SpamChallenge 2007 : France Telecom R&D submission

AIRWEB 2007

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france telecom R&D

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strategy overview

intuition : most amount of spam is automatically generated

- source code of HTML pages generated by the same script tend to share some redundancy
- spreading information between pages that look alike should improve spam classification

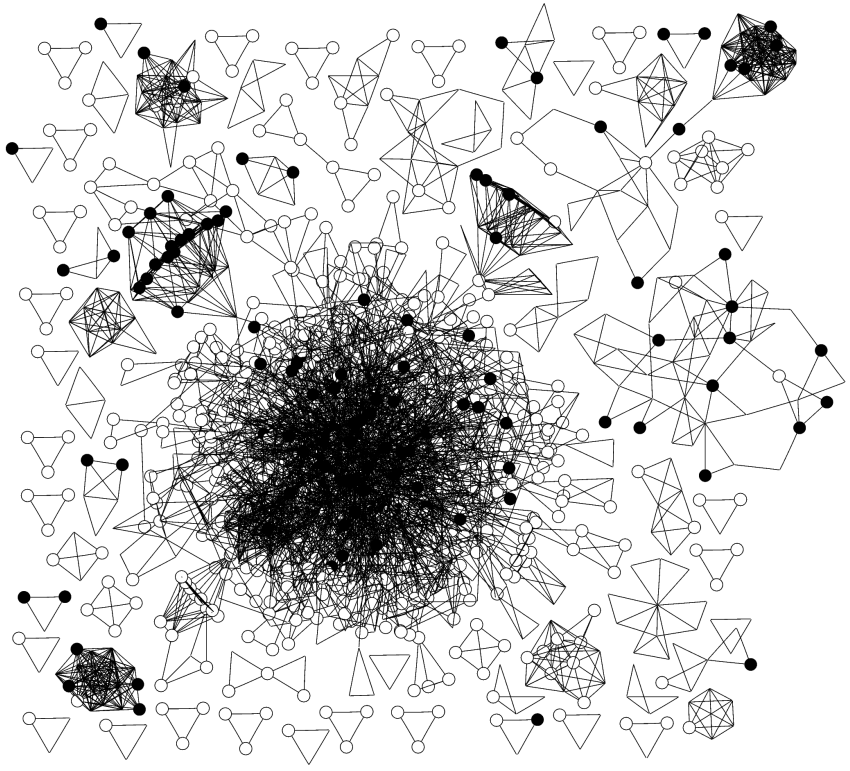
how to compute similarity between pages

- use various preprocessing strategies to extract pages footprints
- compute clusterings according to each HTML preprocessing

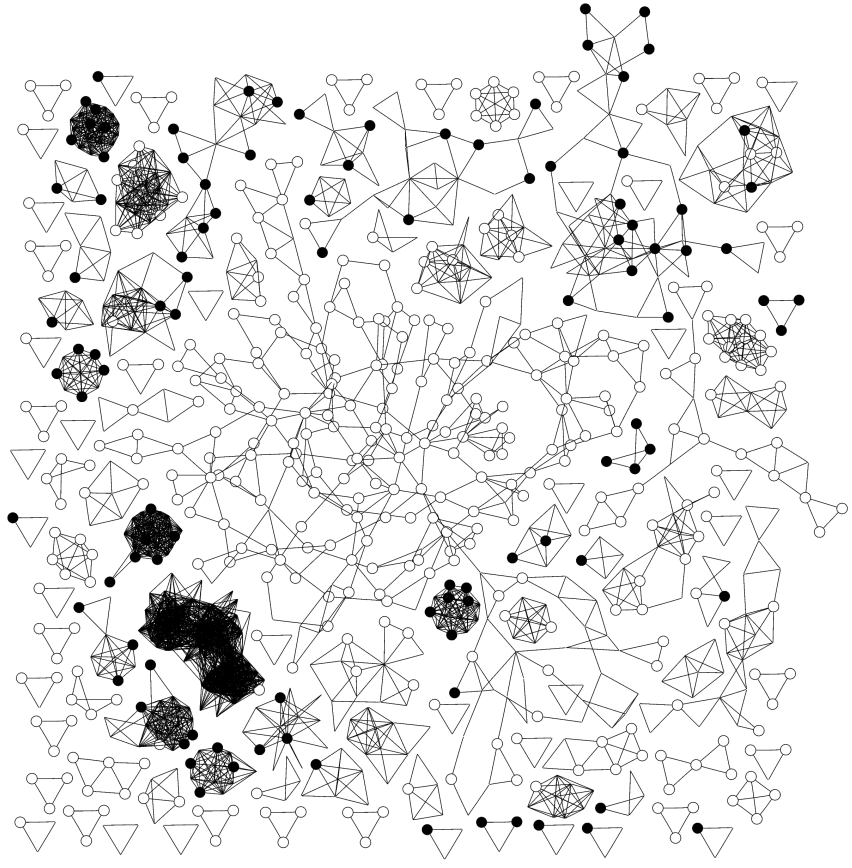
overall : a mix of supervised and unsupervised classification

- first classification of pages : training data, classifier output with most confidence, ...
- smoothing and completion of classification among clusters according to their consistency $(\frac{Spam-Normal}{Spam+Normal})$

sample clusterings



words similarity graph



HSS-var-space similarity graph

core components

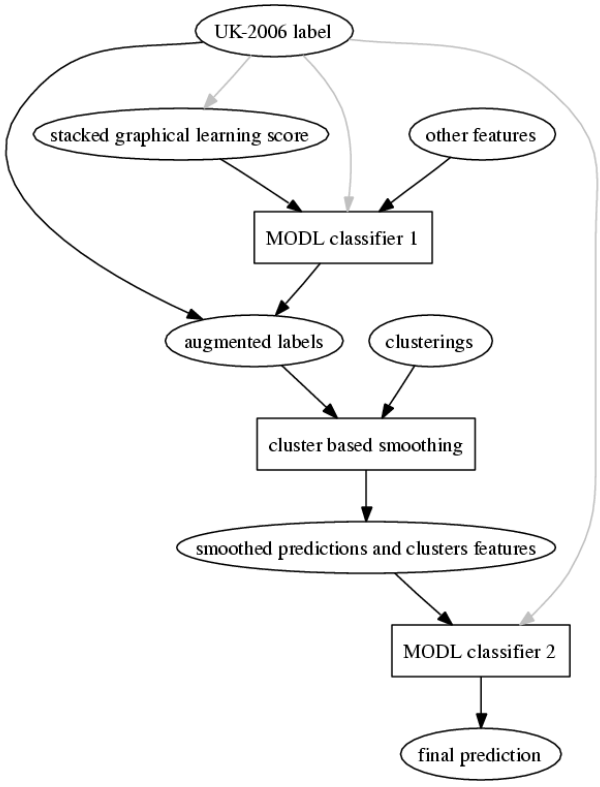
clustering

- several preprocessing strategies were tried and mixed (keeps non alpha-numeric *noise*, HTML tags, words, variants with/without spaces, tags attributes . . .)
- LSH fingerprints were computed using *Broder* (min-hashing) and *Charikar* algorithms
- 2-pass clustering using connected component computation over windowed partial clusterings

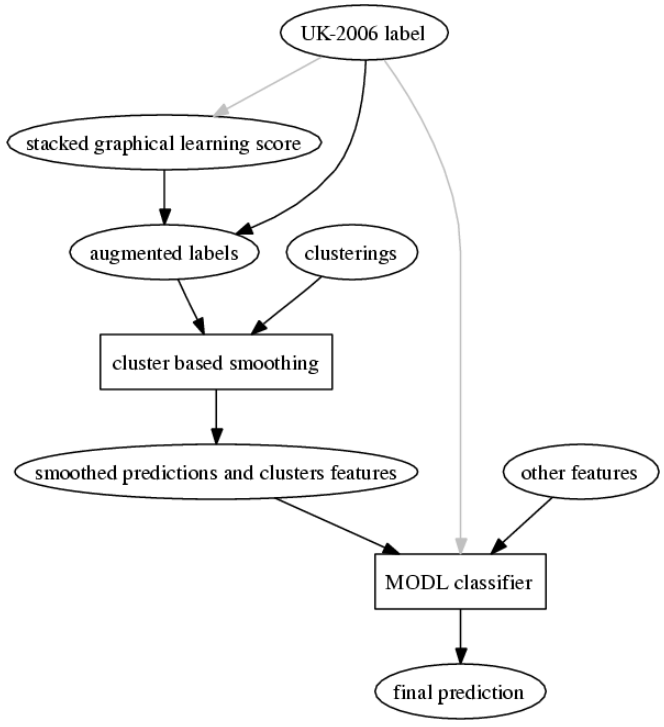
classifier and features selection

- *MODL* discretization toolkit and selective bayes classifier [Marc Boullé - 2004]

two experiments



#1 : enrich labels with MODL classifier, smooth using similarity clusters



#2 : enrich labels with *stacked graphical* feature, build classifier using clusters and other input features

thanks for your attention