平成26年度 大学院博士(前期)課程入学者選抜学力試験

英語
[90 分]

注意事項

1. 試験開始の合図があるまで, この問題冊子を開かないでください.

2. 問題冊子(問題は1〜4 ページにあります)と解答冊子(解答用紙2枚)は別々になっています. 解答冊子のみを提出してください.

3. 解答冊子の表紙に氏名と受験番号を, 解答用紙のすべてに受験番号をはっきり記入してください.

4. 問題冊子や解答冊子に印刷上の問題などがあれば, 静かに手を挙げて監督員に知らせてください.

5. 試験終了後, 問題冊子は持ち帰ってください.

6. 問題ごとに配点が記されています.

Read the article below and answer the following questions.

Due to the prolific use of the Internet, the amount of digital data in the 21st century has increased enormously. Companies around the globe are collecting data in multiple formats and in a multitude of languages. For example, Facebook processes 2.5 billion pieces of content and over 500 terabytes of data every day. To put this data into perspective, 300 million photographs are uploaded to Facebook every 24 hours (Priestley, 2013). Due to the increasing amount and subsequent complexity of digital data, a new industry has evolved whose sole purpose is to analyze and make sense of all this information, and reveal hidden patterns and unknown correlations. The process is termed big data analytics, or sometimes referred to as data mining.

It has been predicted that big data will become the key to a company's productivity, growth and innovation (Manyika *et al.,* 2011). For example, large manufacturing companies can collect accurate data of product inventories, regional sales and employee performance. This helps managers make informed decisions based upon data and not conjecture. Upper management can use big data to forecast product sales and make decisions such as terminating a product, adding (or deleting) features from a product, or bringing a new product to the market. Such data-driven strategies help companies to innovate and compete in a globalized market. In the private sector it has been estimated that unlocking the perplexity of vast amounts of consumer data is a $600 billion industry (*ibid*). As companies collect and store more information about their customers, they can collate more accurate and detailed data regarding product performance and trends. Agile companies can then quickly respond to demands by supplying desired products or services.

Governments also benefit from big data. By using big data creatively and effectively, it is estimated that the USA healthcare service can save $300 billion every year; a saving of 8% of the overall expenditure. In Europe big data has been used to reduce fraud and errors when collecting tax revenues. The operational efficiency led to a potential saving of $149 billion (*ibid*).

The concept of big data is not a 21st century invention though. In the 1990's a group of researchers requested computer users around the world to connect their personal computers to a network grid and allow use of their computer processors. The research project was called SETI@Home. SETI is an acronym for Search for Extra-Terrestrial Intelligence. Its purpose was to analyze radio signals in order to search for signs of extra terrestrial intelligence; in other words, aliens in outer space. The researchers used the computing power of the processors to collate the enormous amounts of data being received from outer space.

In the 1980's English language text collected in a computer database at Birmingham University, UK was analyzed by Professor Tim Johns. By using specific software called a concordancer, he

showed that examples of authentic usage of English could be found in order to demonstrate a point of grammar or typical English language collocations. He called it data-driven learning (Johns, 1994).

Nowadays, people conducting data analysis are termed data scientists. They are capable of highlighting and presenting information worthy of attention in two and three-dimensional formats. They unlock significant value within big data by making information transparent and usable. Data scientists therefore demand high salaries. It is estimated that by 2018 the United States alone will have a shortage of 190,000 people with deep analytical skills. Decision makers with knowledge about how to make use of the analysis will also be in demand. A shortage of 1.5 million is expected (Manyika *et al.,* 2011).

Collecting all this data has made some people anxious though. Big data is sourced from social media, private telephone calls and messaging, transactional data, locational data, financial data, medical data, and family data. All this data is being collated in real time and is often immediately accessible to private enterprises and government departments. There is a trend by companies (physical or online) to request a customer's email address, telephone number, and other identification such as a driving license number. Government policies related to privacy, security and intellectual property are deemed insufficient. Another worrying trend relates to how products are marketed. As managers respond to local needs based upon the analysis of data, there may be a shift to averaging where goods and services solely meet the needs of the average person, thereby standardizing our lives.

Big data is expected to further impact our lives. The advice from the well-paid data scientists is not to start with data, but to begin with important questions. To effectively use big data, one needs to ask big questions.

References

Johns, T. (1994). From printout to handout: Grammar and vocabulary teaching in the context of Data-driven Learning. In T. Odlin (Ed.) Perspectives on pedagogical grammar. Cambridge University Press: Cambridge, UK.

Manyika, J. *et al.* (2011). Big data: The next frontier for innovation, competition, and productivity. Accessed May 13, 2103 from URL http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation?p=1

Priestley, T. (2013). Big data begs us to ask bigger questions of it. Accessed May 13, 2103 from URL http://www.wired.com/insights/2013/04/big-data-begs-us-to-ask-bigger-questions-of-it/

(1) Based on the text, mark either TRUE (○) or FALSE (×) for each of the following statements.

(25 points)

(ア) Conjecture will enable agile companies to accurately forecast products and services.
(イ) Data-driven learning makes use of digital data.
(ウ) Big data is a 300 million dollar business.
(エ) It is estimated that by 2018 there will be a shortage of 1.5 million data scientists.
(オ) Some people are concerned about their data being freely available.

(2) What is the author's overall intention of this article? Choose the best answer from (ア) to (オ) below. (5 points)

(ア) Create an awareness of big data
(イ) Scare consumers about the collection of personal data
(ウ) Increase employee performance through big data analysis
(エ) Provide a complete historical record of data analysis
(オ) Advise decision-makers to adopt big data

(3) Based on the text, which ONE of the following statements is INCORRECT? (5 points)

(ア) Data-driven learning utilized authentic English texts.
(イ) Creative analysis of big data will be in high demand.
(ウ) The search for aliens utilized people's personal computers.
(エ) An individual's data online is completely anonymized.
(オ) Asking important questions makes better use of big data.

(4) Based on the text, choose the MOST APPROPRIATE CONTINUATION to complete the following:

Good analysis of the vast amounts of data has the potential to …

(5 points)

(ア) upload 300 million photographs to Facebook every day.
(イ) save private companies up to $600 billion.
(ウ) increase USA healthcare costs by 8%.
(エ) cost European governments $149 billion.
(オ) create 190,000 new jobs.

Part 2　Academic Skills　　　　　　　　　　　(60 points)

Organizations are collecting personal data. What are the benefits of this? What are your concerns? Write approximately 200 words in English.