Web-based Detection of Band Members and Line-Up

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THE PROBLEM

Given the name of a band, find its members and the respective instruments they play.

THE APPROACH

The following four steps are involved in the band members and instrumentation detection.

Web Retrieval

For the band name, up to 100 top-ranked web pages are retrieved using Google and wget. These are stripped down to their plaintext.

Named Entity Detection

All 2-, 3-, and 4-grams are extracted from the plaintext representation, and some basic filtering is performed (non-capitalized words, single character words, common speech words). This yields a set of potential band members.

Rule-based Text Analysis

Seven different rules **R** (like "**M** plays the **I**") are used to find out the assignment between band members (M) and instruments (I). Scanning the plaintexts, the document frequency is recorded for each (M,I,R)-triple.

Rule Selection

(M,I,R)-triples that give uncertain information (low DF) are discarded. For every I, the rule with the highest DF is selected and the corresponding M is predicted.

EVALUATION

A collection of 51 bands with their current members (240 in total) was used. The ground truth was defined by consulting *Wikipedia*, *AMG*, *Discogs*, or the band's web site. To cope with different spellings and nick names, evaluation was performed using three different string comparison methods (exact matching, canonical representation, approximate matching). Furthermore, four different Google query schemes were analyzed (M, MR, MM, LUM). An (M,I)-pair was only considered as correct if both M and I were predicted correctly.

The best recall values achieved were 34.74%, 37.14%, and 39.05% for the three different string comparison methods. The upper limits for the achievable recall were 56.00%, 57.64%, and 63.44%. As for the query schemes, no significant differences could be made out between M, MR, and MM, whereas LUM performed significantly worse.

CONCLUSIONS

Good results were achieved for those bands whose members spent a long time in the band and are still members, regardless of the popularity of the band. On the other hand, the approach has problems with bands facing heavy member fluctuations and with bands whose instrumentation differs from the standard line-up of Rock bands (singer, guitarist, bassist, drummer, keyboardist).

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