An adjective based knowledge net

CHANG SU , JIA TIAN, YIJIANG CHEN

DEPARTMENT OF COGNITIVE SCIENCE , XIAMEN UNIVERSITY

Abstract

Different from the traditional way that takes concepts as the core of knowledge comprehension, this paper presents an adjective-based embodied cognitive net. From the cognitive view, we hold the viewpoint that the first thing comes to the human's mind is the original descriptions (usually are adjectives), while given a new thing. In this knowledge net, nouns are contained as the attachment to construct a mapping between adjectives and concepts.

Schedule

1. Introduction

2. The Structure of The Net

3. Reliability Analysis

4. Application of The Net

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1. Introduction

➢ Recent researchers in cognitive science claim that knowledge acquisition and comprehension are embodied.

➢ In the past years, concepts are viewed as the basis of embodiment.

➢ However, we takes the view that the adjectives are the basis of human's embodied experiments.

➢ Emotion is another basis of embodiment. And the adjectives are along with emotion during cognitive process.

➢ Concepts are object complement to the adjectives and emotion.

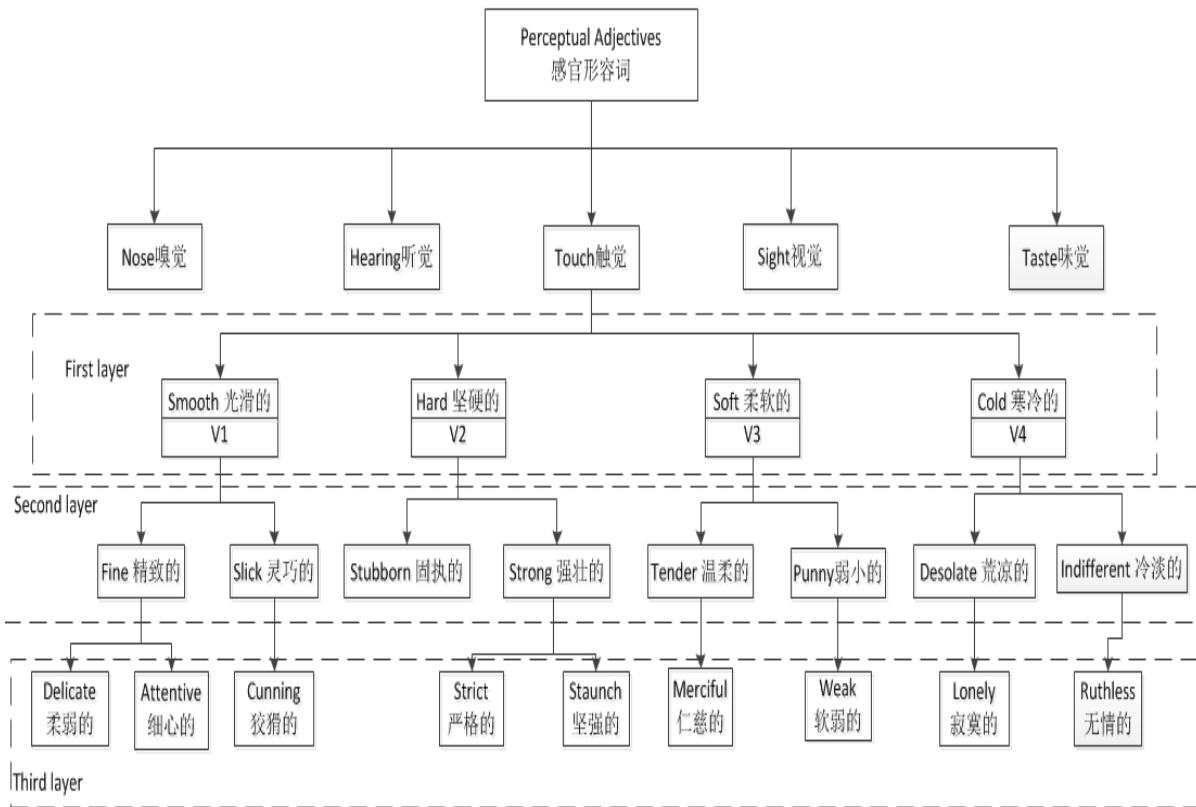➢ The embodied process of cognition:

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┌──────────┐      ┌──────────┐      ┌──────────┐
│ Emotion  │ ───► │Adjectives│ ───► │ Concepts │
│ 情感     │      │ 形容词   │      │概念（名词）│
└──────────┘      └──────────┘      └──────────┘
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Some Hypothesis

➢ It is the adjectives that are the basis of humans' embodiment in knowing the world instead of concepts.

➢ Humans' embodiment is from basic to esoteric. Originally, human beings know the world based on their embodied senses and then their imagination takes them to the deeper cognition.

➢ Adjectives are the initial embodied descriptions to the new things and induce the appearance of concepts.

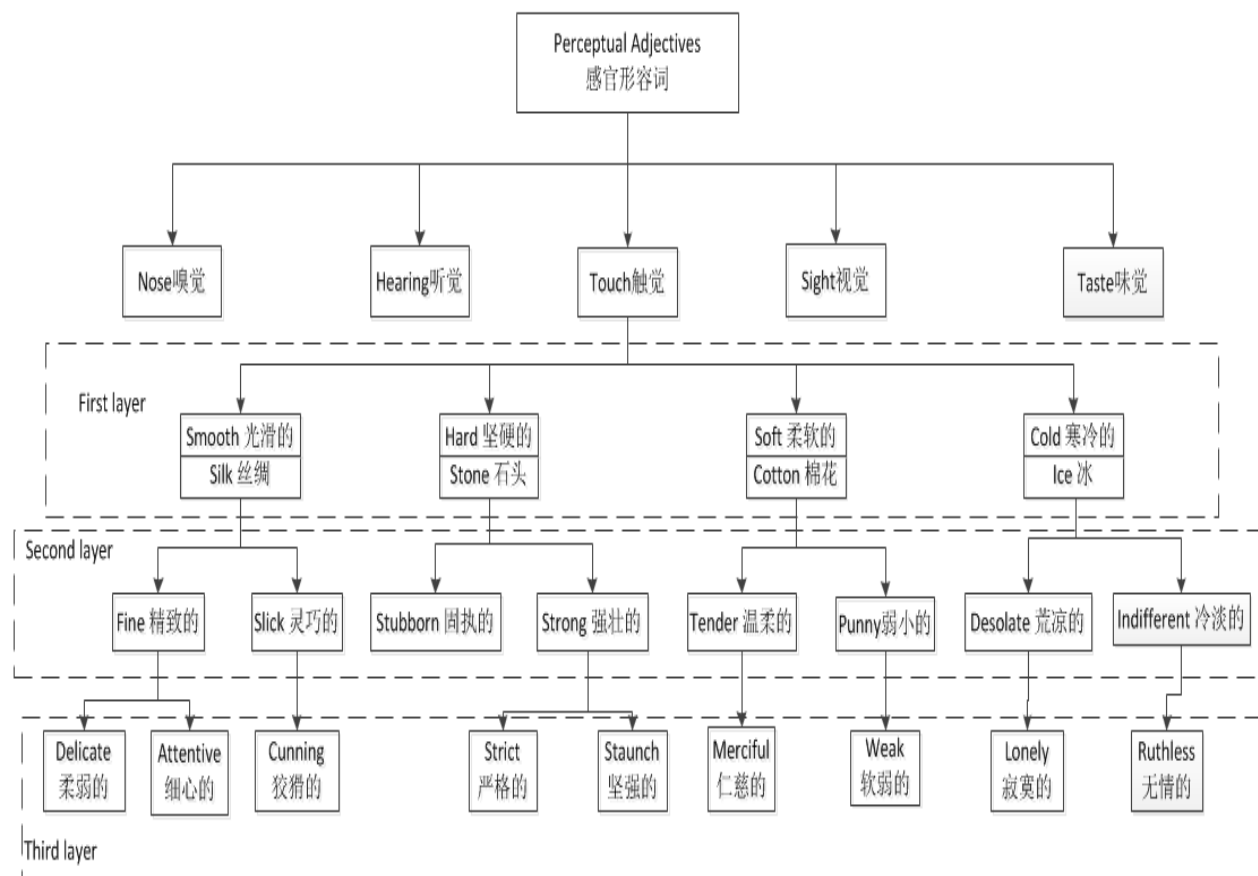➢ Emotions are contained in adjectives and they can be under the inference.

2. The Structure of The Net

> According to the theory of embodiment, we consider that the five senses(i.e., tactile sensation, auditory sense, nose, sight, sense of taste) are the basis of embodiment.

> We divide the net into three layers:

● the first layer contains humans' initial descriptions to the given things and they are the first embodied impressions in childhood

● the second layer contains more abstract or deeper descriptions and infers that the development of humans' cognition contains some imagination

● the third layer contains the psychological descriptions based on humans' totally imagination and it is the final cognition to the world.

Nouns as Attachments to the Net

➤ Considering the effects of concepts in the process of humans' cognition, we takes them as attachments to the adjectives.

➤ Same as the emotions, we only give the concrete nouns and the abstract ones can be obtained by inference
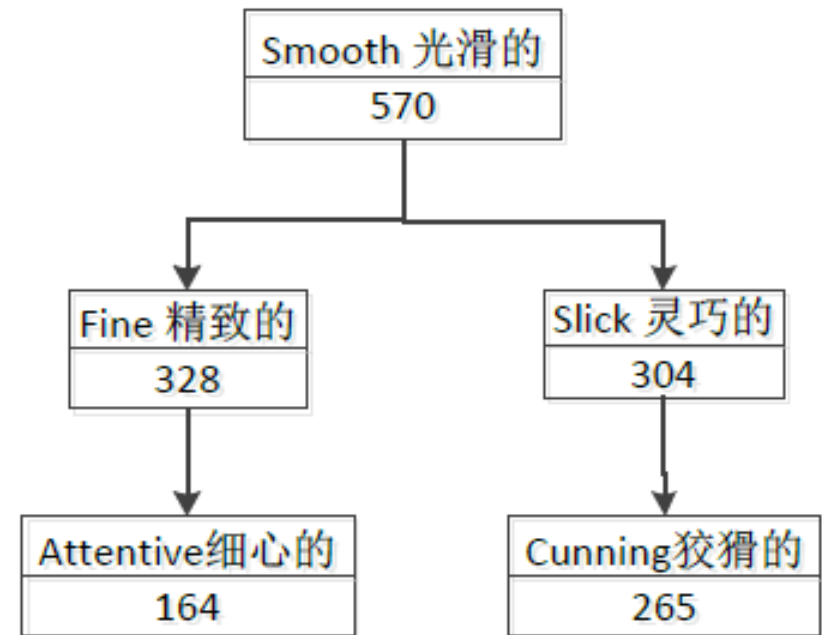
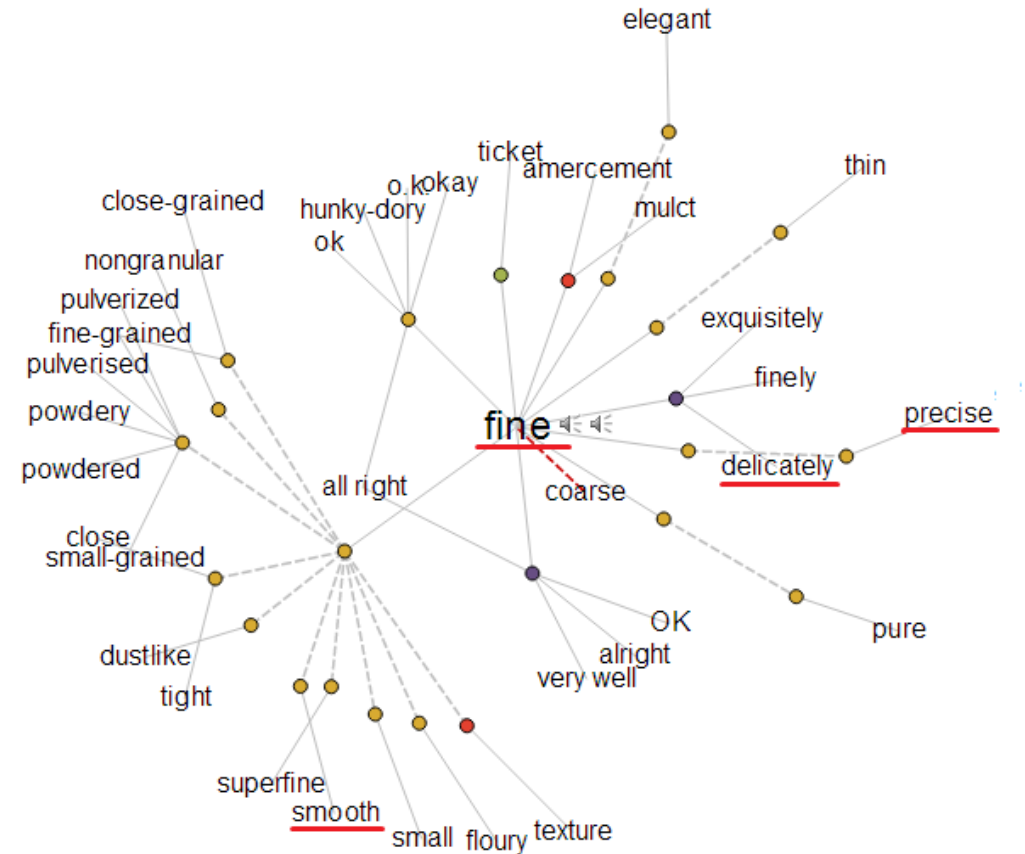# 3. Reliability Analysis

(1) The reliability of layers division

➤ We using MRC Psycholinguistic Database Machine Usable Dictionary (Colt-heart,1981) to test the consistency and reliability of our knowledge net.

➤ The MRC Psycholinguistic Database Machine Usable Dictionary contains words related with the abstractness by human subjects in psycholinguistic experiments.

➤ The rating ranges from 158(highly abstract) to 670(highly concrete).

(2) The reliability of adjectives expansion

➢We take a online visual thesaurus dictionary-

Thinkmap to test and evaluate the reliability of

adjectives expansion in our knowledge net.

➢*Thinkmap* is an interactive tool that allows

users to discover the connections between

words in a visually captivating display

4. Application of The Net

➢ **Metaphor Interpretation**

Given a metaphor "Woman is Water", We can easily extract the properties of woman are " tender , beautiful and so on" and the property of water are "soft, cold, smooth and so on" .

Apparently, "soft" is the father node of "tender", which means the interpretation of this metaphor is that Woman is tender.

5. Future Work

➢ Automatically construct the knowledge net by using WordNet

➢ Use the automatically constructed net to achieve metaphor identification and

interpretation

➢ Use the automatically constructed net to achieve sentiment analysis

Thank You!