



gfu Insights & Trends

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Welcome / Willkommen



Semantisches TV

Wie KI den Inhalt bewegter Bilder erkennt

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Videoanalyse

Deep Learning

Big Data

Künstliche Intelligenz

Web 3.0

KI+TV

**VO
D**

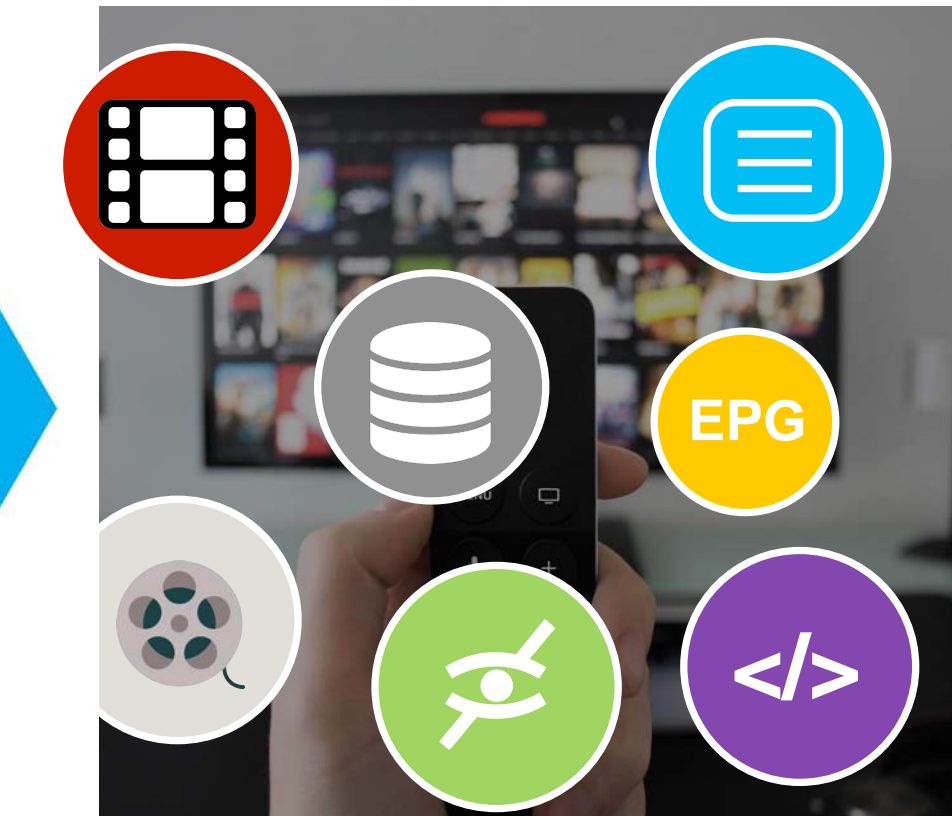
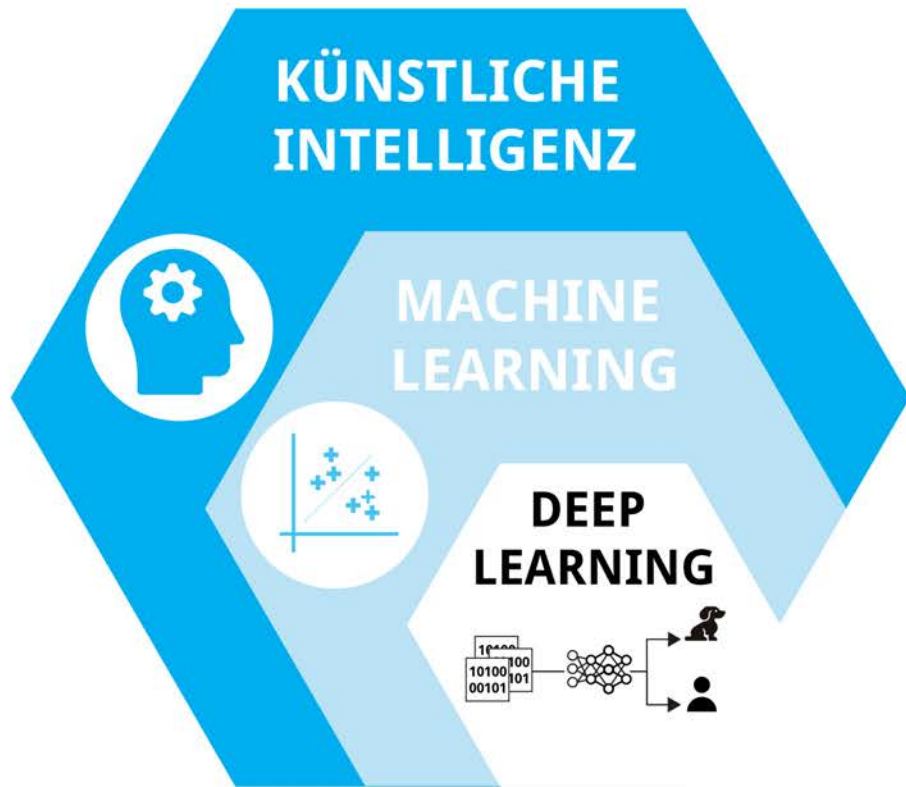
Interaktivität

Social Web

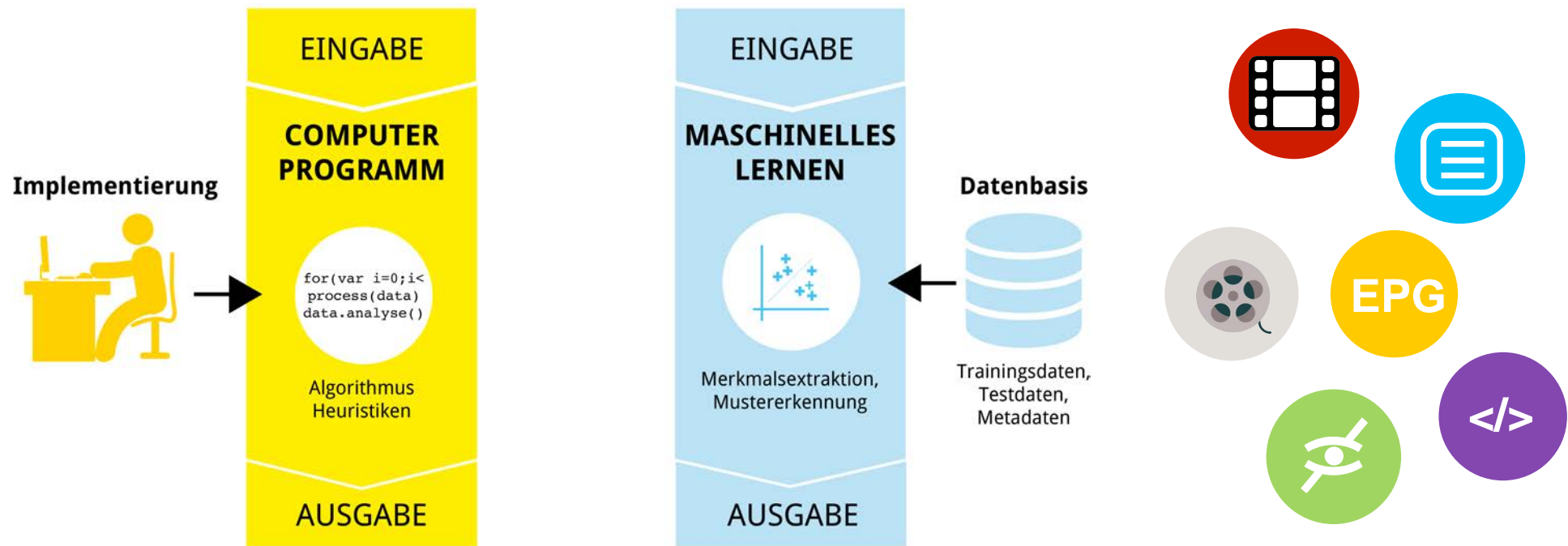
IPTV



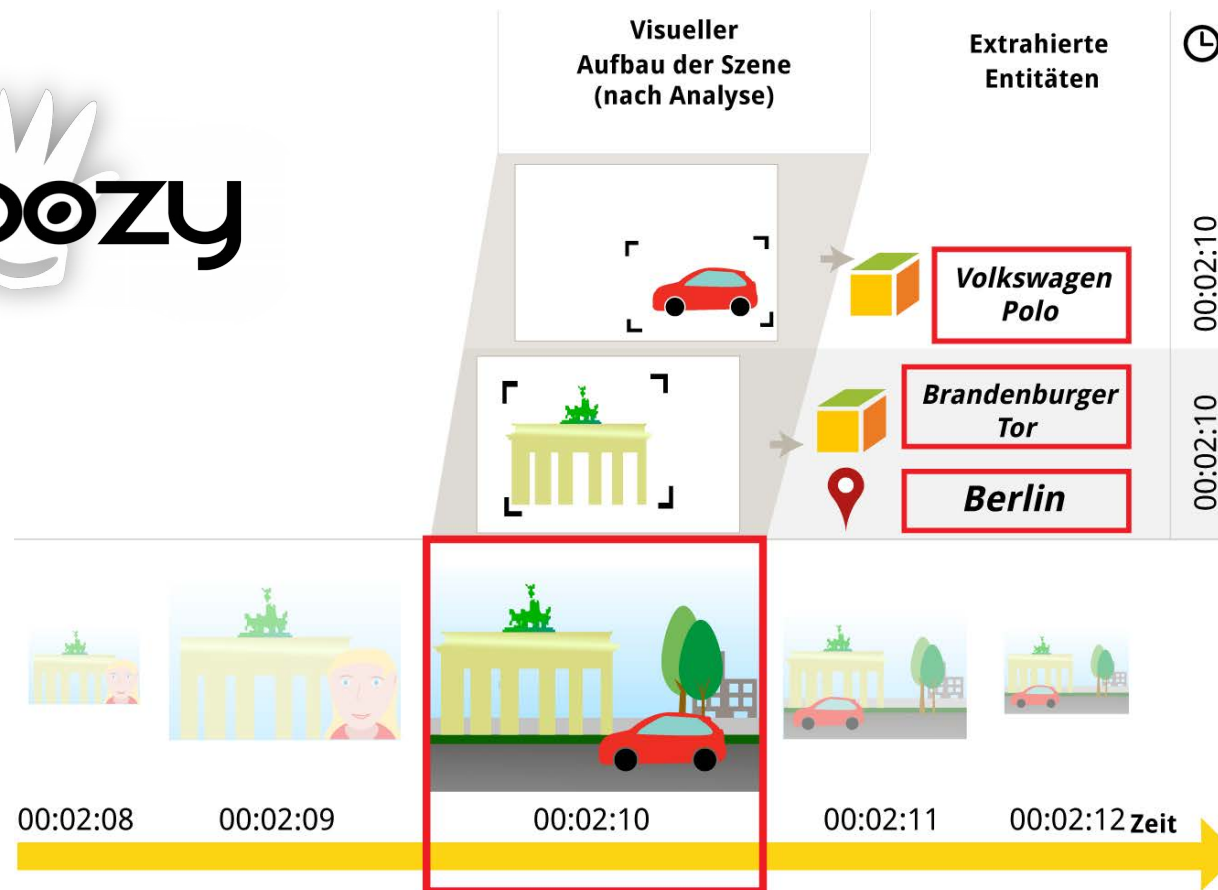
Was ist KI?



Was ist Machine/Deep Learning?



Das semantische Fernsehen



Verknüpfung von Wissen mit Videos



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



The left screenshot shows the Wikidata page for Sebastian Vettel (Q42311). It includes a thumbnail image of Vettel, his birth date (1980-08-03), gender (male), country of citizenship (Germany), country for sport (Germany), and given name (Sebastian). The right screenshot shows the DBpedia page for Sebastian Vettel, displaying structured data in a table format:

<code>dbp:carNumber</code>	• 5 (last integer)
<code>dbp:imageSize</code>	• 200 (last integer)
<code>dbp:lastSeason</code>	• 2015 (last integer)
<code>dbp:name</code>	• Sebastian Vettel
<code>dbp:nationality</code>	• German
<code>dbp:align</code>	• center
<code>dbp:quote</code>	• "It's very difficult for me personally, to receive boos, even though you haven't done anything wrong." • The next stage of my Formula 1 career will be spent with Scuderia Ferrari and for it means the dream of a lifetime has come true. When I was a kid, Michael Schumacher the red car was my greatest idol and now it's an incredible honour to finally get the chance to drive a Ferrari. I already got a small taste of what the Ferrari spirit means I took my first win at Monza in 2008, with an engine from the Prancing Horse built in Maranello. The Scuderia has a great tradition in the sport and I am extremely motivated, help the team get back to the top. I will put my heart and soul into making it happen
<code>dbp:quoted</code>	• 1 (last integer)
<code>dbp:source</code>	• Sebastian Vettel, on being booed on the podium. • Sebastian Vettel, on his lifelong dream of driving for Ferrari

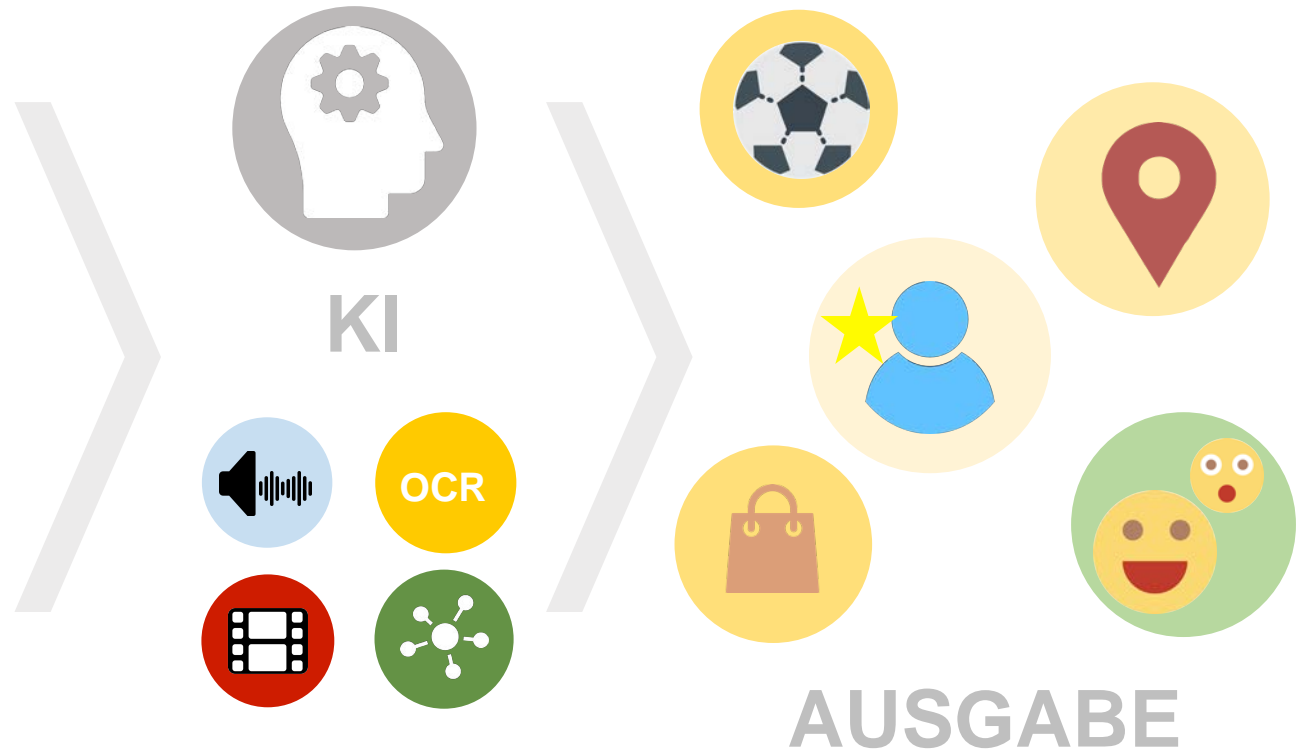
Intelligente Verknüpfung mit dem Semantic Web



Wissensextraktion mit KI



EINGABE



AUSGABE

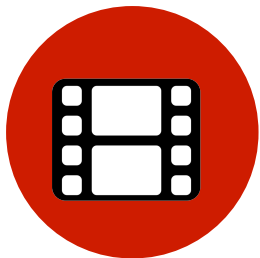
Wissensextraktion mit KI



AUDIOANALYSE
SPEECH-TO-TEXT



OCR-ANALYSE
IN-BILD TEXTERKENNUNG



VIDEOANALYSE
OBJEKTERKENNUNG
PROMIERKENNUNG

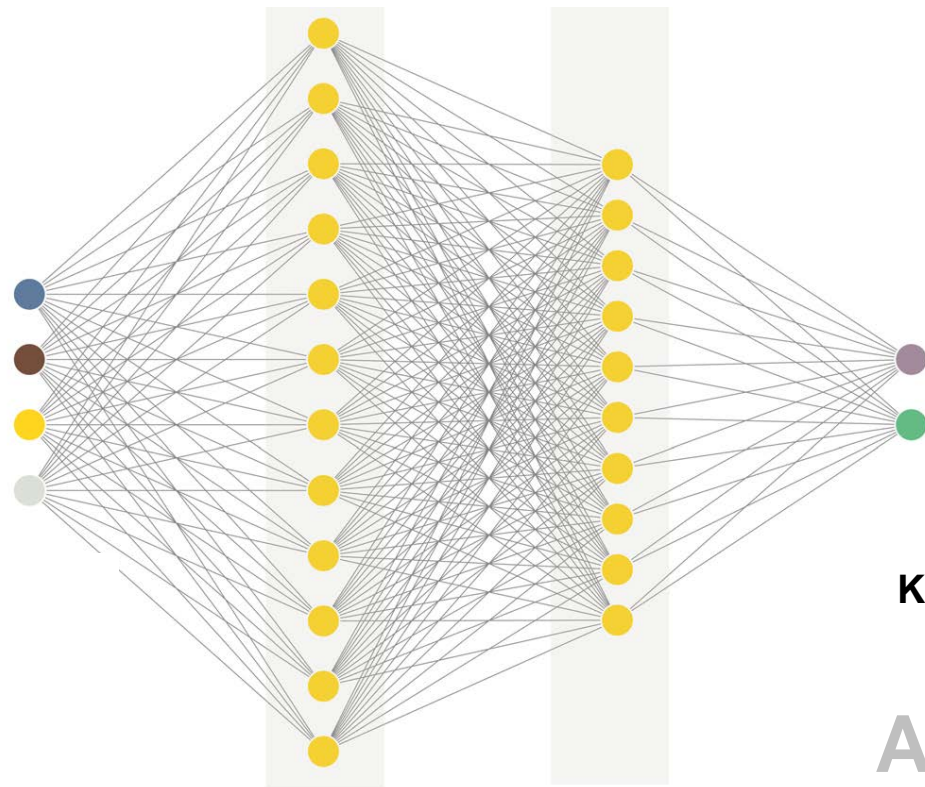


**SEMANTISCHE
TEXTANALYSE**
„Was steht im Text?“

Neuronale Netze



Pixeldaten

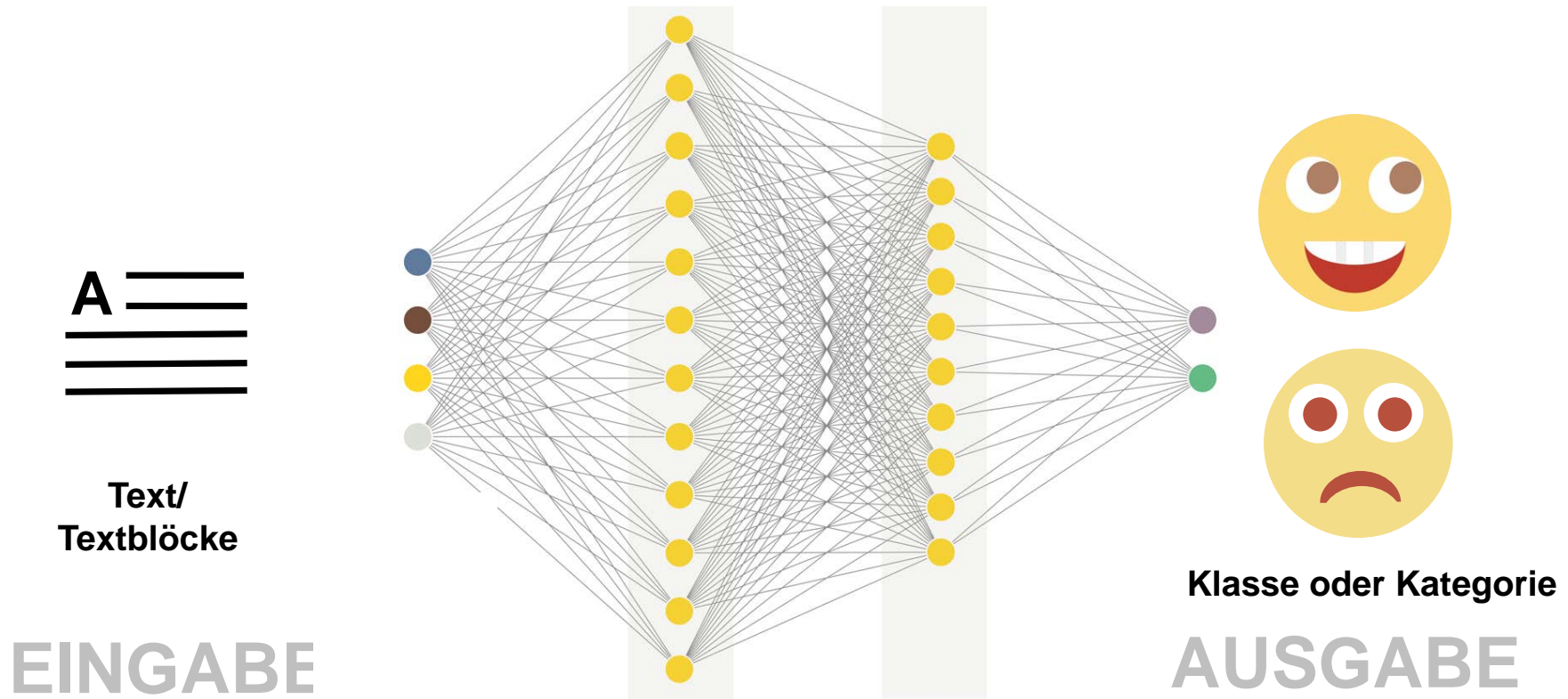


Klasse oder Kategorie

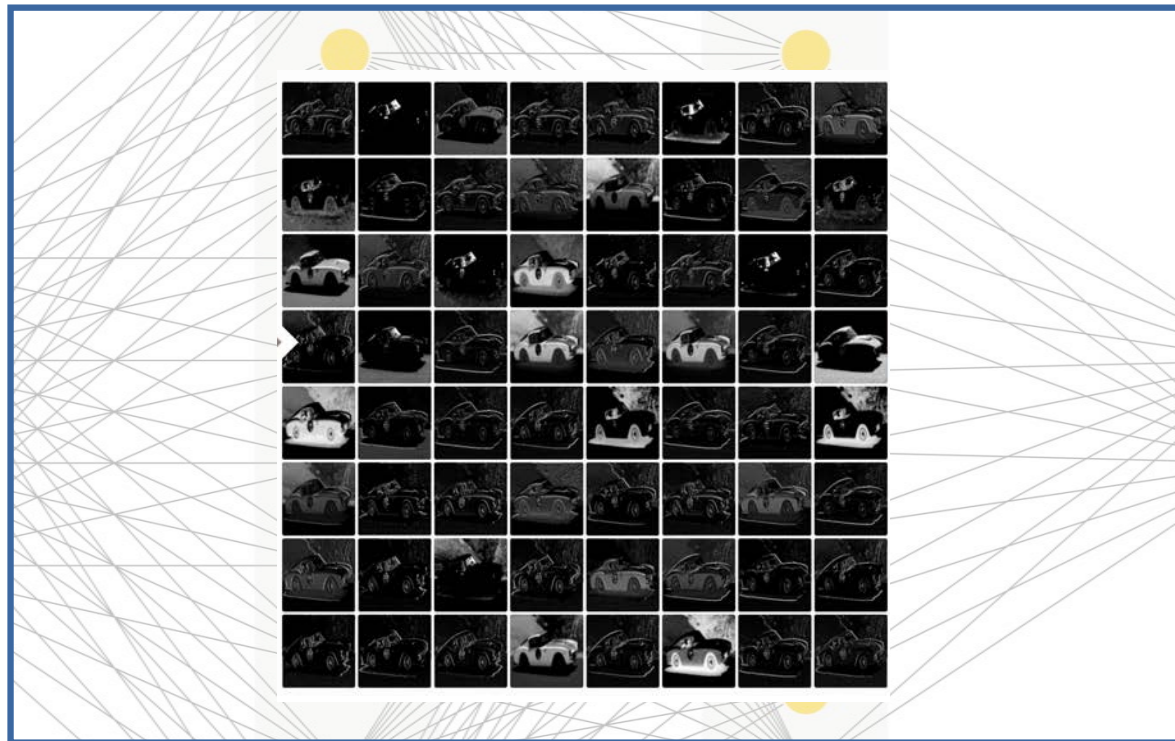
EINGABE

AUSGABE

Neuronale Netze



Neuronale Netze



Ferrari 250 GT
Berlinetta



Ford Mustang

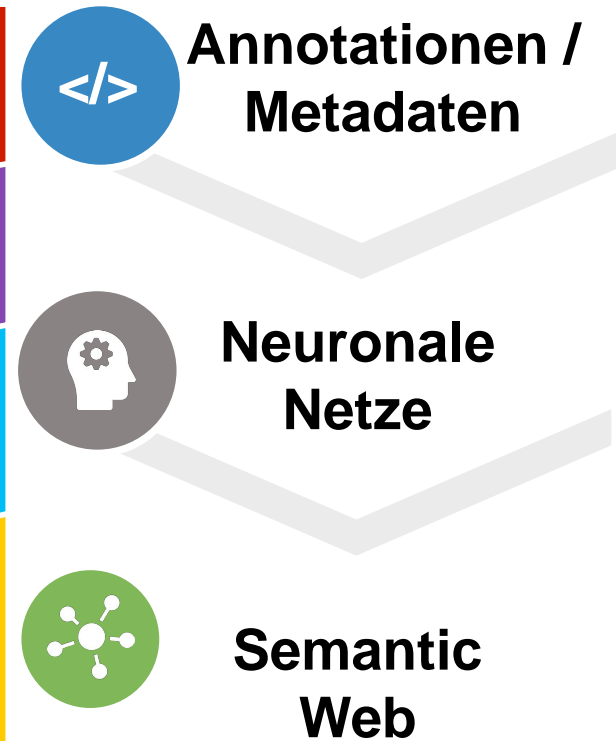
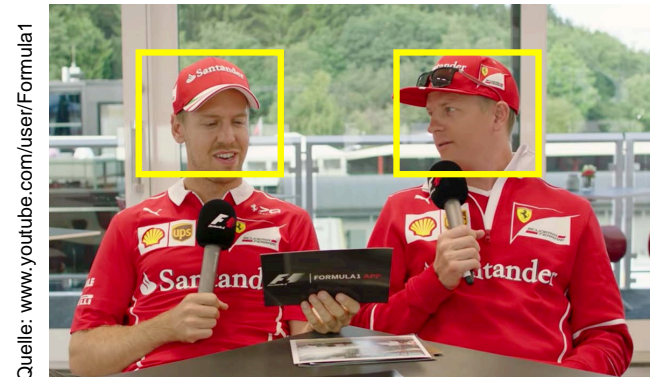


EINGABE

NEURONALES NETZ

AUSGABE

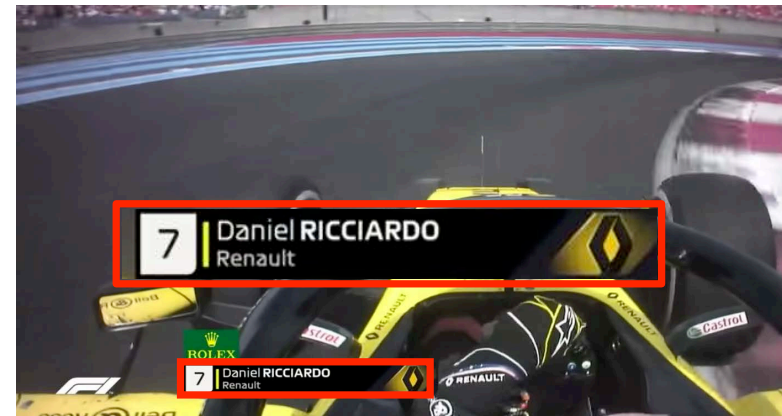
Bildererkennung



Wissensextraktion durch OCR

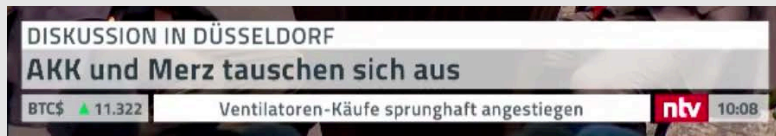


Quelle: France 2

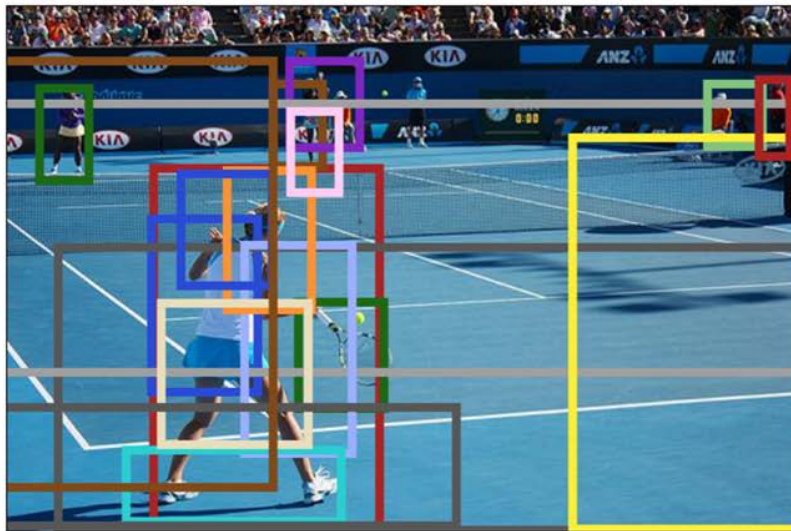


Quelle: <https://www.youtube.com/user/Formula1>

Quelle: n-tv



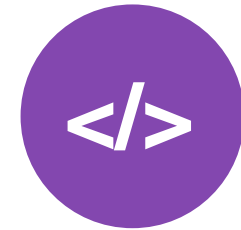
Wissensextraktion



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



„[...] **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
-

Stimmungsanalyse



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



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

Daten, Daten, Daten...



The screenshot shows a YouTube search results page for the query "Musical ensemble". The page features a red header with the YouTube logo and "8M" views. Below the header, there are navigation links: "Dataset", "Explore", "Download", "Workshop", and "About".

On the left side, there is a sidebar with the following sections:

- Vertical** (Arts & Entertainment)
- Filter** (with a search input field)
- Entities** (a list of categories with counts):
 - Concert (497487)
 - Dance (305143)
 - Animation (299054)
 - Musician (296577)
 - Music video (217037)
 - Musical ensemble (170351)** (highlighted in red)
 - 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)

The main content area displays a grid of video thumbnails. To the right of the grid, there is a vertical column of smaller, square thumbnails, likely representing a gallery of related images or a different view of the search results.

KI+TV: Mehrwert für Content-Provider



- **Intelligente Extraktion** von Wissen und Kontext
- **Bessere Verwertung** von Archiv / Mediatheken
- Neue **Mehrwertdienste** entstehen



- Unterstützung der **Semantifizierung durch redaktionelle Werkzeuge** (Swoozy-SKRPTR)
-

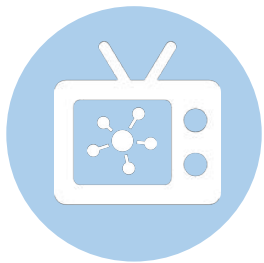
Mehrwert für den Zuschauer



KI + TV => post-Netflix Ära



- Hohes **Interaktivitätspotential**
- **Zuschauer entscheidet** wonach er sucht



- **Neue** personalisierte Mehrwertdienste
 - Video wird ein **mehrdimensionaler** Träger von **Wissen**
-

Swoozy

Das semantische Fernsehen

