music cognition and why body movement is crucial for how we experience the emotional moods in music. We will also explore
Archiving?

Credit, honour and “points”?

Integration with LMS?
Open Source

Open Methods
Musical Gestures Toolbox for Matlab

http://www.ulo.no/english/research/gr...

This branch is 70 commits ahead of benlyyan:master.

- **doc**
  - Update README.md
  - fixing typo

- **example**
  - New example file

- **source-code**
  - fixing typo

- **MGT_MANUAL.pdf**
  - Add files via upload

- **README.md**
  - Update README.md
  - 3 years ago
  - 8 months ago

- **generate_documentation.m**
  - Adding documentation

---

**Musical Gestures Toolbox for Matlab**

The Musical Gestures Toolbox (MGT) is a Matlab toolbox for analysing music-related body motion, using sets of audio, video and motion capture data as source material.
Archiving code
GDPR
Copyright
Storage
Archive
Concert

- Workshop
- Data jockeying
- Panel discussion
- Data collection
MusicLab Vol 1: Biophysical Music

MusicLab Vol 2: Breath

MusicLab Vol 4: Utopia

Kulturhuset (Lab) 2. November at 1PM - 3PM
Psykologi
Musikkvitenskap
Kunst
Rytme
Problem solving

GDPR
Copyright
Storage
Archive
GDPR
<table>
<thead>
<tr>
<th>Data collection</th>
<th>Group 1: Audience</th>
<th>Group 2: Subjects</th>
<th>Group 3: Performers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video filming, thermal camera</td>
<td>On-body sensors (+ filming Group 1)</td>
<td>On-body sensors, filming (+ filming Group 1)</td>
<td></td>
</tr>
<tr>
<td>Level of recognition</td>
<td>May be recognizable</td>
<td>Anonymous</td>
<td>Recognizable</td>
</tr>
<tr>
<td>Information</td>
<td>web + signs + aural</td>
<td>sheet + aural</td>
<td>sheet + aural</td>
</tr>
<tr>
<td>Consent</td>
<td>Silent</td>
<td>Silent</td>
<td>Written</td>
</tr>
<tr>
<td>Legal basis</td>
<td>Legal basis: “task in the public interest”</td>
<td>Exempt from consent (no personal information collected)</td>
<td></td>
</tr>
</tbody>
</table>
Copyright
Copyright
Composers
Lyricists
Performers
Producers
Dancers
Artists
...
Open Research >||< Copyright Directive
Storage
Storage

Where?

- Lagringshotell
- TSD
- Dropbox/GDrive/OneDrive/...
- Vortex
- YouTube
- SoundCloud
- Freesound
- Zenodo
- ...

How?

- Immediate access (Data Jockeying)
- Flexible (hacking from many places)
- Fairly large files
- Synchronization
Storage

Video: 5x normal, 1x 360, 1x thermal
Audio: 8 channels
Sensors: 13 x accelerometers
Text: 13 questionnaires
Scores: live code
Code: jupyter notebooks

Matlab
Python
SPSS
R
Max
PD
...
Archive

- Where?
- How?
- Who?
- What?