

Let us suppose that we perform the case analysis for the following sentence *Sb*.

Sb: the hunter took a goose with his gun

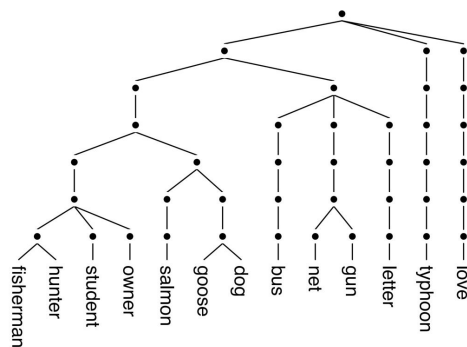


Fig. 1

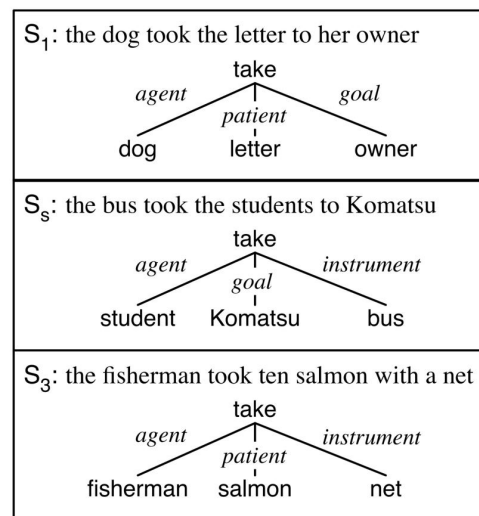


Fig. 2 Example Database

(a) Fig. 1 is knowledge used for the case analysis. We define the similarity of two words (w_i and w_j) as (1)

Equation (1) using this knowledge. Calculate the similarity between “hunter” and “dog”.

$$sim-w(w_i, w_j) = \text{depth of the common superordinate node of } w_i \text{ and } w_j \text{ in Fig. 1} \quad (1)$$

(b) Explain the process of case analysis of the sentence *Sb* using the example database of Fig. 2 (a collection of sentences with case structures). The similarity between two sentences S_i and S_j is defined as Equation (2). $SUBJ_i$ and $SUBJ_j$ are the subject of the sentence S_i and S_j , while OBJ_i and OBJ_j are the object of S_i and S_j , respectively. $sim-w$ is the similarity between words defined as Equation (1). In addition, show the case structure finally obtained.

$$Sim(S_i, S_j) = sim-w(SUBJ_i, SUBJ_j) + sim-w(OBJ_i, OBJ_j) \quad (2)$$