Implicit Relation Inferring Using Knowledge Graph

A Probabilistic Approach

ABSTRACT

In this paper, we propose an approach for detectiing the implicit relations between 2 entities.

1. INTRODUCTION

2. RELATED WORKS

3. FRAMEWORK

First,we do conceptualization
Next,Judge whether the 2 entities are conceptually same
Then, there are 2 cases of the CanBeExplained function:

- Explain 2 conceptually similar entity

Table 1: conceptually similar entity

entity	concept
Steve jobs	Person
Bill Gates	Person

- Explain 2 conceptually different entity

Table 2: Add caption

entity	concept
Mona Lisa	Painting
Renaissance	Period

Note that the concept here are not unique.

Last, We rank all the explanations in each step.

4. PROBABILITY RECALCULATION AFTER CONCEPTUALIZATION

Given an entity e, from Probase, we can acquire its concepts' set C and for each $c_i \in C$, the frequency $n(c_i, e)$ can be accordingly derived, which means how many times the e isA c_i pattern can be observed from the original corpus. However, the concepts here has various forms as illustrated in Example 1. For our task, we only need relatively general concepts. The number of entities can be very large, but the number of top concepts and the relationship between them are limited, literally, we can find all the possible relationship between concepts instead of store all the long-tailed entities and their relations, which indicates the rationality of doing conceptualization.

EXAMPLE 1 (VARIOUS FORMS OF CONCEPTS). *Take the entity* **Mona Lisa** *as example, its concepts includes* **painting, famous painting, world's most famous painting**, *with corresponding frequency* **33,8,1**

First, we detect head [?]f $C_probase$, which later called C_simple. Then, contribute all the counts of $C_probase$ to C_simple
Example **??**.

4.1 Problem Definition

Given an entity e and $Probase$, we want to find a set of concept C, Calculate the probability of each simple concepts towards entity: $P(\gamma_i|e)$

Counting the frequency of âĂIJpaintingâĂİ, There are 2 cases: Isa case: Have isa path to a middle concept, which has isa path to simple concept Oil painting Head case: Have isa path to a middle concept, which detected by âĂIJhead methodâĂİ, and have no isa probability value to simple concept Famous painting

5. FIND ALIAS FOR ATTRIBUTES

6. EXPERIMENT

7. CONCLUSION

8. REFERENCES