The Search Engine IQ Test based on the Internet IQ Evaluation Algorithm

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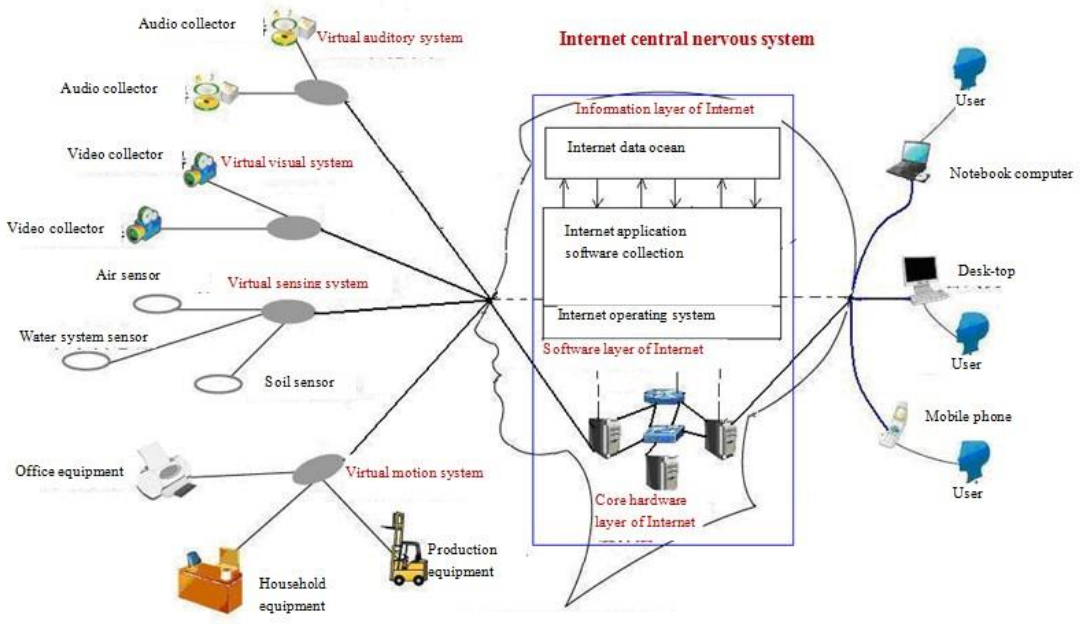
Concepts and Algorithm of Search Engine IQ

There are growing indications that Internet has a strong similarity with human brain in structure and function, while its usage also reflects more intellectual characteristics1. Inspired by the human IQ test, we propose a concept of Internet intelligence in an article, Internet IQ Evaluation Systems and Algorithms.



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IQ of Internet applications

IQ of Internet application is about masuring intellectual development level of Internet applications at certain test time through a series of standard tests, which include electronic bullet board, search engine, social network, electronic mailbox and instant messaging software etc.

Internet IQ

Internet IQ is about measuring Internet IQ Standards Evaluating Bank through a series of standard tests, so as to derive the intellectual development level of Internet at certain test time, and intellectual development level of Internet is also termed as Internet IQ at that point of time2.

Internet 2014 Intelligence Scale

Based on the basic understanding that intellectual is about people's ability of understanding objective things and applying knowledge to solve practical problems, we will build Internet Intelligent Evaluation System from four major aspects in terms of knowledge obtaining ability(also termed as observation ability) and retaining ability, together with ability of knowledge innovation and feedback(also termed as expression ability), set up 15 subtests from the four aspects and endow weights with Delphi Method to form 2014 Internet Intelligence Scale as shown in Table 1

Internet 2014 Intelligence Scale

First-class Index	Second-class Index	Description	Weight
Ability of knowledge acquisition	Ability of character acquisition	Know about the testing object whether can understand and answer the testing question via characters. (Only one correct answer can be deemed pass)	3%
	Ability of sound acquisition	Know about the testing object whether can understand and answer the testing question via sounds. (Only one correct answer can be deemed pass)	3%
	Ability of picture acquisition	Know about the testing object whether can understand and answer the testing question via pictures. (Only one correct answer can be deemed pass)	4%

Internet 2014 Intelligence Scale

First-class Index	Second-class Index	Description	Weight
Ability of mastery of knowledge	Common knowledge	Know about the knowledge range of testing object. For example: *what's the name of three kinds of blood vessel for a human body?*	6%
	Translate	Know about the testing object's transfer ability of the different languages. For example: *please translate "Machine Intelligence cannot exceed that of human beings" into English.*	3%
	Calculate	Know about the calculation ability of the testing object, calculation speed and correctness. For example: *what is the result for 356*4-213?*	6%
	Put in order	To know about the systemizing ability for the matters' relationship. For example: *please rank the commander, platoon leader, group commander, monitor, battalion commander, regimental commander by position.*	5%

Internet 2014 Intelligence Scale

First-class Index	Second-class Index	Description	Weight
Ability of knowledge innovation	Associate	Know about the ability of observing similarities for the testing object. For example: *foot as for hand, is equivalent to leg as for what?*	12%
	Create	Know about the ability of second creation according to the files,. For example, *please tell a story with the key words of sky, rainbow, panda, mountain, hunter and so on.*	12%
	Speculate	Know about the ability of speculating described things. *For example, there is one kind of animal that is similar to wolf, but is called as loyal friend of human being, then what is it?*	12%
	Select	Know about the testing object whether can select the same or different matter's relation. For example: *please select the different one among snake, tree and tiger.*	12%
	Discover (laws)	Know about the testing object whether can discover the laws and apply them from the information or not. For example: *what is the figure after 1,2,4,7,11,16?*	12%

Internet 2014 Intelligence Scale

First-class Index	Second-class Index	Description	Weight
Ability of feedback of knowledge	Ability of expressing via characters	Know about the testing object whether can express the testing results with characters. (Only one correct answer can be deemed pass)	3%
	Ability of expressing via sounds	Know about the testing object whether can express the testing results with sounds. (Only one correct answer can be deemed pass)	3%
	Ability of expressing via pictures	Know about the testing object whether can express the testing results with pictures. (Only one correct answer can be deemed pass)	4%

Absolute IQ Algorithm of Internet

Based on the structure of Table 1, we can build the absolute IQ Algorithm of Internet (IQA) as:

$$IQ_A = \sum_{i=1}^{N} F_i \times W_i$$

Where is the evaluation index score (adopts the indexes of Table 1), is the weight of evaluation index, and is the number of evaluation index2.

Deviation IQ Algorithm of Internet

Similarly, the deviation IQ Algorithm of Internet (IQd) can be expressed as:

$$IQd = 100 + \frac{IQ_A - \overline{IQ_A}}{S}$$

$$S = \sqrt{\frac{1}{M}\sum_{i=1}^{M}(IQ_{Ai} - \overline{IQ_A})^2}$$

Foundation of IQ Test Question Bank of Search Engine

Google, Baidu and other types of search engines are improving the levels of intelligent search engines currently in a variety of ways to continuously, from only being able to identify texts to identify sounds and pictures. Through introducing "semantic understanding" technology, they try to understand the user's search intention and the computing arithmetic and structured display of searching results would be re-optimized, which would present the most accurate and comprehensive information to the user. With the help of deep learning, search engines are made to identify what the object is by the image automatically6. So according to the rules established by the Internet earlier IQ tests, the choice of IQ tests on search engines will have important significance

Ability of grasping the common knowledge

- Which river is the longest in the world?
- Which planet is the largest in the solar system?
- How many chromosomes in human body?
- What's the name of the first president of USA?

Ability of grasping the calculation

- How much is 25 multiply by 4?
- How much is 36 divide 3?
- How much is the biquadrate of 2?
- How much is 128 extract three roots?

Ability of grasping the selection

- Please select a different one from snake, tree, tiger, dog and rabbit.
- Please select a different one from the earth, Mars, Venus, Mercury and the sun.
- Please select a different one from red, green, blue, golden, yellow and white.
- Please select a different one from car, train, airplane, steamer, and worker.

Ability of grasping the creation

Please tell us a story by sky, rainbow, panda, mountain, and hunter and so on.
Please tell us a story by China, America, Russia and Japan.
Please tell us a story by red, tree, airplane, bullet, sun and so on.
Please tell us a story by 1, 2, 3, 4, 5.

Ability of grasping the discovery of laws

1.Offer four questions, respectively are: 20/5=4, 40/8=4, 80/20=4, 160/40=4, observe the rules, then design the fifth question.

2.Cook A expresses that he likes to eat pork, mutton, beef, chicken, fish, but does not like Chinese cabbage, cucumber, green been, eggplant, potato, the please observe the rules, select the favorite food between duck meat and celery for this Cook.

3.On a certain regulation, the row numbers are … for this rule, what is the seventh one in this series?

4.At every night, Company staff B goes home on Jan. 1st, goes the bar on Jan., 2nd, goes home on Jan. 3rd, goes the bar on Jan. 4th, goes home on Jan. 5th, goes the bar on Jan. 6th, goes home on Jan. 7th, goes the bar on Jan. 8th, where B may present on Feb. 13th probably?

Absolute IQ/ Relative IQ Scores

	Google	Baidu	Sogou	Bing	so	panguso	Zhongsou	6 ages	12 ages	18 ages
Absolute IQ	21	24.25	23.5	15	25	15	12	55.5	85.25	97
Relative IQ	99.34	99.44	99.43	99.14	99.48	99.14	99.04	100.51	101.53	101.92

Concluding Remarks 1

1. Based on the rules of the intelligence measurement chart of the Internet in 2014 and the intelligence test base of Internet in 2014, the overall IQ level of the searching engines are behind far away from human's, even if the smartest engine—so.com is not even half as smart as a 6-year-old child.

Concluding Remarks 2

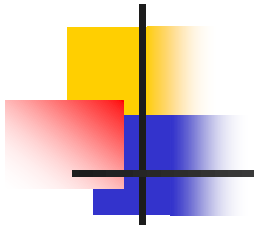
On the whole, the searching engine has the edge or even beyond humans in common sense, translation and calculation as well, but weak in the abilities of gaining knowledge and giving feedback, especially in the fields that require relatively high intelligence such as arranging, associative thinking, creating, speculating, choosing and discovering the pattern, has no competitiveness to humans since its abilities in these fields are close to zero. Therefore, the future development of the intelligence of searching engine requires our efforts in these areas.

Concluding Remarks 3

The main reason that google.com was beaten by baidu.com, sogou.com and so.com in this test is it failed to provide a special tool to access to image recognition like others did.

Concluding Remarks 4

This is an on-going research project. It generates a very interesting research direction by adopting the judgment of human beings on the development of computer and Internet, which opens a door for us to predict how the future Internet will affect our society just like another kind of “human beings”. We will report more systematic results in the near future.



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