

Study on Liver Visceral Manifestation of Huangdi's Internal Classic of Medicine Based on Knowledge Discovery in Database

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Abstract. By constructing the knowledge discovery model of liver visceral manifestation in Huangdi's Internal Classic of Medicine, a special database of annotator of liver visceral manifestation is designed, and then the knowledge network algorithm is used to construct the matrix of the relationship between the knowledge points of each annotator. Analyze the degree of association between the various players. The method of knowledge discovery is applied to the study of the liver in visceral manifestation in Huangdi's Internal Classic of Medicine, which provides a new method for the study of Huangdi's Internal Classic of Medicine. and provide a scientific reference for intelligently extracting the annotated knowledge of Huangdi's Internal Classic of Medicine.

1. Summary of knowledge discovery in database and its application

There is a very rich theory of liver visceral manifestation in Huangdi's Internal Classic of Medicine, but its characters are ancient, the contents are numerous and complicated, and the meaning is profound, so it is very difficult for beginners to systematically understand the contents of liver visceral manifestation in Huangdi's Internal Classic of Medicine. Since the publication of Huangdi's Internal Classic of Medicine, the physicians of all dynasties have carried out a great deal of sorting out and annotating it, forming a number of representative notes, therefore, refer to the annotated book, choose a good choice and follow through. It is an essential and important way to study Huangdi's Internal Classic of Medicine. [1]

How to systematize the theory of liver visceral manifestation in Huangdi's Internal Classic of Medicine is a problem we need to solve. This paper introduces knowledge discovery technology, referring to several notes of Huangdi's Internal Classic of Medicine, to discover the relevant contents of liver visceral manifestation in Huangdi's Internal Classic of Medicine, in order to provide methodological reference for the study of liver visceral manifestation in Huangdi's Internal Classic of Medicine.

1.1 Knowledge discovery in database

The study of knowledge discovery in database begins with the concept of finding useful schemas from databases, that is, KDD (Knowledge Discovery in Database). KDD refers to the identification of valid and novel information that exists in a database. [2]

1.2 Application of knowledge Discovery

Knowledge discovery in database is widely used to solve data classification and data clustering. Decline and prediction, correlation and correlation, sequence discovery, description and discrimination, time series analysis, etc. [3]

Knowledge discovery is also widely used in the field of traditional Chinese medicine. If literature [4] collects relevant information such as formula with prolactin effect and traditional Chinese medicine and so on, the data will be standardized and the database will be set up. The frequency analysis and association rule method were used to excavate the formula with prolactin effect and the compatibility of traditional Chinese medicine, which provided a reference for clinical

treatment of postpartum lack of milk. In reference [5], data frequency statistics and co-occurrence matrix were generated by using SATI, a tool for statistical analysis of bibliographic information, and a visualized co-occurrence network was studied by means of ucinet & underdraw. Literature [6] based on the database of pulmonary diseases of traditional Chinese medicine, this paper discusses the use of various data mining methods to study the etiology, pathogenesis, syndromes and characteristics of lung diseases, and the application law of prescription drugs. Literature [7] collected the medical records of the first national medical master and the first batch of national famous Chinese medicine practitioners, and made data mining. Literature [8] introduces a complex concept network discovery method based on formal concept analysis, which is based on the knowledge of traditional Chinese medicine. Literature [9] summarizes the compatibility of different syndromes according to the prescriptions database.

By searching the literature on the application of knowledge discovery in the field of traditional Chinese medicine, it was found that the main application of knowledge discovery was concentrated in the study of the law of compatibility of prescription and medicine.

2. Applying knowledge discovery in database to liver visceral manifestation in Huangdi' s Internal Classic of Medicine

2.1 Constructing the knowledge discovery in database model

In this paper, the study of liver visceral manifestation in Huangdi' s Internal Classic of Medicine is based on the theoretical annotation of several notes on liver storage images, and introduces the knowledge discovery technology to excavate the hidden and latent knowledge in the relevant annotations of the liver storage images in the Inner Classic. A knowledge discovery model of liver visceral manifestation is constructed in this paper, which is shown in Fig. 1.

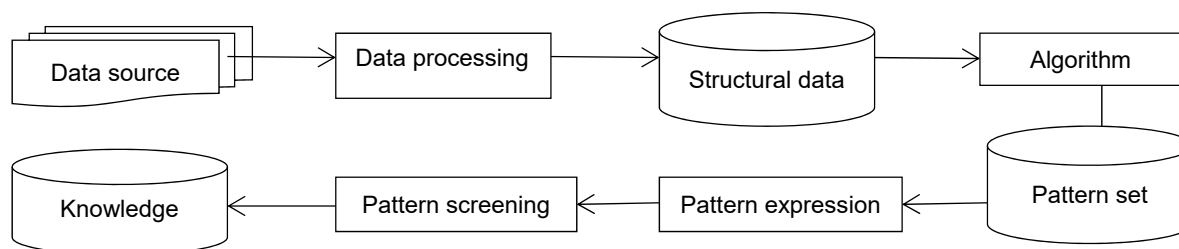


Fig. 1. Knowledge discovery in database model

In fig. 1, the data source is a text document composed of several notes, which needs to be preprocessed by data to extract the annotation of liver visceral manifestation and put it into a structured database, so as to meet the need of using knowledge discovery algorithm in structured data. The process of knowledge discovery produces a set of patterns, in which the patterns are in the form of charts or matrices, which need to be expressed in order to be easily understood by users. The patterns produced by knowledge discovery are not all valuable patterns, but they need to be screened and eliminated, which need to be completed manually at present. The selected valuable pattern is knowledge, which is stored in the knowledge base.

2.2 The design of the special database of the annotator of the live visceral manifestation in Huangdi' s Internal Classic of Medicine

According to the annotations of the annotators on liver visceral manifestation, the conceptual structure of the database is designed as follows:

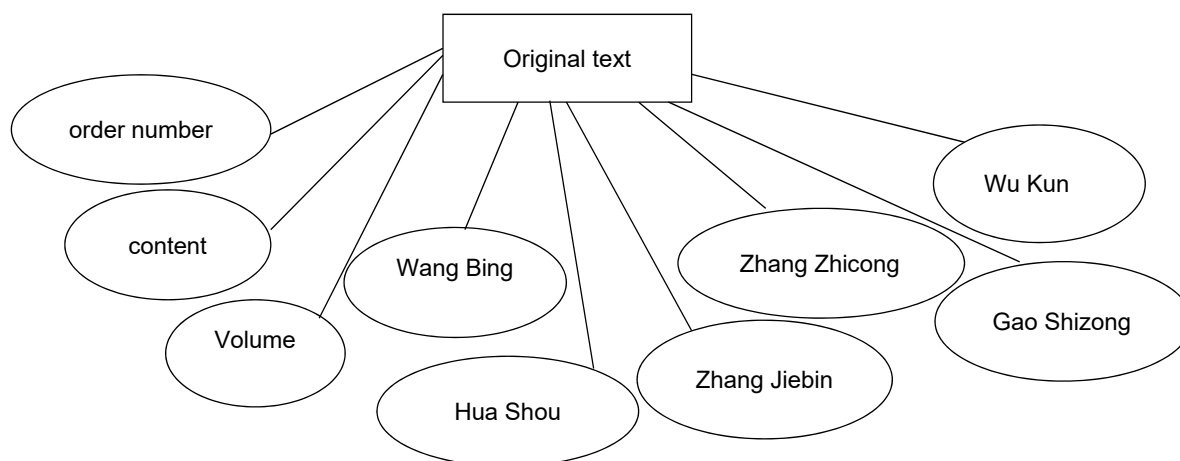


Fig. 2 Conceptual structure chart of the special database of the annotator for liver visceral manifestation

In fig. 2, the original liver visceral manifestation is an entity with corresponding attributes with serial number, content, and notes of annotators. According to the concept structure diagram, we can get the logical structure of the special topic database and establish the database table.

2.3 Constructing the knowledge network of the live visceral manifestation in *Huangdi's Internal Classic of Medicine*

The annotators are equivalent to experts in the field. For each annotation of the Huangdi's Internal Classic of Medicine, it can be regarded as a knowledge point, and there is a certain knowledge correlation between the annotatorundefineds knowledge points. Therefore, this paper uses knowledge network [10] to discover the knowledge of annotators.

The knowledge points and knowledge associations of the annotators are expressed in the form of network as follows:

$$G=(K,R) \quad (1)$$

Among them, $K=\{K_1, K_2, \dots, K_n\}$, a collection of knowledge points for each note, where $k_i = w_1 w_2 \dots w_m$, w_i represent a word (Chinese character) that constitutes a knowledge point ($R=\{r_{ij}\}$, $i, j=1, 2, \dots, N$ is a set of association relations representing knowledge points. Its relation matrix is:

$$R=\{r_{ij}\}, i, j=1, 2, \dots, n \quad (2)$$

Among them, r_{ij} is used to indicate the degree of relevance of the knowledge point k_i to k_j , which can be expressed as

$$r_{ij} = l(k_i, k_j) / l(k_i) \quad (3)$$

Where $l(k_i)$ denotes the number of all Chinese characters in k_i , $l(k_i, k_j)$ means the same number of words in k_i and k_j .

3. Summary

In this paper, the knowledge discovery in database theory is used as the research method to establish a special database for the contents of the annotators of the visceral manifestation in Huangdi's Internal Classic of Medicine, and on the basis of this, the knowledge network algorithm is used to construct the matrix of the relationship between the knowledge points of the annotators. An objective analysis of the degree of correlation among the annotators provides a new method for the study of the liver reservoir and provides a scientific reference for intelligently extracting the annotated knowledge of the Huangdi's Internal Classic of Medicine.

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