

Personalization and User Modeling

Content-Based Recommender Systems

Patrick Siehndel

IVS Semantic Web Group

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The following pictures are part of a tagging system. Each picture is tagged with the given words and frequencies.

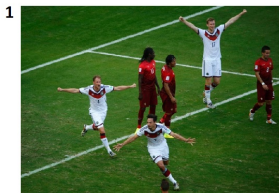
- 1 Calculate the weighted term vector for each of the pictures using term frequency and inverse document frequency.

$$f_{i,j} = \frac{freq_{i,j}}{\sum_k freq_{k,j}}$$

$$idf_i = \log \frac{|D|}{|d_i|}$$

$$w_{i,j} = f_{i,j} \times idf_i$$

- 2 Calculate the cosine similarity between picture 1 and 3 and between picture 2 and 3.
- 3 Define a user vector for a user who likes Goals and Portugal, and calculate which picture would be recommended.



Soccer (4), Germany (3), Portugal (3), Goal (4)



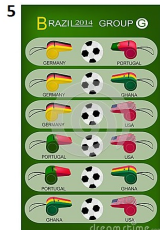
Soccer (2), USA (4), Fans(4)



Soccer (1), Germany (3), Goal (1), Fans (2)



Soccer (3), Team (4), Ghana (4)



Soccer (3), Ghana (1),
Germany (1), Portugal (1)
USA (1)