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Cognitive Computing of Information Extraction and Rich Media Presentation

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Cognitive Computing of Information Extraction and Rich Media Presentation

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ABSTRACT

The extraction of scientific and technological information and the presentation of rich media aims to achieve the theory of intellectual learning and the practice of cultural genetic system engineering. The method is to gradually merge the three stages of human-computer interaction, collaboration and synergy with batch processing technology. The specific steps are as follows: First, the language chessboard is used to build a dual-formal intelligent text analysis tool software, Second, construct the knowledge module finishing software tool by means of the knowledge menu. Third, present the expert knowledge acquisition and structured expression that the rich media can play a further role in the way of mind map, that is, the visual expression of original idea, its characteristics in the cognitive computing of language, knowledge and originality. The result is a combination of several data platform indexing abstracts of papers, extracting scientific and technological information such as authors and keywords, and rich media presentations. It not only makes typical model, but also writes paper, which is characterized by using language chessboard, knowledge chess-menu and software chess-soul trinity, can accurately show the beneficial effects of the basic theory and method of cognitive computing of language points, knowledge points and original points, and make a corresponding intellectual property protection system. The significance lies in: not only can the abstracts of domestic and foreign scientific and technological journal papers and conference papers be analyzed in a large amount of text, but also can be used to further make rich media portraits of author's potential innovative thoughts in papers.

KEYWORDS

Cognitive Systems,Information presentation,Cognitive metrics, Visual information processing, Cognitive computation and learning

1. INTRODUCTION

The extraction of scientific and technological information and the presentation of rich media aims to achieve the theory of intellectual learning or Rongzhixue and the practice of cultural genetic system engineering. In the current traditional method, for example, in the fields of cognitive computation and learning and informatics and intelligent science, peers need to open their eyes to see if there are new good theories and methods to deal with a certain topic of pan-source. The current knowledge graph is a visual presentation of knowledge after organization, rather than the automatic extraction of information and exploration from different perspectives. Therefore, the purpose of this study is to automatically extract knowledge from different angles by using cognitive computation and intellectual learning methods.

2. REVIEW

The extraction and the presentation are described from the level of applications; if viewed from the perspective of artificial intelligence research, then it actually focuses on expert knowledge acquisition and structured expression (data structures and algorithms), further digging is the study of theories and methods of cognitive computing. Its technical implementation approach involves: classification, matching, translation, prediction and decision-making; semantic and ambiguity issues faced in the fusion and integration of wisdom in philosophy, intelligence in psychology and artificial intelligence in computer science within their combination difficulties in how to integrate. The reason for this is that there have been considerable advances in the various fields of science and technology listed above.

Rongzhixue or intellectual learning is the integration of the three - wisdom, intelligence and AI, with the cultural gene system engineering supporting by the eight major formal systems and the eight content systems. Among them, the eight major formal systems are fonts, formulas, pictures,tables, audio,visual,3D, livings, and the eight content systems are philosophy, logic, mathematics, nature (science), artificial (engineering), humanities (including art), psychology (especially mentality and consciousness), society (even about religion), This division not only simplifies the phenomenon information of both the form and the content, but also facilitates cognitive computing object and its systems. It is compatible with existing software engineering and knowledge engineering and language engineering (three system engineering) technology implementation methods.The cognitive computing model combining macro and micro in this paper is complementary to the popular meso model. We are entering a new frontier in the evolution of computing: the era of cognitive systems, pushing the boundaries of science and technology to create smart machines that sense, learn, reason, and interact with people in new ways with the new programming paradigm which permits construction of complex cognitive algorithms and applications [1-2].Big data with cognitive computing shows us a new future[3]. [1-9]

Table 1. Cognitive computing object and its systems

Cognitive computing object	Cognitive computing object systems
plain text and rich media	the eight major formal systems
language points	language system engineering
expert knowledge	the eight major content systems
knowledge points and original points	knowledge system engineering

3. METHOD

The method is to gradually incorporate the three stages of human-computer interaction, human-computer collaboration and human-computer synergy with batch processing technology.

The specific steps are as follows:

First, the language chessboard is used to build a dual-formal intelligent text analysis tool software;

Second, construct the knowledge module finishing software tool by means of the knowledge chess menu;

Third, present the expert knowledge acquisition and structured expression that the rich media can play a further role in the way of mind map with original chess soul, the visual expression of original ideas, its characteristics in the cognitive computing of language, knowledge and originality.

This method is to find the entry point in combination with scientific publishing, for example, to automatically sort out the knowledge system from multiple homogenized publications; knowledge points, interpretation, according to time series, application scenarios, institutional influence and author influence, display knowledge systems and publications are different carriers.

Next, let's expand the narrative one by one, solving the theoretical methods first, and then how to achieve them.

First, let us see the cognitive computing modeling (Differentiate and compatible with ASCII-based cognitive computing mode):

2.1. Tao Function Model

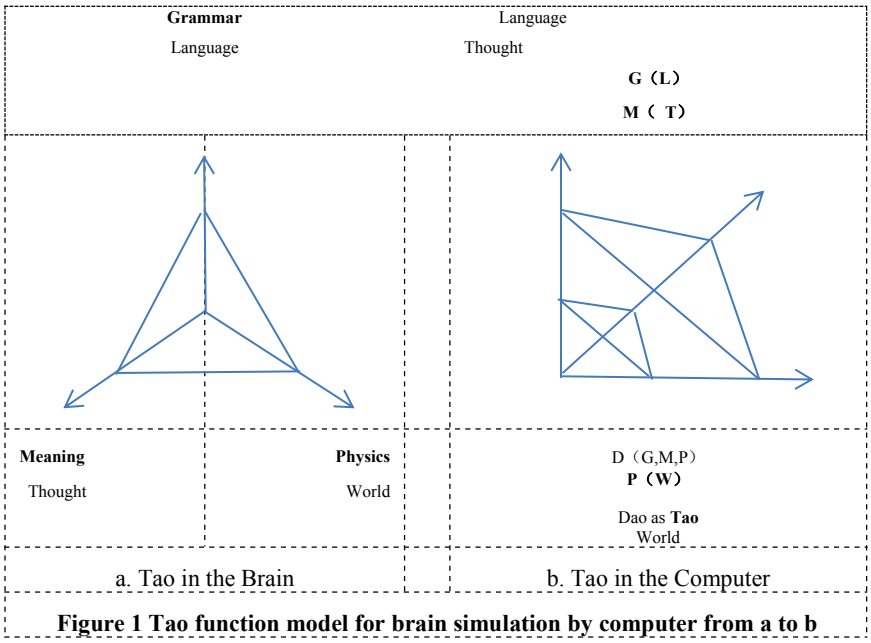


Figure 1 Tao function model for brain simulation by computer from a to b

From Figure 1 a (the invisible derivative function in the human brain) to Figure 1 b (the Tao function presented in the computer) the process of everything come out of nothing.

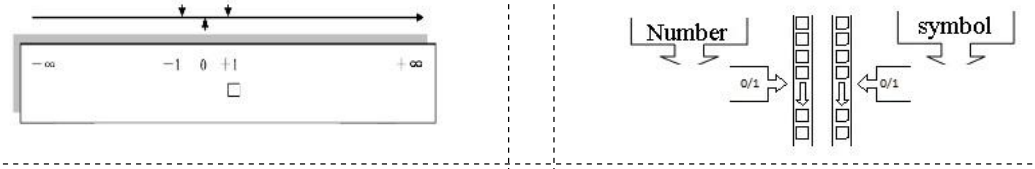
Figure 1 Cognitive model and mathematical model of the theoretical perspective of Rongzhixue on the intelligent learning from a to b (the basic theory of computer modeling and simulation).

It is a human-computer as dual-brain cognitive computing model. As can be seen from Figure 1, the theoretical view of human construction (human brain cognitive model) as Tao in the Brain, and the cognitive computing model (a mathematical form expressed in Cartesian coordinates) that can be formally understood by both humans and machines as Tao in the Computer.

It can be obtained when it is at the zero point: the expression of the Tao function.

It constitutes the foundation of the research on the basic theory and method of cognitive computing for the modeling and simulation of the whole process of human-computer. Its historical basis involves three milestones in the development of human cognition, see historical record theoretically.[10]

2.2. Cognitive Computing Model



a. number calculation model b. twin Turing machine

Figure 2. The cognitive computing model by using digital computing

In Figure 2 the relationship between the real point calculation model recorded by the Cartesian number axis and the formal grid point, namely the natural number calculation model envisaged by Xiaohui Zou; the recognition of human-machine can be formally understood by knowing the calculation model as twin Turing machine, the formal understanding model, see Figure 3 for further interpretation.How does the computer agent simulate the cognitive computing modeling of the human subject on Rongzhixue namely intelligent learning as keywords? First of all, from the perspective of computing in the background of the computer, we can do the corresponding cognitive computing modeling, and then open up a broad bilingual dialogue channel between the human (symbol) and computer (number).

From the Cartesian number axis and coordinates, to the Turing machine, and then to the twin Turing machine described in this article, the cognitive model of formal understanding can be penetrated. Among them, it involves not only two great leaps in human cognition, but also two great leaps in cognitive computing of computer artificial intelligence. They are cognitive computing of real numbers and natural numbers. Formal Chinese rooms belong to the latter type of recognition. A typical example of knowledge computing which is indirectly.

2.3. Formal Understanding Model

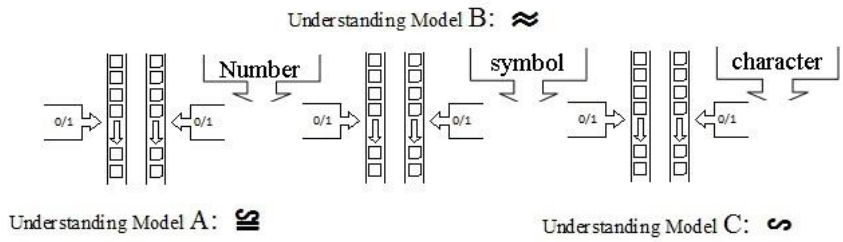


Figure 3. Formal understanding model = twin Turing machine = formal Chinese room

In Figure 3 that the three models are the three types of Turing tests envisioned as formal lattice points, that is, natural numbers in the form of twin Turing machines, that is, done within the P system and within the eight major formal systems, within the formal Chinese room, that is, the Chinese character system, three types of formal understanding models, and the mapping relationship meets the rigid constraints of sequence-location logic and linkage function;

described in Figure 2 above the cognitive computing model and operation method of the calculation model with the linkage function of numbers and symbols.

It can be seen that any one or more symbol systems in the eight major forms can pass the Turing test (within the constraints) through the combination of its basic elements and their transformations. In other words, language symbols in a broad sense (covering the form of natural language symbols in a narrow sense) can be formally understood from this (specific types can be classified into three categories of ABC).

This step is very critical.

It is the core hub model of cognitive computing for the digital, formal and structured connection between human brain and machines.

If the above mainly introduces the theoretical basis of cognitive computing that the computer background can be established, then the following will introduce the theoretical basis of cognitive computing and its application of operation between the front and back of the computer.

2.4. Front and Back Formal Language Chessboard with Computing

a. formal Chinese room

b.twin Turing machine

Figure 4. The front double-chessboard and the back-end double list with the basic theory and method of cognitive computing of the construction formal language chessboard

In Figure 4 that the formal Chinese room mapping relationship between the formal lattice point, that is, natural numbers and Chinese characters envisioned; the twin Turing machine as the cognitive computing model and its numbers and the cognitive computing of symbolic linkage function and the actual operation mode and operation method. Among the formal Chinese room, every Chinese character in the first paragraph of Dao De Jing has been completely digitized, formalized and structured.

This means that anyone's understanding and reuse the texts can be included in the global digital system for systematic research and comparative analysis (with human-computer cooperation). This has laid the theoretical foundation of cognitive computing and examples of operation execution methods for Rongzhixue (theme) and its definition and classification (expert knowledge acquisition methods of pure text and rich media).

If this is just a front-end example, then the complete back-end example is given below.The background of the modeling and simulation of any piece of text is an indirect formalized Chinese room with three types of bilingual system as relational database of Language and Speech.It can be seen from Figure 5 that the twin Turing machine constructed by numbers and words, that is, the practical application of the dual formal understanding model, are Language (single-syllable Yan) and one- or two- or three- up to multi- syllable groups Yu as Speech, a relational database composed, and the methods as three kinds of bilingualism. It can be found from this: each of us can establish a functional relationship with human-computer interaction interface or batch processing. We provide a set of application examples（can be used in any programming language development environment）.

2.5. Indirect Formalized Chinese Room with Three Types of Bilingual System

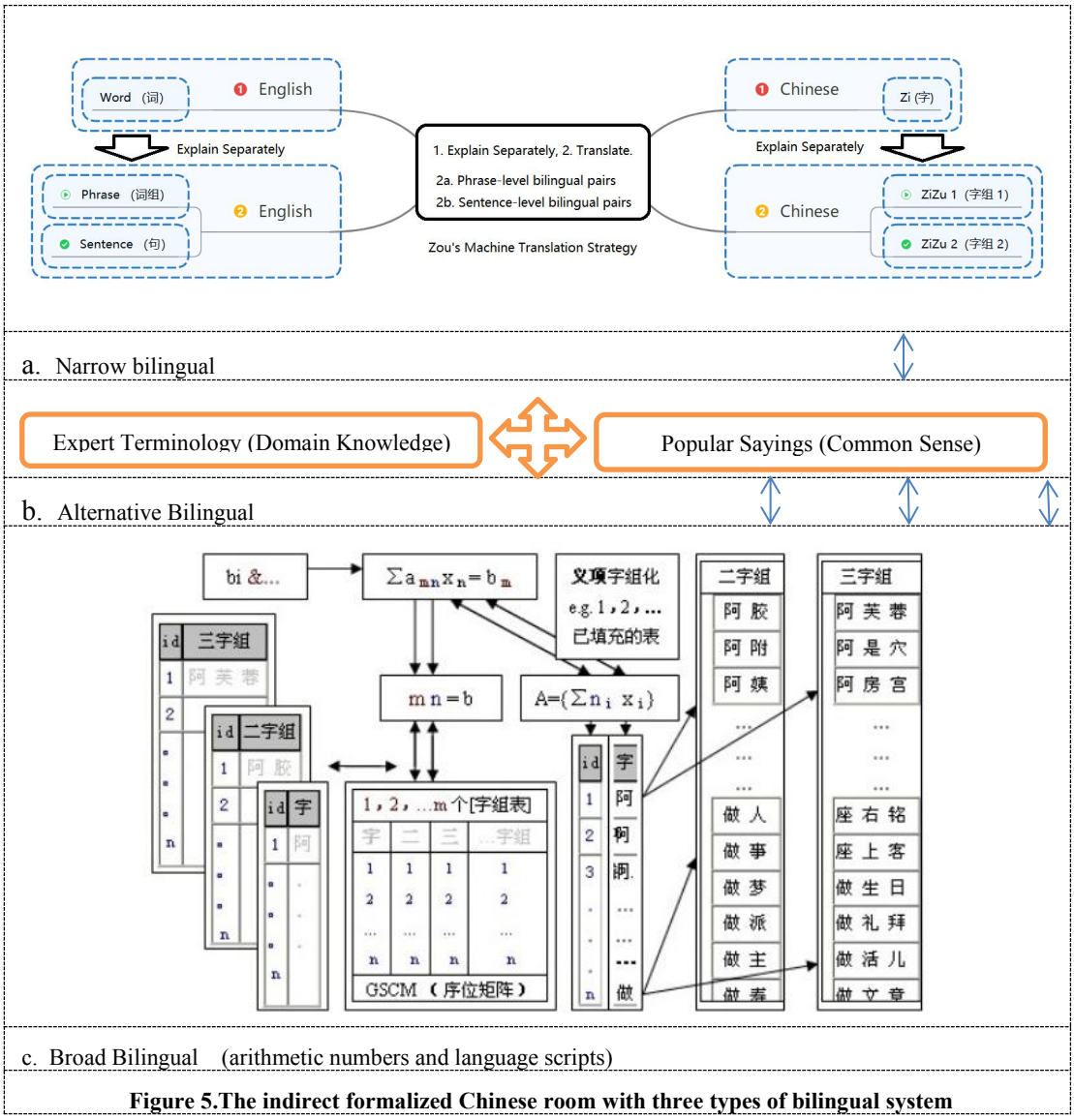


Figure 5.The indirect formalized Chinese room with three types of bilingual system

4. Result and Discussion

The result is a combination of several data platform indexing abstracts of papers, extracting scientific and technological information such as authors and keywords, and rich media

presentations. It not only makes typical models, but also writes papers and reports, which is characterized by a language chess board, Knowledge chess-menu and software chess-soul trinity, can accurately show the beneficial effects of the basic theory and method of cognitive computing of language points, knowledge points and original points, and make a corresponding intellectual property protection system.

4.1.

By comparing Semantics Scholars Network and Wanfang and HowNet, a set of application examples, cognitive computing modeling method and simulation process on the topic of Rongzhixue: The first step is to build a double-formal intelligent text analysis tool software by using language chessboard. The second step is to build a knowledge module finishing software tool by using knowledge menu. The third step is to use a mind map, that is, the visual expression of original information, which is characterized by the cognitive calculation of language points, knowledge points, and original points. First, look at Figure 6. that is the first step.

4.1.1. Language Chessboard with Three Types of Data Structured

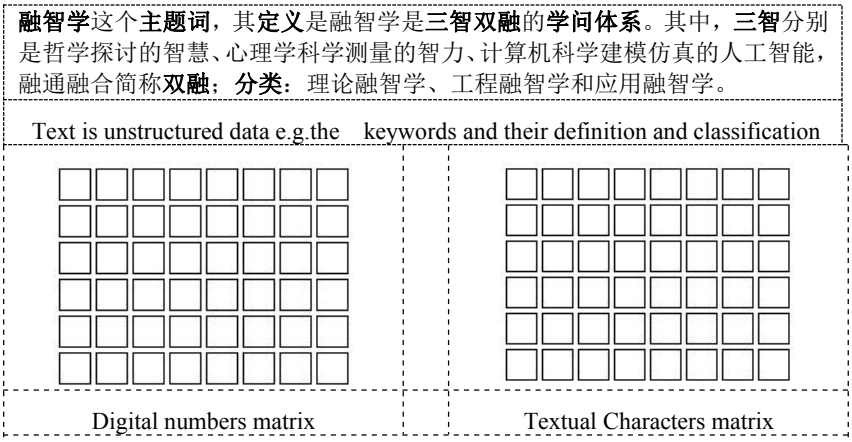


Figure 6. Language chessboard with structured and semi-structured data

Figure 6, enter any text in the upper text box. Rongzhixue is a key word of definition,automatic extraction as three points of knowledge seen in Table2.This is the second step.

4.2. Expert Knowledge Acquisition by Using Menu as Tree Structure

Table 2.Express expert ideas with tree structure and knowledge menu from language chessboard

（**Parent node**） Rongzhixue as Smart System Studied
（**Child node**）wisdom in philosophical exploration as sub-smart system studied
（**Child node**）intelligence measured in psychology as sub-smart system studied
（**Child node**）artificial intelligence in computer science as sub-smart system studied
Notes: showing original points as chess spirit from knowledge points as chess menu for building mind map (Text paragraph: It can be a concept, principle, method, example, namely any creator's ideas)

The third step is to provide expert knowledge acquisition and structured expression. Rich media can further play a role in the way of mind map, that is, the visual expression of original

information, which is characterized by cognitive computing of language, knowledge and originality. As can be seen from Table 2, the series of knowledge menus selected in the previous Figure 6 are combined here for building mind map automatically. The original chess soul of each original point can be optimized-presented in a mind map that displayed here with only a tree structure, and other rich media transformations are omitted for the same reason (speech and visual object processing can be used the existing technology is realized, the key of this subject is to explain clearly its text processing).

5. CONCLUSIONS

The significance lies in: not only can the abstracts of domestic and foreign scientific and technological journal papers and conference papers be analyzed in a large amount of text, but also can be used to further make rich media portraits of papers and authors with innovative potential.

Springer, ACM-DL, Semantic Scholar Network,ORCID, Recearch Gate and GitHub combine to accurately locate the paper and its author.Furthermore, the three chess with three-point cognitive computing is used to better focus on expert knowledge acquisition and its structured expression.

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