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# gfu Insights & Trends

10. Juli 2019

Welcome / Willkommen

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# **Semantisches TV**

## **Wie KI den Inhalt bewegter Bilder erkennt**

**Dr. Matthieu Deru**

Senior Software Engineer / UX Designer für Interaktive Systeme

Deutsches Forschungszentrum für Künstliche Intelligenz  
DFKI GmbH / Saarbrücken





Videoanalyse

Deep Learning

Big Data

Künstliche Intelligenz

Web 3.0

VOD

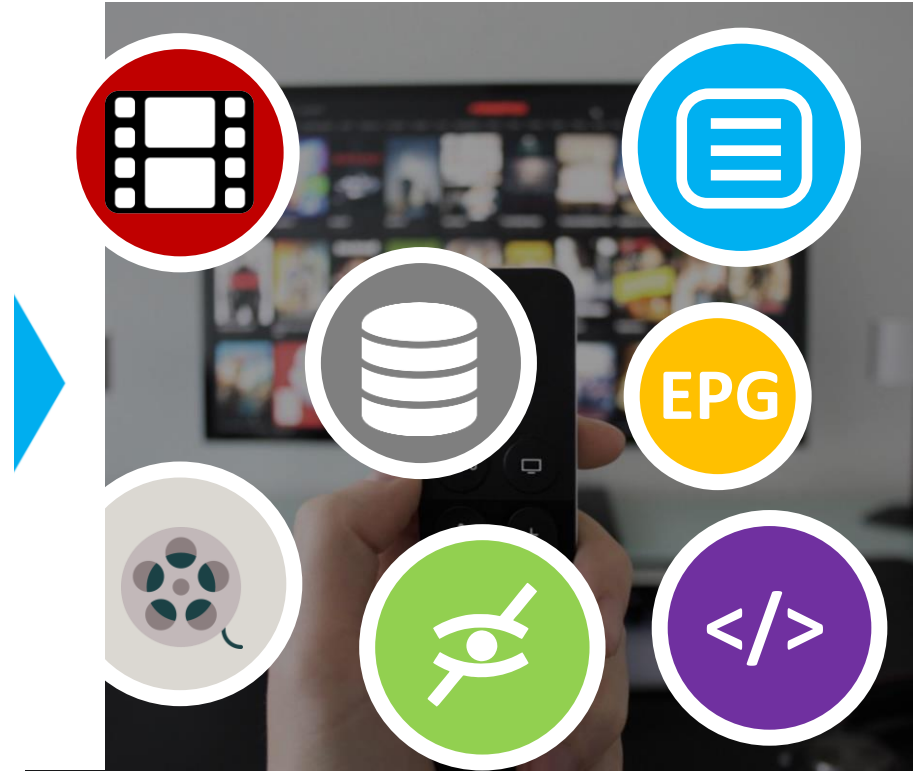
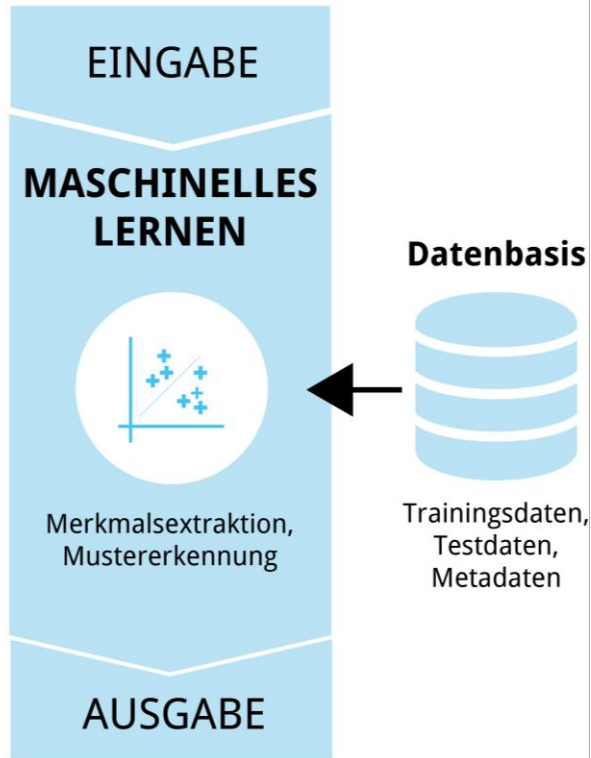
Interaktivität

Social Web

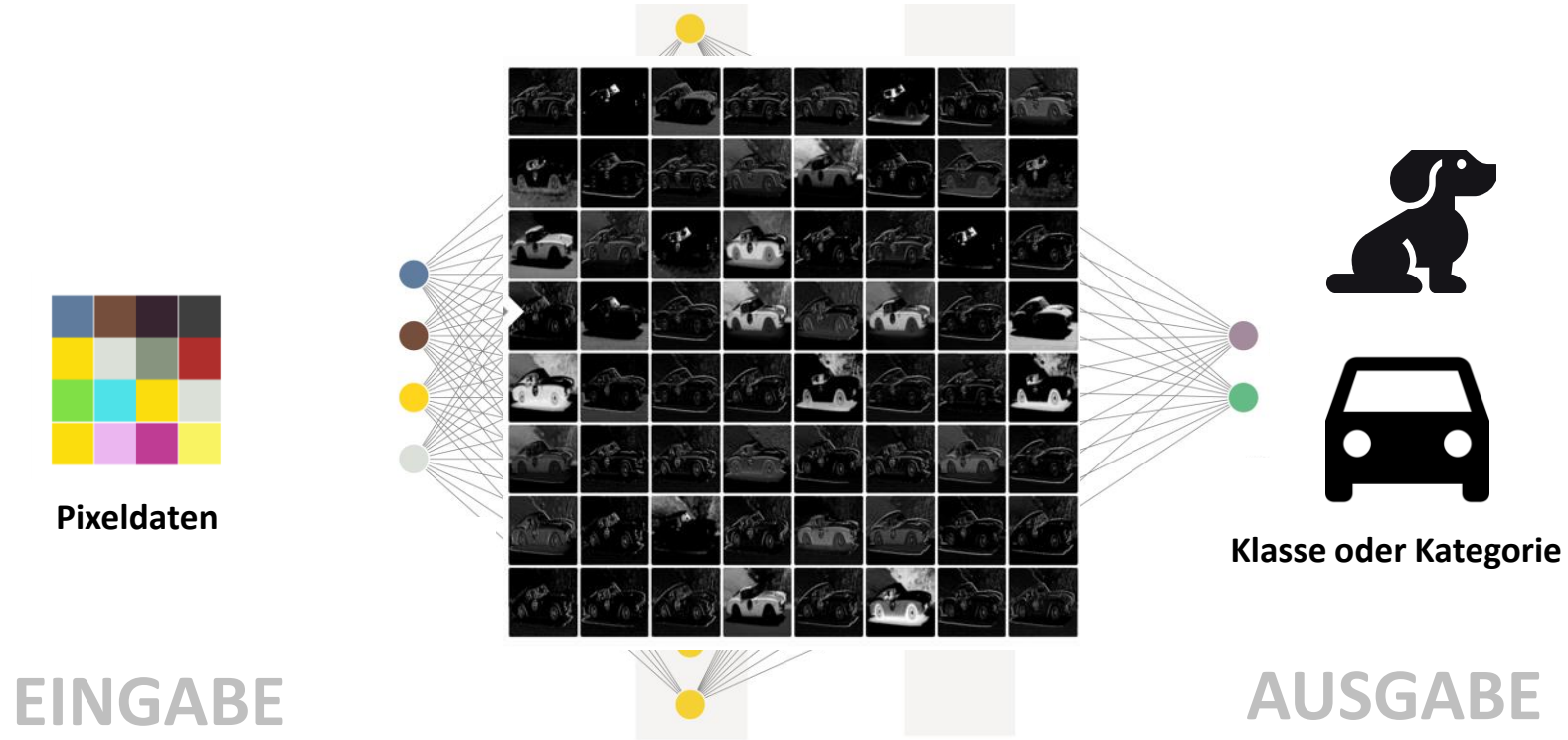
IPTV

**KI+TV**

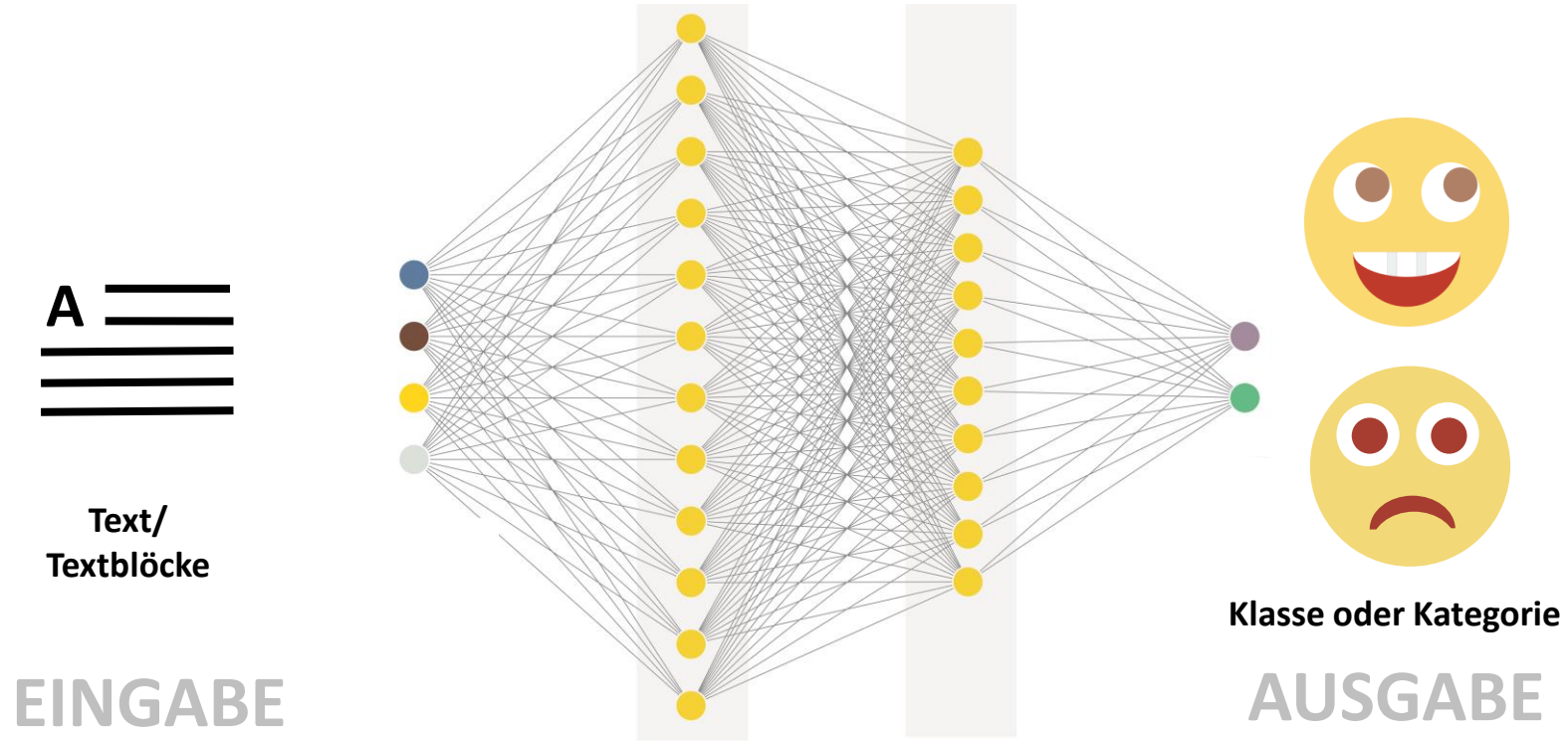
# KI, Machine und Deep Learning



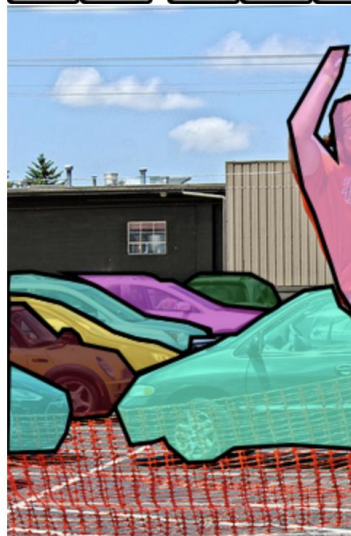
# Neuronale Netze



# Neuronale Netze



# Daten, Daten, Daten...



YouTube 8M

Vertical

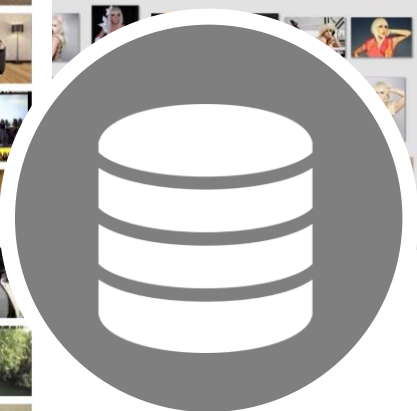
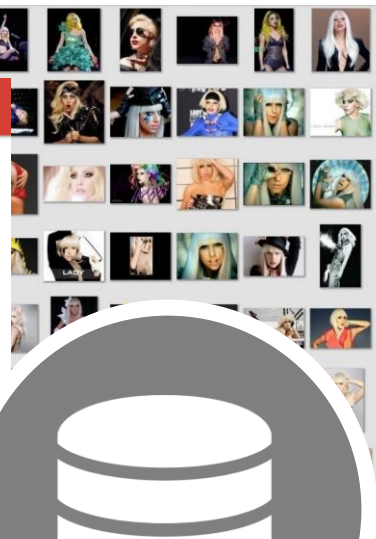
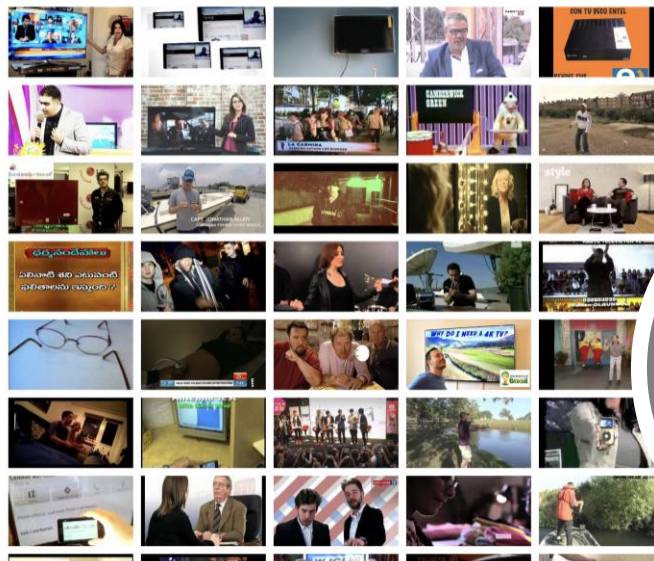
Arts & Entertainment

Filter

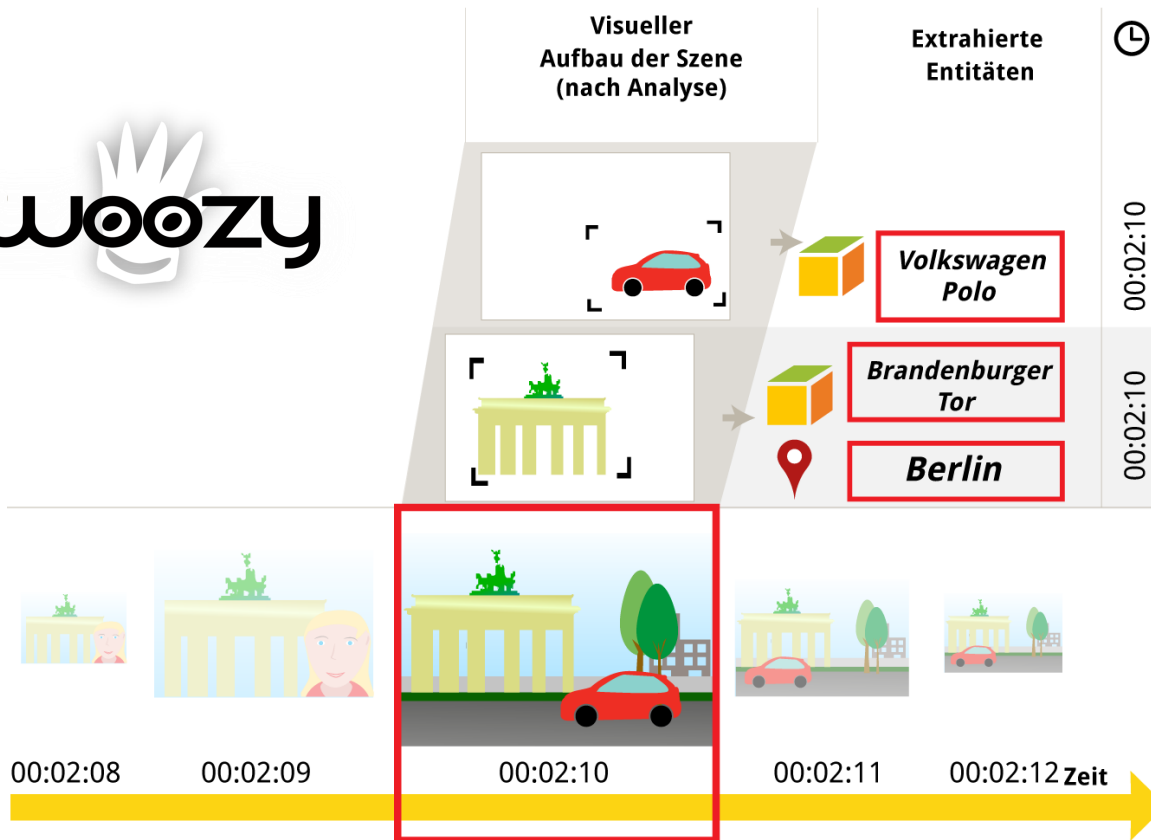
Entities

- Concert (497487) Dance (305143)
- Animation (299054) Musician (296577)
- Music video (217037) **Musical ensemble (170351)**
- Guitar (162864) Cartoon (162157)
- Performance art (160383) Trailer (97912)
- Stadium (94966) String instrument (85888)
- Drummer (78917) Disc jockey (74545)
- Piano (63833) Orchestra (60411)
- Drums (59236) Drums (57517) Choir (56753)
- Highlight film (47867) Art (43419)
- Acoustic guitar (43050) Bollywood (40317)
- Arena (34292) Comics (30704)
- Comedy (30429) Talent show (29612)

Dataset Explore Download Workshop About



# Das semantische Fernsehen





# Platzhalter für Video

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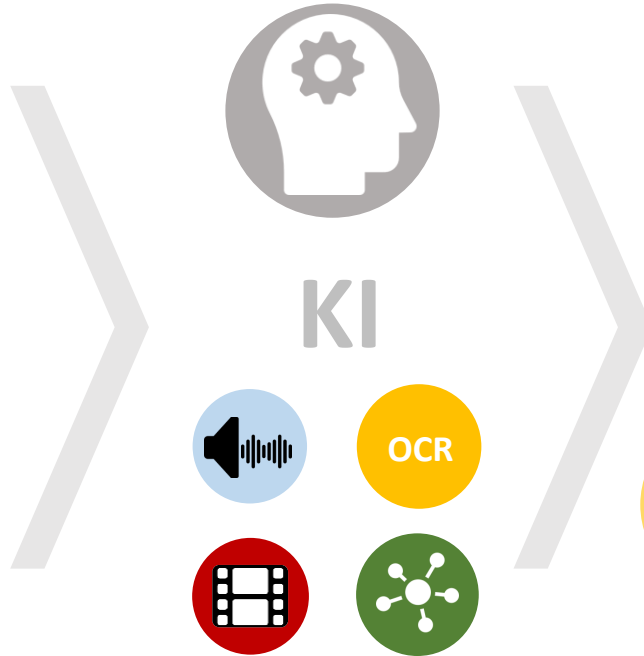
Swoozy\_Interaktionen\_mit\_semantischen\_TV.mp4

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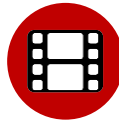
# Wissensextraktion mit KI



EINGABE



KI



AUSGABE

# Wissensextraktion mit KI

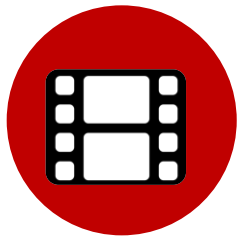
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**AUDIOANALYSE**  
SPEECH-TO-TEXT



**OCR-ANALYSE**  
IN-BILD TEXTERKENNUNG



**VIDEOANALYSE**  
OBJEKTERKENNUNG  
PROMIERKENNUNG



**SEMANTISCHE  
TEXTANALYSE**  
*„Was steht im Text?“*



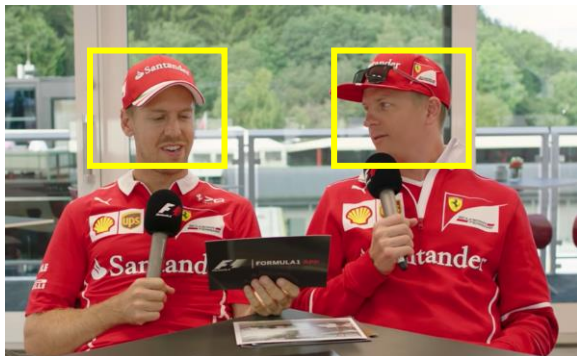
# Bilderkennung



Quelle: ZDF



Quelle: www.youtube.com/user/Formula1



**Annotationen /  
Metadaten**



**Neuronale  
Netze**



**Semantic  
Web**

# Wissensextraktion durch OCR

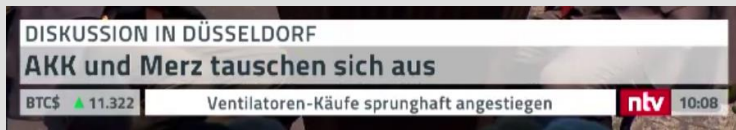


Quelle: France 2



Quelle: <https://www.youtube.com/user/Formula1>

Quelle: n-tv



Merz

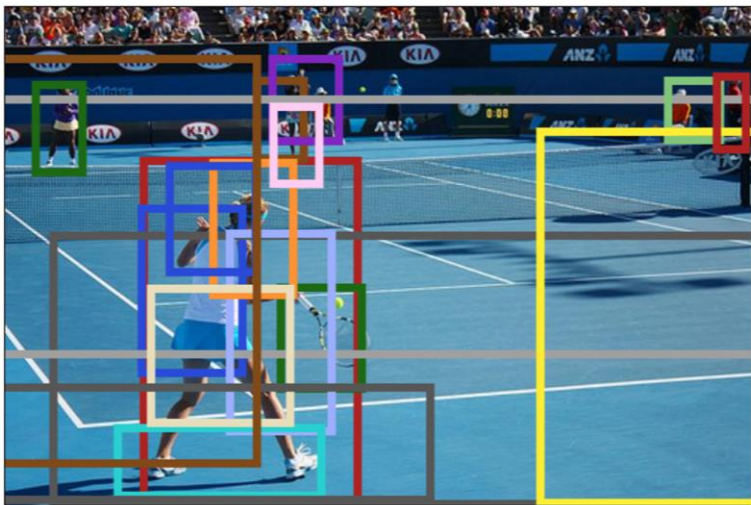


AKK



Düsseldorf

# Wissensextraktion

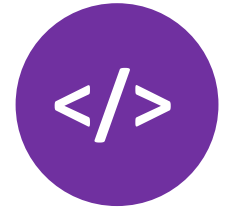


woman playing tennis. woman wearing a blue shirt. blue tennis court. tennis racket is black and white. a man in a white shirt. a man in a tennis match. a tennis court. man wearing a red shirt. woman holding a tennis racket. white and black tennis shoes. woman with blonde hair. blue tennis court. a pair of blue shorts. a man in a white shirt. a man wearing a red shirt. woman wearing a white visor. white lines on tennis court. a man in a white shirt. tennis player on court.

**Quelle:** DenseCap: Fully Convolutional Localization Networks for Dense Captioning  
Justin Johnson\*, Andrej Karpathy\*, Li Fei-Fei 2016

# Wissensextraktion aus Texten

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„[...] **Sebastian Vettel** fuhr in **Hockenheim** die beste Runde [...]“



PERSON>SPORTSMAN>DRIVER



HOCKENHEIM>PLACE>CIRCUIT>GERMANY

Entitätserkennung in unstrukturierten / streambasierten Texten

KI: NLP / NLU Module zum Sprachverständnis

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# Stimmungsanalyse



- Kontextbezogene Inhalte werden besser bzw. **positiver wahrgenommen**
- Zuschauer wird mehr **interagieren**



- Zusatzinformation wird erst **später** eingeblendet  
(z.B. Spannung bei Thriller oder historische Reportage über einen Krieg)



# Platzhalter für Video

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swoozy\_compact.mp4

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# Platzhalter für Video

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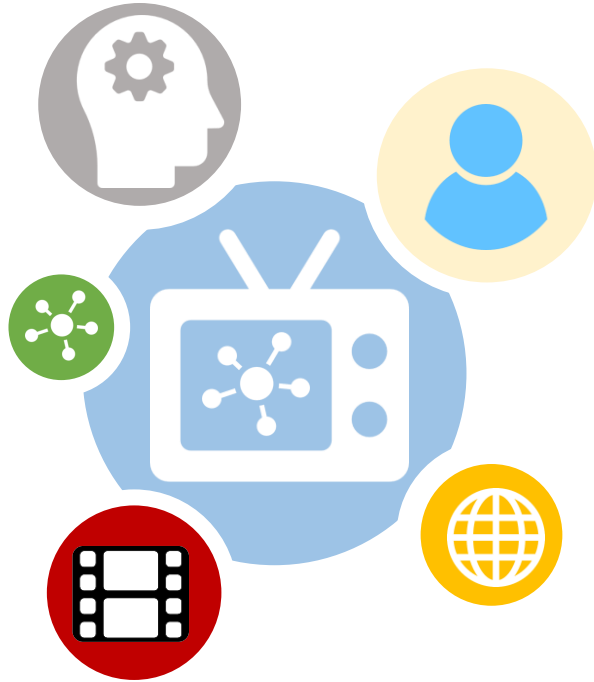


SKRPTR\_compact.mp4

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# Zusammenfassung

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**Mehrwert für Content-Provider  
durch intelligente Extraktion**

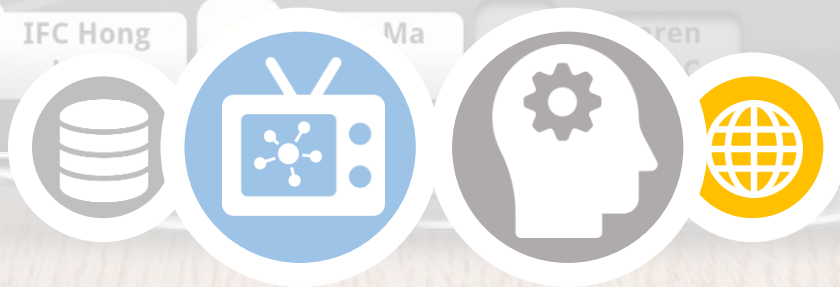
**Hohes Interaktivitätspotential**

**Video wird ein mehrdimensionaler  
Träger von Wissen**

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# SWOOZY

## Das semantische Fernsehen



Swoozy<sup>®</sup>Cloud ☰ Results



Facts

Sources:



Pictures

Sources:



Videos

Sources:



Shop it!

Sources:



Share it!

Sources:

