

# MURAT

Presented by Data Magic

**MURAT** - **MU**sic **R**ecommendation **A**utomat**T**

# Project Team



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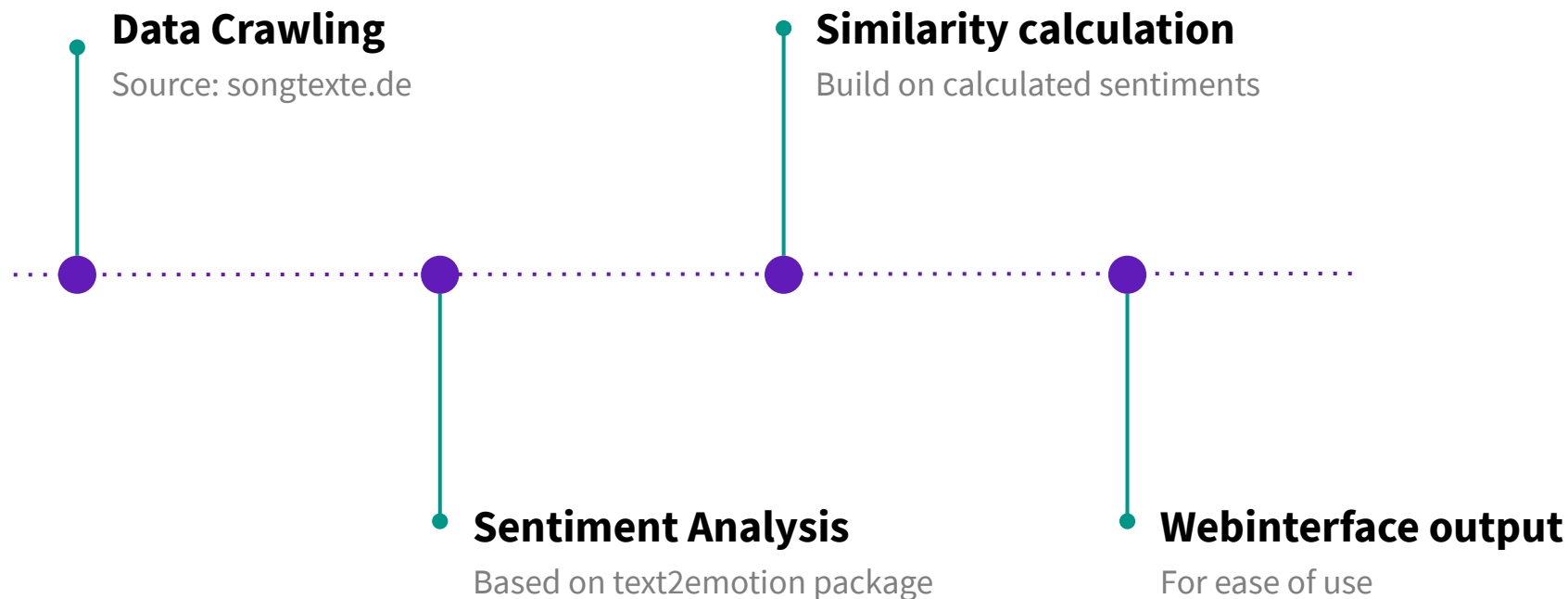


Niklas  
Wichter

# Project goal

- Recommendation of music depending on a given song
  - Suggestion based on lyrics analysis
  - Data corpus of ca. 45k songs crawled from the WWW
-

# Project Pipeline - @Simon



# Data crawling

## overview

- Crawler based on BeautifulSoup package in Python
- Source website: [songtexte.de](http://songtexte.de)

# Data crawling

## creative parts

- Problem: we don't know the titles of all songs in Germany to search for lyrics
- Solution: crawl [songtexte.de](http://songtexte.de) to get all songs which they know (and that's a lot)

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# Data crawling challenges

- Genres were crawled directly from google.com by parsing artist and song title directly into URL - Problem of different layout in Google

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daftpunkt get lucky genre



Einstellungen

Suchfilter

Get Lucky / Genres

Elektronische Tanzmusik

Pop



paul kalkbrenner sky and sand genre



Einstellungen

Suchfilter

Ungefähr 50.900 Ergebnisse (0,60 Sekunden)

Sky and Sand / Genre

Dance/Electronic



# Sentiment Analysis

## Goal

- Resolve emotions from song text
  - Based on text2emotion package  
word Dictionar(ies)y
  - Included Emotions
    - Angry
    - Happy
    - Fear
    - Sad
    - Surprise
-

# Sentiment Analysis Process

- 8-Step Process
- Deep dive on next slide

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1. clean apostrophe shortcuts

i'm → i am



2. clean general shortcuts

thnks → thank you



3. clean negations

not happy → sad



4. clean word types

remove .,?!() and verbs, pronouns, ...



5. clean entities

remove countries, organisations, etc.



6. clean stopwords

there, can, any, here, ...



7. lammatize text

going → go



8. map on Emotion Dictionary

map on Emotion Dictionary

# Similarity calculation

- Calculate error for each song based on absolute deviation of each sentiment feature:

```
sentimentError +=  
    Math.abs( song.happy -  
              selectedSong.happy)
```

- Pick top three songs based on error
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# Webinterface

- Simple Interface to test our recommendations
- Text-input with button to trigger recommendation
- List with recommendation results

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# Model evaluation

- On the following slides the evaluation of:
  - Emotions
  - Recommendation

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# Evaluation: Song Emotions on two Songs

## I don't like Mondays

The silicon chip inside her head  
Gets switched to overload.  
And nobody's gonna go to school today,  
She's going to make them stay at home.  
[...]  
Tell me why?  
I don't like Mondays.  
Tell me why?  
I don't like Mondays.  
Tell me why?  
I don't like Mondays.  
I want to shoot  
The whole day down.  
[...]

Happy:	0.07
Angry:	0.23
Surprise:	0.09
Sad:	0.46
Fear:	0.15

## Happy

It might seem crazy what I am 'bout to say  
Sunshine she's here, you can take a break  
[...]  
Huh (Because I'm happy)  
Clap along if you feel like a room without a roof  
(Because I'm happy)  
Clap along if you feel like happiness is the truth  
(Because I'm happy)  
Clap along if you know what happiness is to you  
(Because I'm happy)  
Clap along if you feel like that's what you wanna do  
[...]

Happy:	0.43
Angry:	0.07
Surprise:	0.05
Sad:	0.34
Fear:	0.16

# Evaluation: I don't like Mondays

Sad Angry Fear Happy Surprise

The silicon **chip** inside her head  
Gets switched to **overload**.  
And nobody's gonna go to school today,  
She's going to make them **stay** at home.  
And daddy **doesn't understand** it,  
He always **said** she was as **good** as gold.  
And he can see **no reasons**  
'Cause there are **no reasons**  
What **reason** do you need to be shown?

**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like** Mondays.  
I want to **shoot**  
The whole **day** down.

The telex **machine** is kept so clean  
As it types to a **waiting** world.  
And mother feels so **shocked**,  
Father's world is rocked,  
And their thoughts **turn** to  
Their own little girl.  
Sweet 16 ain't so **peachy keen**,  
No, it ain't so neat to **admit** defeat.  
They can see no **reasons**  
'Cause there are no **reasons**

What **reason** do you need?  
**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like** Mondays.  
I want to **shoot**  
The whole **day** down, down, down.

**Shoot** it all down

All the playing's stopped in the playground  
now  
She wants to play with her toys a while.  
And school's out early and soon we'll be  
learning  
And the lesson today is how to die.  
And then the bullhorn crackles,  
And the captain tackles,  
With the **problems** and the how's and why's.  
And he can see **no reasons**  
'Cause there are **no reasons**  
What **reason** do you need to die?

The silicon **chip** inside her head  
Gets switched to **overload**.  
And nobody's gonna go to school today,  
She's going to make them **stay** at home.  
And daddy **doesn't understand** it,  
He always **said** she was as **good** as gold.  
And he can see **no reasons**  
'Cause there are **no reasons**  
What **reason** do you need to be shown?

**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like**, I don't like  
**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like**, I don't like  
**Tell** me why?  
I **don't like** Mondays.  
**Tell** me why?  
I **don't like** Mondays.  
I wanna **shoot**,  
The whole **day** down.



# Evaluation: Happy

Sad Angry Fear Happy Surprise

It might seem **crazy** what I'm about to say  
Sunshine she's here, you can take a **break**  
I'm a **hot** air balloon that could go to space  
With the air, like I **don't care** baby by the way

Because I'm **happy**  
**Clap** along if you feel like a **room** without a  
**roof**

Because I'm **happy**  
**Clap** along if you feel like **happiness** is the  
truth

Because I'm **happy**  
**Clap** along if you know what **happiness** is to  
you

Because I'm **happy**  
**Clap** along if you feel like that's what you  
wanna do

Here **come** bad news talking this and that  
Yeah, well, gimme all you got and don't hold  
back  
Yeah, well I should probably **warn** you I'll be  
just **fine**

Yeah, no offense to you don't waste your  
time  
Here's why

Because I'm **happy**  
**Clap** along if you feel like a **room** without a  
**roof**

Because I'm **happy**  
**Clap** along if you feel like **happiness** is the  
truth

Because I'm **happy**  
**Clap** along if you know what **happiness** is to  
you

Because I'm **happy**  
**Clap** along if you feel like that's what you  
wanna do

(**Happy**) **bring** me down  
Can't nothing (**happy**) **bring** me down  
My level's too **high** (**happy**) to **bring** me down  
Can't nothing (**happy**) **bring** me down  
I **said**

(**Happy, happy, happy**) **bring** me down  
Can't nothing **bring** me down  
My level's too **high** (**happy**) to **bring** me down  
Can't nothing **bring** me down  
I **said**

Because I'm **happy**  
**Clap** along if you feel like a **room** without a  
**roof**

Because I'm **happy**  
**Clap** along if you feel like **happiness** is the  
truth

Because I'm **happy**  
**Clap** along if you know what **happiness** is to  
you

Because I'm **happy**  
**Clap** along if you feel like that's what you  
wanna do  
Because I'm **happy**  
**Clap** along if you feel like a **room** without a  
**roof**

Because I'm **happy**  
**Clap** along if you feel like **happiness** is the  
truth  
Because I'm **happy**  
**Clap** along if you know what **happiness** is to  
you

Because I'm **happy**  
**Clap** along if you feel like that's what you  
wanna do  
C'mon

# Evaluation: Recommendation

## Songtiteleingabe:

Song

Jar of Hearts - Christina P...

Vorschlag generieren

### Songvorschlag:

Why Try - Ariana Grande

Why Was I Born - Sonny Rollins

Why We Live Here - Tyler Farr

## Songtiteleingabe:

Song

TiK ToK - Ke\$ha

Vorschlag generieren

### Songvorschlag:

Stone Cold - Demi Lovato

Stone Cold - Rainbow

Stone Cold (feat. Tiana Khasi) - The Kite String Tangle

# Evaluation: Recommendation

## Songtiteleingabe:

Song

Vorschlag generieren

### Songvorschlag:

Winning Days - The Vines

Winning Streak - Ashley Monroe

Winter - Daughter

## Songtiteleingabe:

Song

Vorschlag generieren

### Songvorschlag:

Rock 4 Rock - Pimp C

Rock and Roll Again - Blackberry Smoke

Rock And Roll All Nite - KISS

# This was MURAT

*by Team Data Magic*