StoryGraphs – Implementation Details

- Character presence in scene
- Reduce influence of automatic person identification errors
- Minimum number of frames required to flag as present
- Co-occurrence score $p_{ci,j}$ between characters $c_i$ and $c_j$
- Geometric mean of frame counts within scene
- Initialization is important
- Objective not convex
- Agglomerative clustering of characters, based on $1 - p_{ci,j}$
- Optimization $1 \leq x_f^2 \leq N_c$
- Matlab’s `fmincon` with given gradients

Acknowledgment: This work was supported by the Quaero Programme, funded by OSEO.

Scene detection – Implementation details

- Forward computation matrix update equations

Add shot to same scene:
$$D_{i,j} = D_{i,j-1} + \alpha(k)(\delta(C_j, P_i) + T_{ij})$$
$$\forall (i,j) \in [1..N_{ci}, 1..N_{cj}, 2..N]$$

Add shot to new scene:
$$D_{i,j} = \max_k [D_{i,j-1} + \beta(k)(1 - \delta(C_k, P_i) + T_{ij})]$$

- $k \geq 1$, score of adding shot to same scene is high when there is a high shot similarity and shot threads exist
- $k = 1$, score of adding shot to new scene is high when there is a low shot similarity and no threads exist

Complex StoryGraphs – many characters

Storyline: While chasing a vampire in a cemetery, Buffy meets Dracula, who has come to Sunnydale to meet her. Buffy feels proud with the revelation of the greatest vampire in the world. Meanwhile, Giles secretly tells Willow that he will return to England since Buffy does not need his service of watcher anymore. Dracula turns Xander into his slave, and during the night, he visits Buffy, bites and puts her under his thrall. Buffy hides the bite with a scarf and becomes powerless and seduced by the dark prince, who promises to disclose to her the darkness of her powers and increase them. (source: IMDb)

Main Events:
1 – Giles reveals to Willow his plans to leave Sunnydale
2 – Buffy encounters Dracula while patrolling
3 – Dracula charms Xander and turns him into his slave
4 – Riley meets Spike to gather more information about Dracula
5 – Dracula bites Buffy and puts her under his thrall
6 – Xander takes Buffy to Dracula’s castle
7 – Buffy admits to Giles that she needs his help

Storyline: Sheldon is fired from his job as a physicist at the university when he insults his new boss Dr. Eric Gablehauser. His change of circumstance sends him into a downward spiral of depression which results in working on developing luminous fish for nightlights and buying a loom for himself. Leonard tries to cure him by sending for Sheldon’s mom, Mary Cooper. When she arrives for a visit, the men realize she is completely the opposite of what they expected: she is sweet and down-to-earth, if culturally ignorant, and a devout Christian, but nevertheless, a really good and loving and caring mother, as they have not expected. After waiting it out, Mary finally forces Sheldon to apologize, and he is given his job back after she flirts with Dr. Gablehauser. As Mary is a widow, Sheldon asks if Dr. Gablehauser will be his new daddy and his mother replies, “We’ll see...” (source: FanWiki)

http://cvhci.anthropomatik.kit.edu/projects/mma

The Big Bang Theory S01E04

The Luminous Fish Effect

The Luminous Fish Effect

Keep track of the graph 📝

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Project page (data and code)
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Auto vs. Manual PersonID

The Big Bang Theory S01E04

The Luminous Fish Effect

Ground Truth PersonID

Buffy the Vampire Slayer S05E01

Buffy vs. Dracula

Game of Thrones S01E07

You Win or You Die

Game of Thrones S01E04

Cripples, Bastards, and Broken Things

Storyline

Add shot to same scene

Add shot to new scene

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