



UNIVERSITÄT
LEIPZIG

Computational Film Studies

Computergestützte Ansätze für die
Analyse von Filmen und Serien



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@8urghardt

Kurze Einführung in die Filmanalyse

Verschränkung von „weichen“ (qualitativen) und „harten“ (quantitativen) Kategorien und Methoden

Korte, H. (2010). Einführung in die Systematische Filmanalyse. Erich Schmidt Verlag

Analyse von Szenen und Einstellungen

Scenes

Shots

THE GOOD, THE BAD AND THE UGLY ()

[BACK TO THE DATABASE](#) | [ADD METADATA](#)

Submitted by Zoe on 2018-11-22

Zoe's comment:

Shooting scene

ASL: 3.5 MSL: 2.7 MSL/ASL: 0.77 LEN: 5:1 NoS: 85 MAX: 34.8 MIN: 0.3 Range: 34.5 StDev: 4.7 CV: 1.34



<http://www.cinemetrics.lv>

„Beyond Shot Lengths“

... weitere quantifizierbare Parameter bei Filmen

Direkt aus dem Film

Shots / Scenes

Farbhistogramme,
Edge detection

Farbverteilung

Clustering (k-means)

Externe Quellen / Web

Sprache / Dialoge

opensubtitles.org
imsdb.com

Metadaten

imdb.com

Burghardt, M., & Wolff, C. (2016). Digital Humanities in Bewegung: Ansätze für die computergestützte Filmanalyse. In Book of Abstracts der 3. DHd-Konferenz.

Burghardt, M., Kao, M., & Wolff, C. (2016). Beyond Shot Lengths – Using Language Data and Color Information as Additional Parameters for Quantitative Movie Analysis. In Book of Abstracts of the International Digital Humanities Conference (DH).

Quantitative Serienanalyse

Dramen / TV-Serien

Szenen [...
Scene: The stairs of the apartment building.

Figuren

Sheldon: Are you still mad about the sperm bank?

Leonard: No.

Sheldon: You want to hear an interesting thing about stairs?

Leonard: Not really.

Sheldon: If the height of a single step is off by as little as two millimetres, people will trip.

Leonard: I don't care. Two millimetres? That doesn't seem right.

Sheldon: No, it's true, I did a series of experiments when I was twelve, my father broke his clavicle.

Leonard: Is that why they sent you to boarding school?

Sheldon: No, that was the result of my work with lasers.

...

Beispiel: „The Big Bang Theory“ (von Chuck Lorre & Bill Prady)

Konfigurationsmatrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
D	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
H	0	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
O	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
S	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Y	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0
L	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0

„Man of the Mode“, George Etherege

- **Alternative Figuren** (Figuren haben in keiner Spalte eine gemeinsame 1)
- **Konkomitante Figuren** (Figuren kommen immer nur gemeinsam vor)
- **Dominate Figuren** (Figur hat in vielen Spalten eine 1)

Konfigurationsmatrix einer Folge von „The Big Bang Theory“

Configuration Matrix

Download as CSV

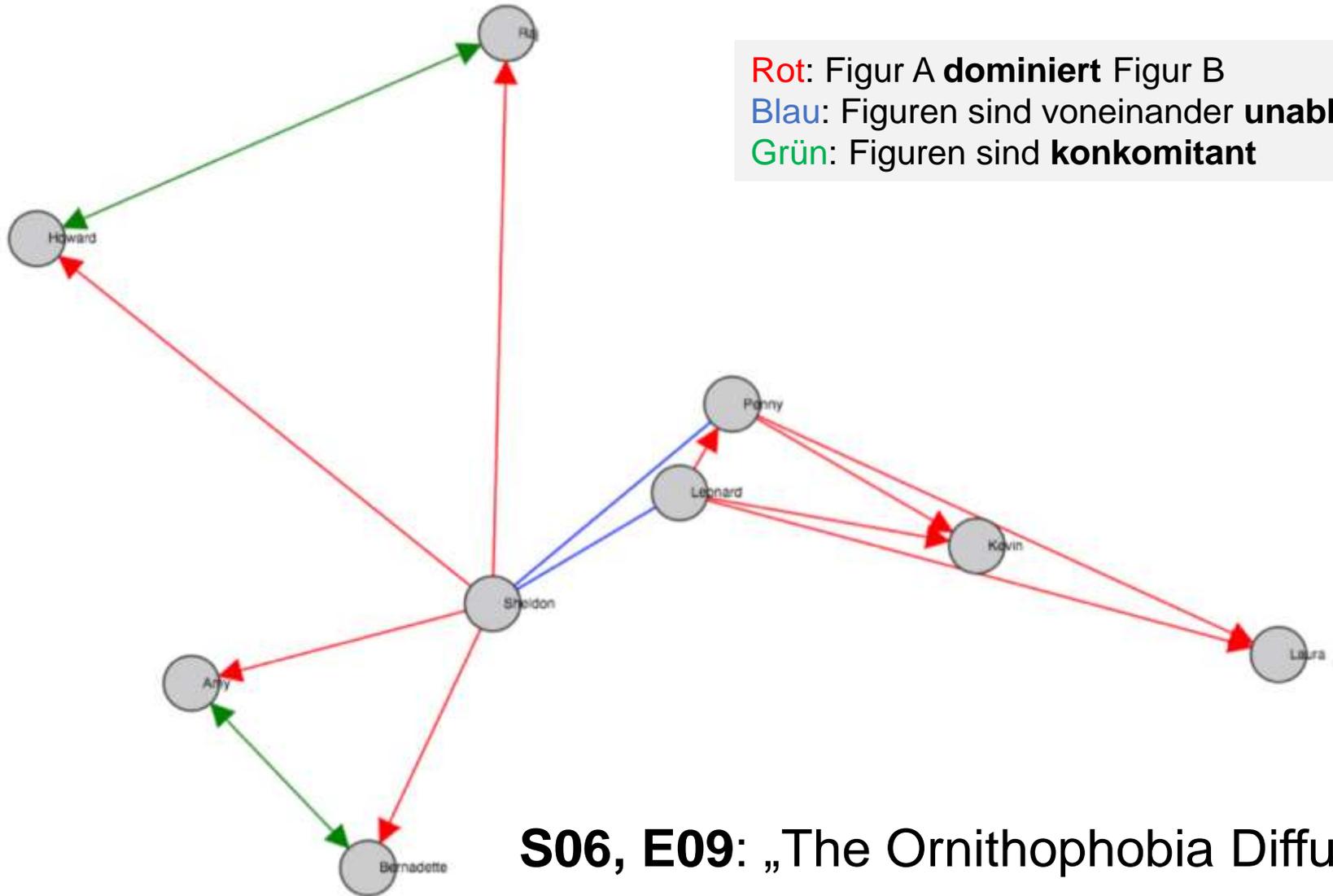
Download as XLS

Search:

	1	2	3	4	5	6	7	8	9	10	11	12
Howard	0	0	1	0	0	1	0	0	0	0	1	1
Leonard	1	1	1	1	1	0	1	1	1	1	1	1
Penny	0	1	1	1	0	1	0	0	0	0	1	1
Raj	0	0	1	0	0	0	0	0	0	0	1	0
Receptionist	1	0	0	0	0	0	0	0	0	0	0	0
Sheldon	1	1	1	0	1	0	1	1	1	1	1	1

Beispiel: „The Big Bang Theory“ (von Chuck Lorre & Bill Prady)

Figurennetzwerke



S06, E09: „The Ornithophobia Diffusion“

„Visual Movie Analytics“

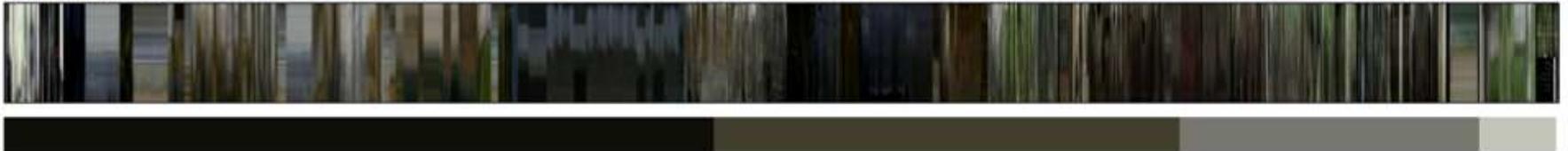
Vgl. Kurzhals, K., John, M., Heimerl, F., Kuznecov, P., & Weiskopf, D. (2016). Visual Movie Analytics. In IEEE Transactions on Multimedia 18(11), 2149-2160.

Farbprofile – MovieBarcodes

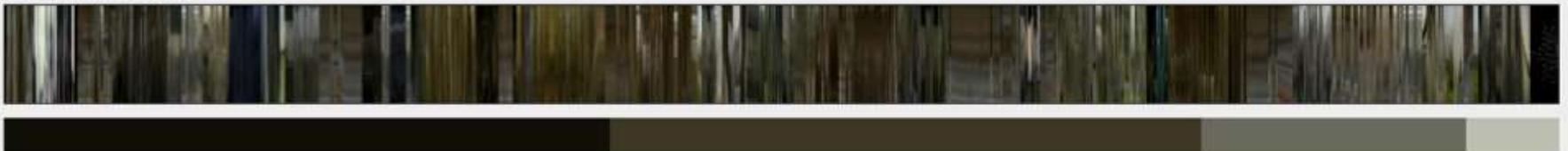
Der König der Löwen



True Detective S01E01



True Detective S01E02



<http://moviebarcode.tumblr.com/>

THE LEGO MOVIE (2014)
THE LIFE AQUATIC WITH STEVE ZISSOU (2004)
THE LION KING (1994)
THE LION KING (1994) [SEQUENCE FROM]
THE LION KING II: SIMBA'S PRIDE (1998)
THE LITTLE MERMAID (1989)
THE LITTLE ORPHAN (1948)
THE LOCKET (1946)
THE LONE RANGER (2013)
THE LOOK (2011)
THE LOOK OF LOVE (2013)
THE LORAX (2012)
THE LORD OF THE RINGS TRILOGY (2001-2003)
THE LORD OF THE RINGS: THE FELLOWSHIP OF THE RING (2001)
THE LORD OF THE RINGS: THE FELLOWSHIP OF THE RING (2001) [SEQUENCE FROM]
THE LORD OF THE RINGS: THE RETURN OF THE KING (2003)
THE LORD OF THE RINGS: THE TWO TOWERS (2002)
THE LOST THING (2010)
THE LOST WORLD: JURASSIC PARK (1997)
THE LOVE BUG (1968)
THE MACHINIST (2004)
THE MALTESE FALCON (1941)
THE MAN IN THE WHITE SUIT (1951)
THE MAN WHO PLAYS WITH GUNS (1950)
THE MARK OF ZORRO (1940)
THE MASK (1994)
THE MATRIX (1999)
THE MATRIX RELOADED (2003)
THE MATRIX REVOLUTIONS (2003)
THE ME BIRD (2013)
THE MILKY WAY (1941)
THE MILL AND THE CROSS (1941)
THE MILL AND THE CROSS (1941)
THE MILL AND THE CROSS (1941)
THE MISSOURI BREAKFAST (1951)
THE MONUMENTS MEN (2014)
THE MOURNING FOREST / MOGARI NO MORI (2007)
THE MUMMY (1999)
THE MUMMY RETURNS (2001)
THE MUMMY: TOMB OF THE DRAGON EMPEROR (2008)
THE NAKED GUN 2½: THE SMELL OF FEAR (1991)
THE NAKED GUN: FROM THE FILES OF POLICE SQUAD! (1988)
THE NECESSARY DEATH OF CHARLIE COUNTRYMAN (2013)
THE NIGHTMARE BEFORE CHRISTMAS (1993)
THE NINTH GATE (1999)
THE NOTEBOOK (2004)
THE NUDE RESTAURANT (1967)
THE OLD MAN AND THE SEA (1999)
THE OUTSIDERS (1983)
THE PEOPLE UNDER THE STAIRS (1991)
THE PHYSICIAN (2013)
THE PIANO (1993)
THE PIANO (1993)

Mapping der MovieBarcodes
auf 11 Standardfarben mithilfe
des CIEDE 2000 color
difference-Algorithmus
(*color diff*).



Burghardt, M., Hafner, K. Edel, L., Kenaan, S., & Wolff, C. (2017). An Information System for the Analysis of Color Distributions in MovieBarcodes. In Proceedings of the 15th International Symposium of Information Science (ISI 2017).

Film scholar

1

Find all Sci-Fi movies from 1980 – 2005 that contain at least 15% of blue color.

2

colors	title	year	director	genre	country
 black 66.82%  blue 19.65%  grey 12.09%	Resident Evil: Apocalypse	2004	Alexander Witt	Action, Horror, Sci-Fi	Germany, France, Canada, USA
 black 60.24%  blue 20.36%  grey 11.14%	TRON	1982	Steven Lisberger	Action, Adventure, Sci-Fi	USA



Movie database

3

TRON



color	percentage	color name
	60.24%	black
	20.36%	blue
	11.14%	grey
	7.33%	brown
	0.48%	white



Ziel: Aufbrechen der sequenziellen Struktur von Filmen

- Filtern / Suchen nach bestimmten **Figuren** und **Schlüsselwörtern**

- Anzeig

Burghardt, M., Kao, M. & Walkowski, N.O. (2018). Scalable MovieBarcodes – An Exploratory Interface for the Analysis of Movies. 3rd IEEE VIS Workshop on Visualization for the Digital Humanities, Berlin.

Exploratives Tool für Filmretrieval

Pretty Woman

Query subtitles...

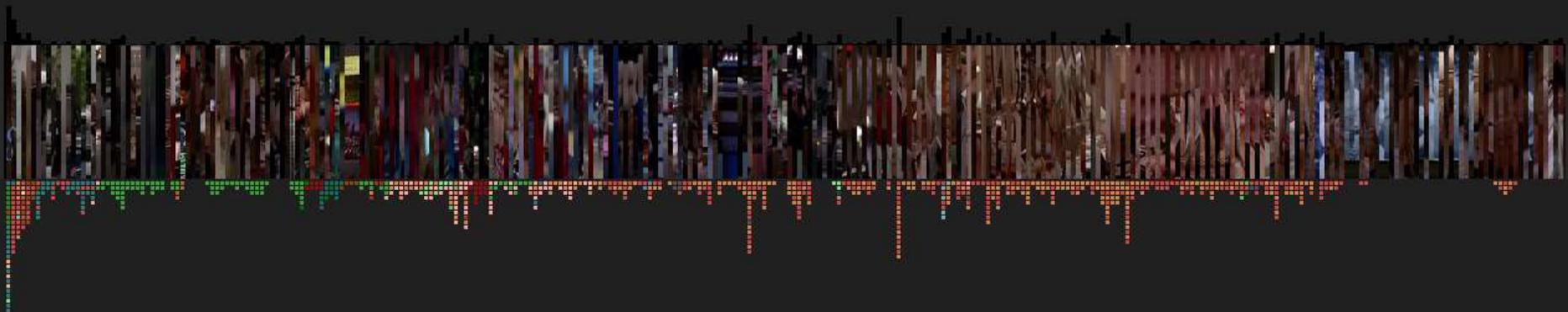
Filter characters...



single subtitle

multiple subtitles

Hide filtered



Exploratives Tool für Filmretrieval

Pretty Woman

Query subtitles... Filter characters... -

single subtitle multiple subtitles

Hide filtered

DENNIS - She's with Mr. Lewis.
00:42:21.725 - 00:42:24.352

479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494

The visualization shows a horizontal timeline of subtitle segments. A large, highlighted segment is shown in a larger window, displaying the subtitle text and its time range. Below this, a series of smaller frames show the corresponding video frames for each subtitle segment, with the segment number (479-494) displayed above each frame. A vertical bar on the left indicates the duration of each segment, with the highlighted segment being significantly longer than the others.

Exploratives Tool für Filmretrieval

Pretty Woman

Query subtitles...

(111) KIT

- single subtitle
- multiple subtitles

Hide filtered

18.68s



Exploratives Tool für Filmretrieval

love

00:03:14.837 - 00:03:17.715
EDWARD - I love this car.

00:03:14.837 - 00:03:17.715
PHILIP - I love it too. Look
know where you're going.



- single subtitle
- multiple subtitles



18 / 1149

9.4 s

00:03:14.480

Ø 6.24

00:03:23.880

Exploratives Tool für Filmretrieval

love

00:03:14.837 - 00:03:17.715
EDWARD - I love this car.

00:03:14.837 - 00:03:17.715
PHILIP - I love it too. Look, you don't even know where you're going.

single subtitle

multiple subtitles



Fazit

Was können digitale Tools für die Filmanalyse leisten?

Digitale Methoden für die Filmanalyse – Zwischen Berechnung und Exploration

Configuration Matrix

[Download as CSV](#) [Download as XLS](#)

Speaker/Season	1	2	3	4	5	6
Howard	0	0	1	0	0	1
Leonard	1	1	1	1	1	0
Penny	0	1	1	1	0	1
Raj	0	0	1	0	0	0
Receptionist	1	0	0	0	0	0
Sheldon	1	1	1	0	1	0





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Vielen Dank.