

Multimodale Suche II

- Verfahren und Systeme -

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21.06.2006

Motivation

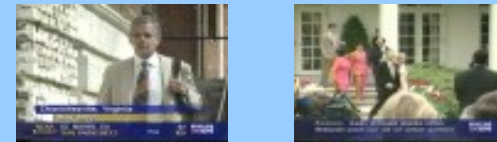
- multimodale Anfragen
- “Ein Bild sagt mehr als tausend Worte”

Suchtext: Personen die eine Treppe hoch oder runter laufen

Beispiel Bilder:



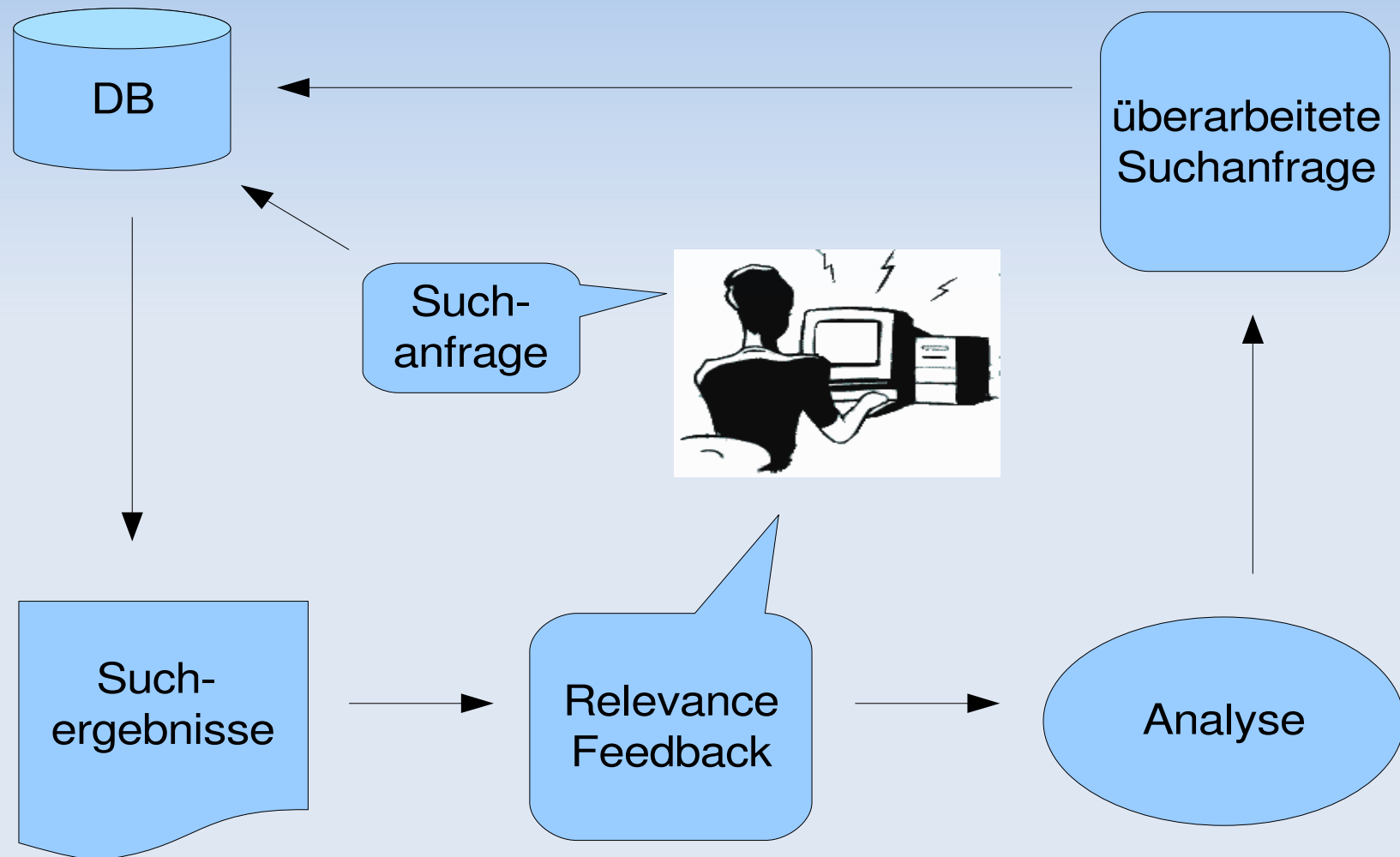
Beispiel Videos:



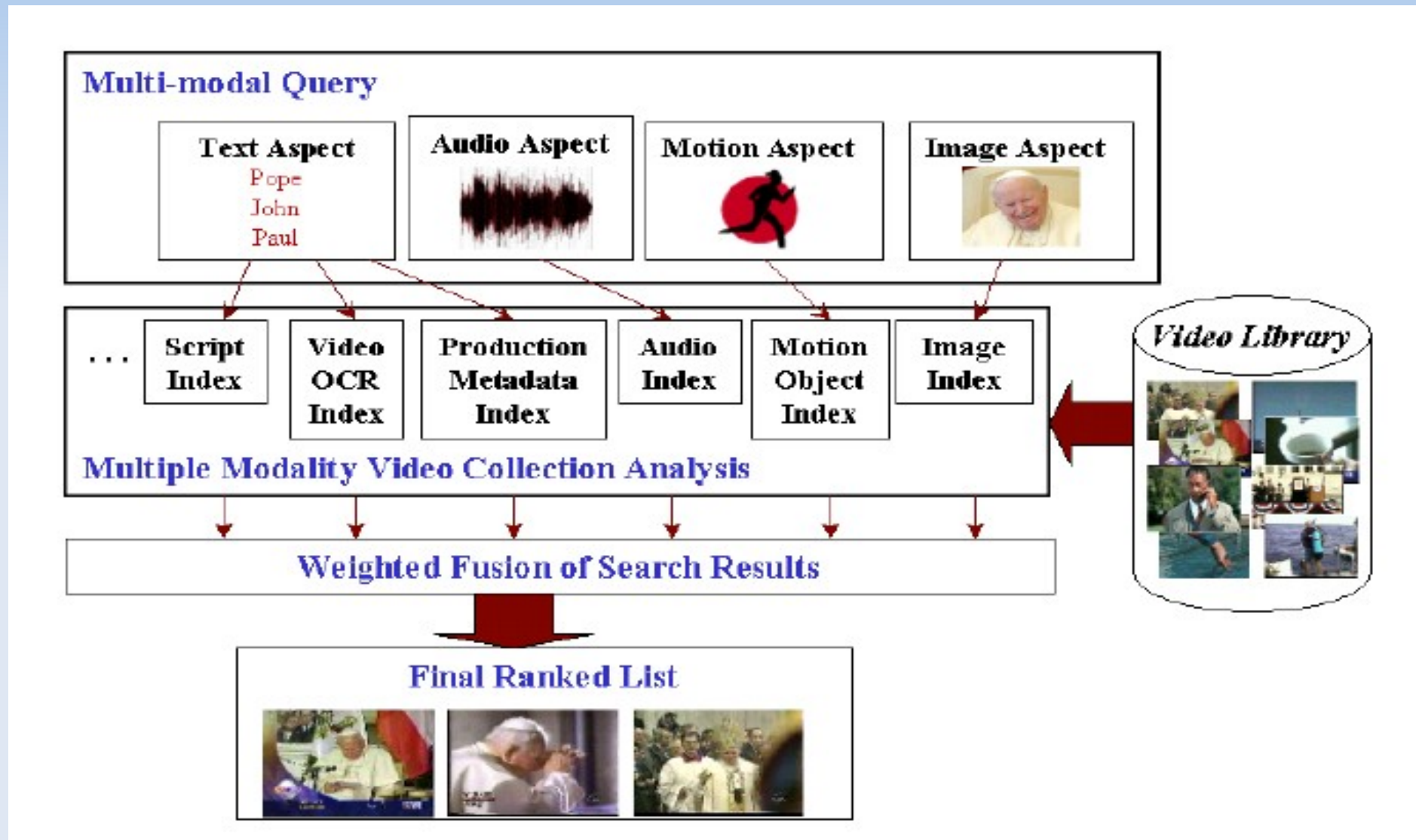
Gliederung

- Motivation
- Verfahren
 - Relevance Feedback
 - Multimodal Fusion
- Systeme
 - Mutual Relevance Feedback
 - Photo-to-Search
- Fazit

Relevance Feedback



Multimodal Fusion



Systeme

- Mutual Relevance Feedback
- Photo-to-Search

Mutual Relevance Feedback

- IBM Research
- Suche in einer DVL (Digital Video Library)
- interaktive Suche
- Multimodale Anfragen
- beidseitiges Feedback

Suchanfragen

- 6 Indexe
- Suche in Textbox
- Modalität mit Suffix bestimmt
- Gruppierung der Ergebnisse in Segmente
- Ranking

Beispiel für eine Anfrage:

```
“sport~ AND basketball AND (NBA# OR NCAA#) AND 04.38333”
```


GUI

[Basic Search](#) [Soft-Boolean Search](#) [Load Results](#) [Tips](#)

 [New Session](#)

Segments Labeled Shots
 Shots between and seconds

Suggested positive terms: valve(9.99), temple(8.71), comeback(8.56),
 jerome(8.40), stanford(8.31), cap(8.08), dominate(7.87), ring(7.85),
 maryland(7.82), sweep(7.57), rank(7.38), michigan(7.25), college(7.22),
 rally(7.04), loss(7.04), miami(6.81), single(6.78), drop(6.75), ravage
 (6.68), form(6.67), tie(6.61), track(6.37), season(6.19), appear(6.18).

1) 19981204_CNNa
 0:21:56

NCAA - PRAIRIE VIEW
 NEW PITTSLBURGH (2)
 04 75 1:52:07 ET
 Clip Info: Video

Results for: **basketball & (N.B.A.# | NBA\$) & 04.38333 & sport-** in 't04_test_wd' Found 2178 results Use collection shots file: **E:\HTTP\cgi-bin\T04SearchRef.txt**. Display first 100 hits

Non-Vocabulary words: 'NBA.'. Use a # suffix for phonetic search, \$ for VOICR.

Save marked results as

No#	Score	Video Segment	QUERY Shots
1	236.55	19981213_CNNa 00:21:41-00:21:49 (basketball_&_sport_&_CBIR) basketball(CBIR_&_sport)...	- <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 44041 0:21:39-0:21:45 basketball - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 44042 0:21:45-0:21:47 basketball - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 44043 0:21:47-0:21:50 basketball
2	206.98	19981002_CNNa 00:16:50-00:16:58 / / ALIENATED/DV_ABE/AE/ _B/R/UW(S) /PIA(spo...	- <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> + RefShot# 997 0:16:29-0:16:54 PIA - <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> + RefShot# 998 0:16:54-0:17:01 PIA
3	185.64	19981204_CNNa 00:21:56-00:22:03 (basketball_&_CBIR) basketball (CBIR_&_basketball)_&_...	- <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 38333 0:21:56-0:21:57 basketball - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 38334 0:21:57-0:22:01 basketball - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 38335 0:22:01-0:22:04 basketball
4	179.84	19981120_CNNa 00:21:44-00:22:13 CBIRsport_sport(CBIR_&_sport) (sport_&_CBIR)sport sport ...	- <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 29385 0:21:43-0:21:44 sport - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 29386 0:21:44-0:21:50 sport - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> + RefShot# 29387 0:31:50-0:31:52 sport - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 29388 0:31:52-0:31:57 sport - <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> + RefShot# 29389 sport - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> + RefShot# 29390 sport - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> + RefShot# 29391 sport - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> + RefShot# 29392 sport

beidseitiges Feedback

- Nutzer
 - Relevance Feedback
- System
 - visuelles Feedback
 - Vorschläge
 - Suchanfrage

The screenshot shows a search results page titled "Search results". At the top, there is a search bar and buttons for "Save", "Feedback", "Pseudo", and "Refresh". Below the search bar, there is a table of search results. The table has columns for "No.", "Size", "File Name", and "QUERY Shots". The "QUERY Shots" column contains a grid of image thumbnails. Each thumbnail has a feedback button with a plus sign and a score. The scores are: 44041, 44542, 44043, 44044, 44045, 44046, 44047, 44048, 44049, 44050, 44051, 44052, 44053, 44054, 44055, 44056, 44057, 44058, 44059, 44060, 44061, 44062, 44063, 44064, 44065, 44066, 44067, 44068, 44069, 44070, 44071, 44072, 44073, 44074, 44075, 44076, 44077, 44078, 44079, 44080, 44081, 44082, 44083, 44084, 44085, 44086, 44087, 44088, 44089, 44090, 44091, 44092, 44093, 44094, 44095, 44096, 44097, 44098, 44099, 44100.

Others evaluated "Positive"

This screenshot shows a subset of the search results from the previous image, specifically those that were evaluated as "Positive". The thumbnails are highlighted in green, and the feedback scores are higher, ranging from 29329 to 29392.

Others evaluated "Negative"

This screenshot shows a subset of the search results from the previous image, specifically those that were evaluated as "Negative". The thumbnails are highlighted in red, and the feedback scores are lower, ranging from 997 to 999.

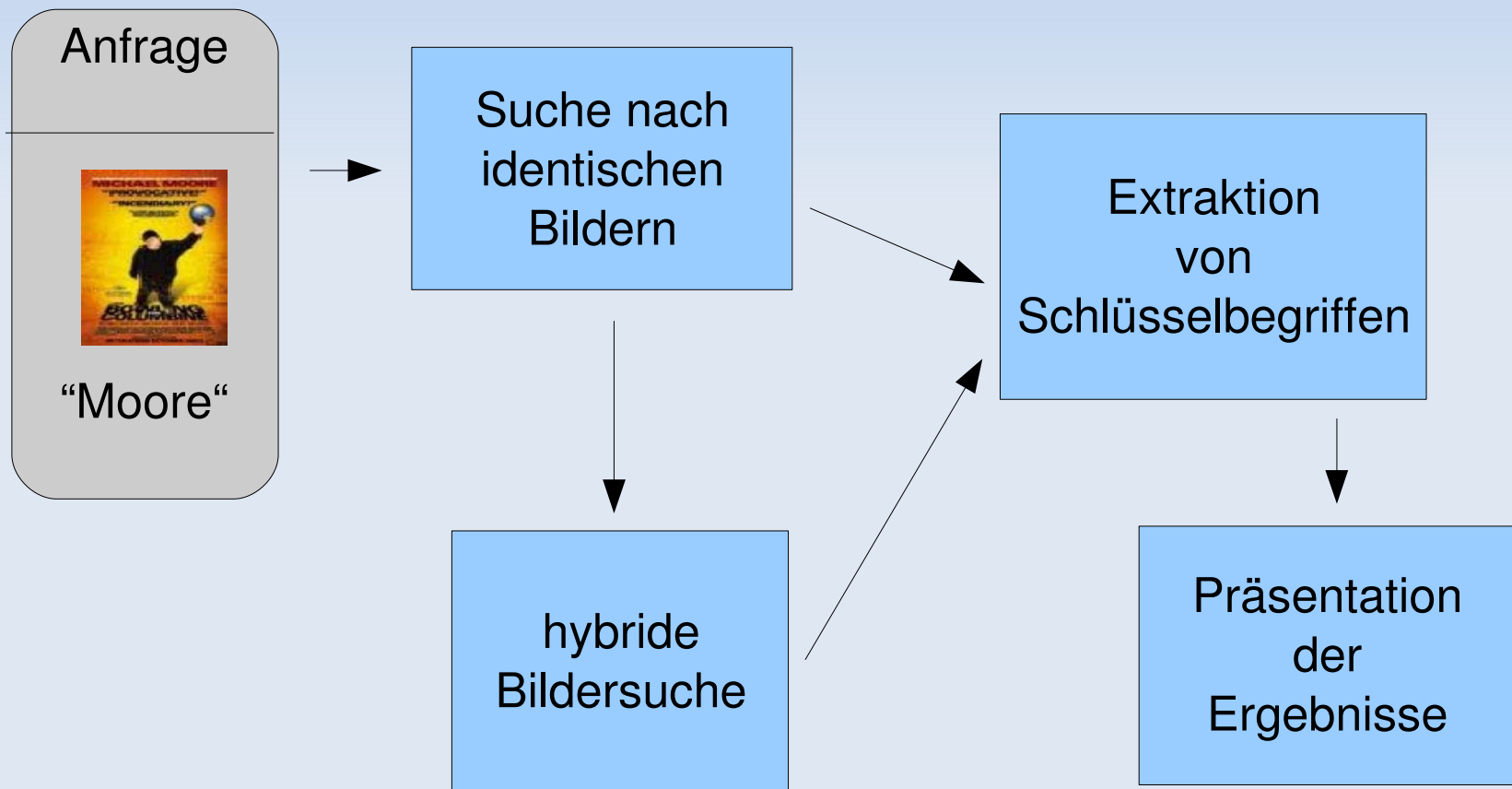
Photo-to-Search

- Microsoft Research
- Internetsuche mit mobilen Endgeräten
- Suche per Bild und Text



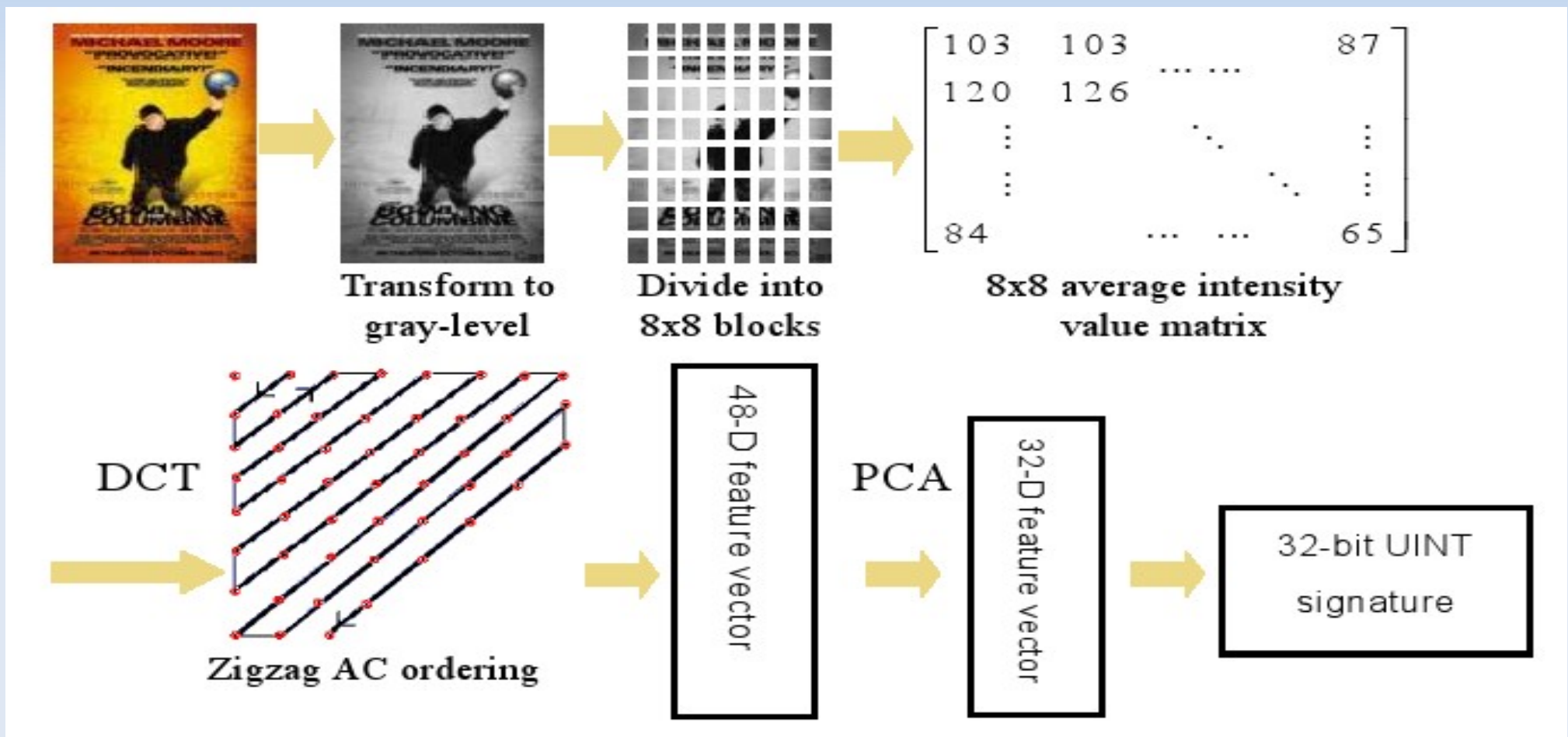
Aufbau des Systems

- 4 Komponenten

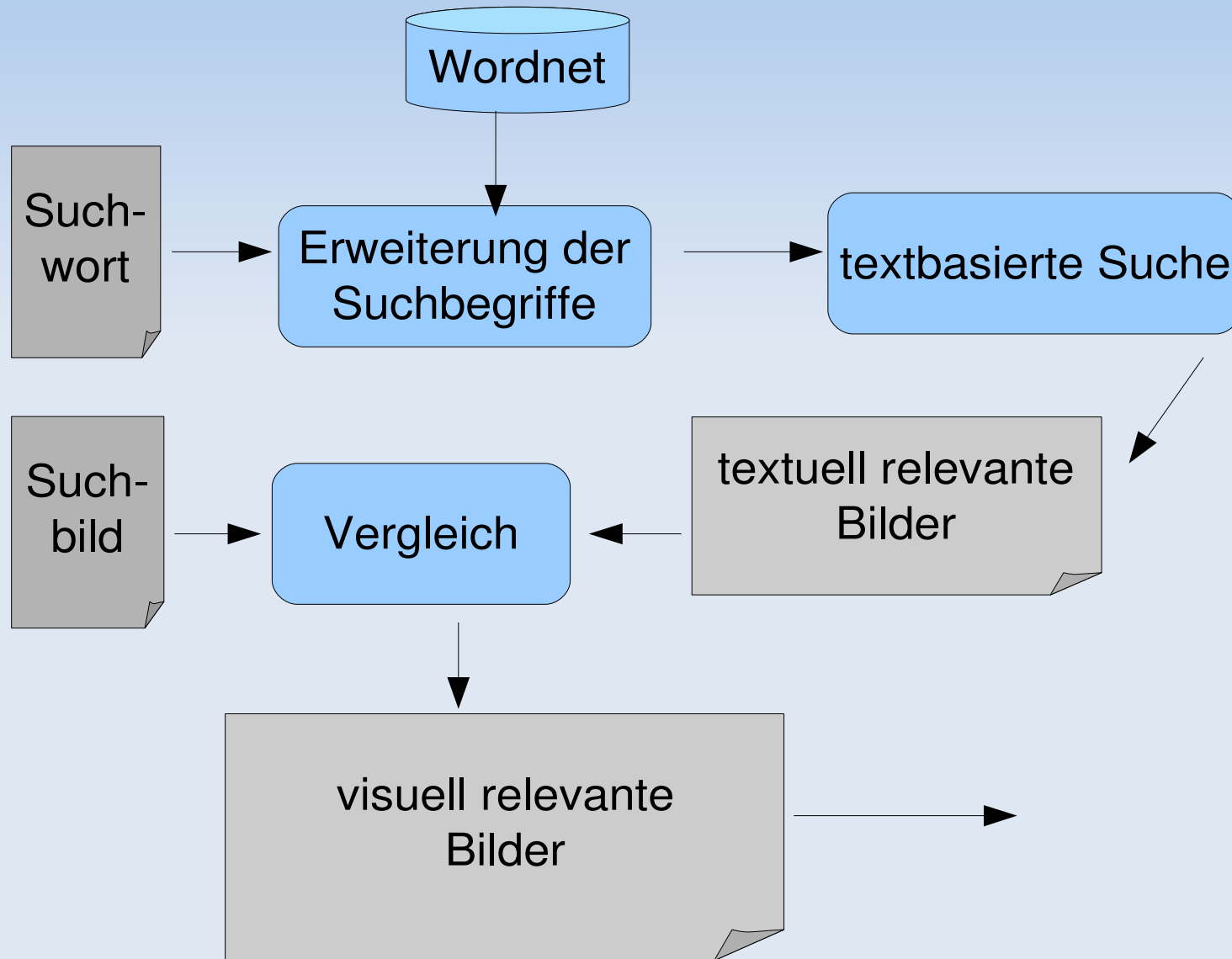


Suche nach identischen Bildern

- Vergleich der Hash Signatur



Hybride Bildersuche



Extraktion von Schlüsselbegriffen

- offline
- statistische & strukturelle Aspekte
- zusammen mit dem Bild gespeichert
- bei hybrider Bildersuche:
 - globale Schlüsselbegriffe

Präsentation der Resultate

- gefundene Bilder
 - verlinkt mit Webseiten
- Schlüsselbegriffe
 - Online – Enzyklopedien
 - Ergebniss textbasierter Suche

Fazit

- Chancen & Möglichkeiten
 - “Bridging the Semantic Gap”
 - Suchergebnisse verbessern
 - Interaktion Nutzer – System vereinfachen
 - Technologien besser nutzen
- Herausforderungen
 - Umsetzung
 - Prozesse automatisieren, beschleunigen

**Vielen Dank für Ihre
Aufmerksamkeit!**