Multimedia Data Mining

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OVERVIEW

- General Idea
- Uses
- Algorithm
- Example

General Idea

- Similarities between data.
    - Multimedia (Pictures, etc.)
- Take what we know.
- Discover something about an unknown.

Uses

- Handwriting Analysis
- Voice Analysis
- Satellite Photos
- Retina Scan
- Camera with Smile Recognition

Camera

From Feb. 2008

Consumer Reports

claim check

SAY 'CHEESE' A feature on the Sony DSC-T70 takes a photo only when a chosen subject smiles. It detected a smile for just one of these subjects. Guess who?

Can this Sony snap when you smile?

The claim. "Imagine a camera smart enough to catch every smile," says literature for Sony Cyber-shot cameras with face-detection technology. Their Smile Shutter mode "can automatically trip the shutter at just the right instant to catch the perfect expression." It works by detecting expression in the mouth and eyes. The technology can detect and track up to eight faces.

Smile Shutter works two ways. It can detect the first smile that appears, then snap up to six images without your having to press the shutter. Or you can touch the LCD screen to single out a face, and the camera will shoot only when that person smiles. You can set smile detection to one of three sensitivity levels depending on how big a smile you want to trigger a shot.

The check. We used the Sony DSC-T70 to photograph individual faces and groups of people, and tested it on 8x10 printed color photos of people with varying expressions and skin tones. Some subjects had beards, some wore glasses. To further test the camera's abilities, and to answer a question dogging art aficionados since the 16th century, we photographed an image of the "Mona Lisa." And we snapped a few other iconic folk.

CR's take. News flash: Lisa is not smiling! And that annoying smiley face isn't happy; neither is Charlie Brown. With humans, the camera worked very well, rejecting faces with frowns, grimaces, or puckered lips at all sensitivity settings, and accepting faces with closed- and open-mouth smiles. It missed only closed-mouth, slight smiles, which may be why Lisa didn't trigger the shutter. And smile-detection mode didn't seem to drain the camera's battery.

Algorithm

- Mixed Media Graph
- Want affinity between two nodes.
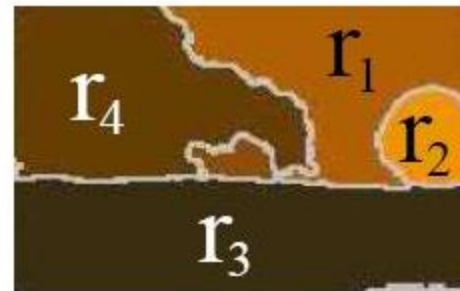- Find steady-state probablity between nodes.

Example

- Simple example of Multimedia Data Mining
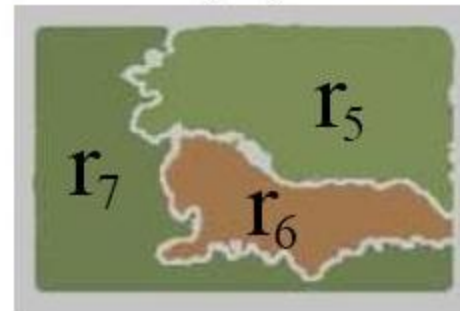   - Using Images

Original Pictures

I_1 ("sea", "sun", "sky", "waves")
(a1)   (a2)
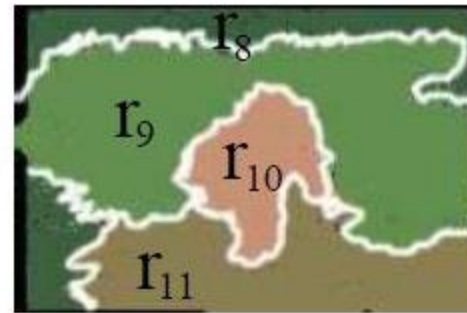
I_2 ("cat", "forest", "grass", "tiger")
(b1)   (b2)
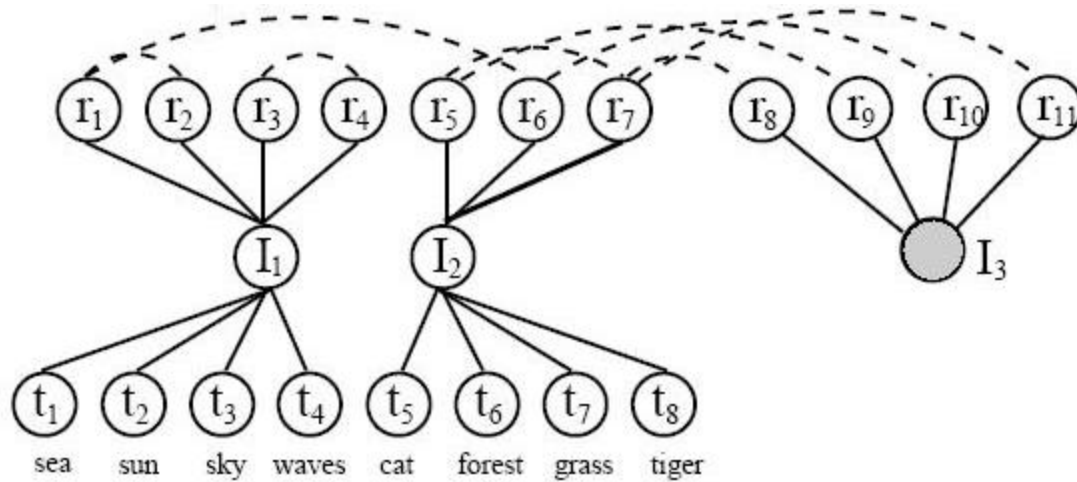
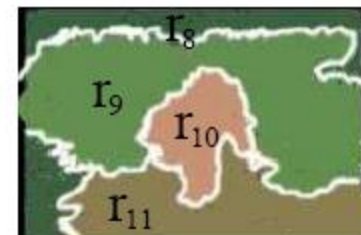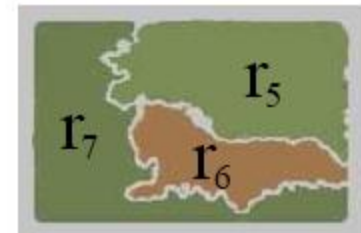# Unknown Picture

I_3 - no caption

(c1)   (c2)

MMG Graph

(d)

REVIEW

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THE END

Sources

- Consumer Reports, Feb. 2008 Page 7.
- http://www.cs.cmu.edu/~jypan/publications/ KDD04CrossModalCorrelation.pdf