Centro Federal de Educação Tecnológica Celso Suckow da Fonseca - CEFET/RJ

Programa de Pós-Graduação em Ciência da Computação

PROCESSO SELETIVO 2018.2

PROVA DE LÍNGUA INGLESA

INSTRUÇÕES GERAIS AOS CANDIDATOS

- O tempo total para realização das provas é de **1 hora** ***(1h)***.
- Ao término da prova o candidato deverá devolver o cartão resposta.
- É imprescindível verificar no cartão resposta o número de inscrição do candidato no espaço reservado para tal.

  A IDENTIFICAÇÃO DOS CANDIDATOS EM TODAS AS PÁGINAS DEVERÁ SER FEITA **APENAS** PELO NÚMERO DE INSCRIÇÃO.
- As respostas deverão ser transpostas para o cartão resposta com caneta de tinta azul ou preta. Não serão consideradas as respostas que não estiverem transcritas no cartão resposta bem como não serão consideradas respostas rasuradas.
- A prova de Prova de Língua Inglesa é constituída por 10 questões objetivas.
- Cada questão objetiva tem somente uma resposta correta.
- A prova deve ser feita sem consulta e sem empréstimo de material.
- Verifique se sua prova contém 10 questões, assim como o cartão de respostas.
- **Não** é permitido o uso de calculadora, celular ou qualquer outro aparelho durante a realização da prova. É vedado o empréstimo de qualquer material entre os candidatos.

Boa Prova !

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CARTÃO DE RESPOSTAS

INSCRIÇÃO Nº: ___

Questão	Alternativa			
1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D

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PROVA DE LÍNGUA INGLESA

TEXT 1

AI and IoT Need Each Other

Maciej Kranz, Cisco 1/8/2018 07:00 AM EST

Together, AI and IoT bring out the best in each other and are perfect partners to drive digital transformation.

For decades scientists, writers and filmmakers have been fascinated with the concept of artificial intelligence (AI) — from Isaac Asimov's iRobot series to the endearing droids of "Star Wars". We tend to view these examples through the lens of AI; without the Internet of Things (IoT) they wouldn't exist, though.

If "the whole earth will be converted into a huge brain", as Nikola Tesla envisioned back in the 1920s, an interconnected network of things is required for that brain to actually do anything. You might say that if AI is the brain, then IoT is the body.

Just as our bodies sense the world around us and send that information to the brain to process, billions of sensors and cameras in the IoT gather vast amounts of environmental and operational data for AI to sort, analyze and turn into actionable insights. In return, IoT can act upon these insights and decisions through end devices such as robots, drones and industrial machines.

This remarkably synergistic relationship is generating hundreds of billions — some say trillions — of dollars in value globally over the next five to 10 years. Hundreds of well-developed use cases have been delivering solid improvements in productivity and efficiency for years.

For example, connected operations, remote operations, predictive analytics and preventive maintenance are well-proven fast paths to IoT payback that often incorporate AI capabilities. But that's really just the beginning. There are rich opportunities for more transformative solutions in virtually every industry. Here are three:

1. A rail line in Spain is competing head-to-head with air carriers, focusing first on the route between Madrid and Barcelona. The 200 mile-per-hour train is an attractive option for commuters, but the real differentiator is the way the company is using IoT data coming from trains, tracks and external weather sources to predict and optimize on-time arrivals. By offering an on-time guarantee, the train has claimed 60 percent of airline customers taking the same route.

2. Japanese industrial equipment maker FANUC is transforming itself from product manufacturer to services provider. The company collects operational data from its machines and offers remote monitoring, analytics and predictive maintenance services to reduce customer costs and improve equipment uptime. IoT-generated data plus AI-driven analytics are providing business and operational insights and recommendations.

3. Simultaneous Localization and Mapping (SLAM) allows drones to comprehend unknown surroundings on the fly—even in dark, obstacle-filled environments beyond the reach of the Internet and even GPS. Using SLAM, drones can fly into dangerous situations, such as buildings damaged by fire or natural disaster, to check for people who are hurt or trapped. With real-time machine learning built into IoT devices, SLAM has become one of the most important drone applications in safety, security and surveillance.

These opportunities deliver more than incremental process improvements – they have the potential to transform entire industries. AI could not do this alone because it needs IoT to link to the physical world. IoT could not do this alone because it needs AI to make it smart and insightful. It is only when you combine their capabilities that you get truly transformational results.

So, if you are working in artificial intelligence, now is the time to bring IoT into your thinking. After all, most of the data you use in your AI systems is generated and delivered by IoT. Don't take these data sources and underlying data distribution systems for granted—integrate them into your designs from the beginning.

(https://www.eetimes.com/author.asp?section_id=36&doc_id=1332818)

Answer questions 1 to 5 according to TEXT 1.

1. According to TEXT 1

A. people often see the movie industry creations through the prism of the IoT.

B. the perfect parternship between the IoT and AI has already proven to be profitable.

C. AI alone could transform the insdutrial world, but its potential can be boosted by the IoT.

D. the data used in the IoT is conveyed by AI systems.

2. O TEXTO 1 utiliza "mente" e "corpo" para simbolizar os papéis da inteligência artificial e da internet das coisas, respectivamente. De acordo com essa metáfora,

A. resultados verdadeiramente transformadores aparecem quando as capacidades da "mente" e do "corpo" são colocadas juntas.

B. a "mente" é capaz de captar uma quantidade enorme de dados, processá-los e entregá-los em forma de boas ideias.

C. o papel do "corpo" é analisar quais ideias são executáveis e faz isso por meio do auxílio de bilhões de sensores e câmeras.

D. a "mente" age, a partir das informações enviadas pelo "corpo", por meio de robôs, por exemplo.

3. TEXT 1 shows three "rich opportunities for more transformative solutions" (§5) in industries, which ally the IoT with AI capabilities. Based on it, it's correct to affirm that

A. due to accurate schedules, a train service in Spain can get cheaper and attract more passengers.

B. through predictive maintenance services, a company in Japan can prevent its customers from misusing machines.

C. a company that once was just a producer can now broaden its horizons and offer services.

D. the integration between SLAM, the Internet and GPS has transformed drones into the most important rescue tool.

4. The suffix *–ing* can be used to form verbs, nouns, adjectives and prepositions. Mark the option in which the suffix *–ing* is forming a noun.

A. "...from Isaac Asimov's iRobot series to the **endearing** droids of 'Star Wars'." (§1)

B. "...**focusing** first on the route between Madrid and Barcelona." (§5, item 1)

C. "The company collects operational data from its machines and offers remote **monitoring**, analytics..." (§5, item 2)

D. "Don't take these data sources and **underlying** data distribution systems for granted..." (§7)

5. O trecho "We tend to view these examples through the lens of AI; without the Internet of Things (IoT) they wouldn't exist, though." (§1) poderia ser reescrito, sem prejuízo de sentido, como em

A. Although we tend to view these examples through the lens of AI, without the Internet of Things (IoT) they wouldn't exist.

B. We tend to view these examples through the lens of AI. Despite without the Internet of Things (IoT) they wouldn't exist.

C. In spite of we tend to view these examples through the lens of AI, without the Internet of Things (IoT) they wouldn't exist.

D. As we tend to view these examples through the lens of AI, without the Internet of Things (IoT) they wouldn't exist.

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PROVA DE LÍNGUA INGLESA

TEXT 2

Big Data What it is and why it matters

Big data is a term that describes the large volume of data – both structured and unstructured – that inundates a business on a day-to-day basis. But it's not the amount of data that's important. It's what organizations do with the data that matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves.

Big Data History and Current Considerations

While the term "big data" is relatively new, the act of gathering and storing large amounts of information for eventual analysis is ages old. The concept gained momentum in the early 2000s when industry analyst Doug Laney articulated the now-mainstream definition of big data as the three Vs:

(1) _____. Organizations collect data from a variety of sources, including business transactions, social media and information from sensor or machine-to-machine data. In the past, storing would've been a problem – but new technologies (such as Hadoop) have eased the burden.

(2) _____. Data streams in at an unprecedented speed and must be dealt with in a timely manner. RFID tags, sensors and smart metering are driving the need to deal with torrents of data in near-real time.

(3) _____. Data comes in all types of formats – from structured, numeric data in traditional databases to unstructured text documents, email, video, audio, stock ticker data and financial transactions.

At SAS, we consider two additional dimensions when it comes to big data:

(4) _____. In addition to the increasing velocities and varieties of data, data flows can be highly inconsistent with periodic peaks. Is something trending in social media? Daily, seasonal and event-triggered peak data loads can be challenging to manage. Even more so with unstructured data.

Complexity. Today's data comes from multiple sources, which makes it difficult to link, match, cleanse and transform data across systems. However, it's necessary to connect and correlate relationships, hierarchies and multiple data linkages or your data can quickly spiral out of control.

Big data's big potential

The amount of data that's being created and stored on a global level is almost inconceivable, and it just keeps growing. That means there's even more potential to glean key insights from business information – yet only a small percentage of data is actually analyzed. What does that mean for businesses? How can they make better use of the raw information that flows into their organizations every day?

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Why Is Big Data Important?

The importance of big data doesn't revolve around how much data you have, but what you do with it. You can take data from any source and analyze it to find answers that enable 1) cost reductions, 2) time reductions, 3) new product development and optimized offerings, and 4) smart decision making. When you combine big data with high-powered analytics, you can accomplish business-related tasks such as:

- Determining root causes of failures, issues and defects in near-real time.
- Generating coupons at the point of sale based on the customer's buying habits.
- Recalculating entire risk portfolios in minutes.
- Detecting fraudulent behavior before it affects your organization.

Who uses big data?

Big data affects organizations across practically every industry. See how each industry can benefit from this onslaught of information.

Banking

With comprehensive amounts of information streaming in from countless sources, banks are faced with finding new and innovative ways to manage big data. While it's important to understand customers and boost their satisfaction, it's equally important to minimize risk and fraud while maintaining regulatory compliance. Big data brings big insights, but it also requires financial institutions to stay one step ahead of the game with advanced analytics.

Education

Educators armed with data-driven insight can make a significant impact on school systems, students and curriculums. By analyzing big data, they can identify at-risk students, make sure students are making adequate progress, and can implement a better system for evaluation and support of teachers and principals.

Government

When government agencies are able to harness and apply analytics to their big data, they gain significant ground when it comes to managing utilities, running agencies, dealing with traffic congestion or preventing crime. But while there are many advantages to big data, governments must also address issues of transparency and privacy.

Health Care

Patient records. Treatment plans. Prescription information. When it comes to health care, everything needs to be done quickly, accurately – and, in some cases, with enough transparency to satisfy stringent industry regulations. When big data is managed effectively, health care providers can uncover hidden insights that improve patient care.

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Manufacturing

Armed with insight that big data can provide, manufacturers can boost quality and output while minimizing waste – processes that are key in today's highly competitive market. More and more manufacturers are working in an analytics-based culture, which means they can solve problems faster and make more agile business decisions.

Retail

Customer relationship building is critical to the retail industry – and the best way to manage that is to manage big data. Retailers need to know the best way to market to customers, the most effective way to handle transactions, and the most strategic way to bring back lapsed business. Big data remains at the heart of all those things.

Big data in action: UPS

As a company with many pieces and parts constantly in motion, UPS stores a large amount of data – much of which comes from sensors in its vehicles. That data not only monitors daily performance, but also triggered a major redesign of UPS drivers' route structures. The initiative was called ORION (On-Road Integration Optimization and Navigation), and was arguably the world's largest operations research project. It relied heavily on online map data to reconfigure a driver's pickups and drop-offs in real time.

The project led to savings of more than 8.4 million gallons of fuel by cutting 85 million miles off of daily routes. UPS estimates that saving only one daily mile per driver saves the company $30 million, so the overall dollar savings are substantial.

(https://www.sas.com/en_us/insights/big-data/what-is-big-data.html)

Answer questions 6 to 10 according to TEXT 2:

6. According to the industry analyst Doug Laney, big data can be defined by three Vs. Later, the software company SAS has added two dimensions to Laney's original definition. Four of the five dimensions were omitted from the text. Mark the option which holds the correct word order for the definitions given in the text.

A. (1) Volume, (2) Velocity, (3) Variability, (4) Variety

B. (1) Variety, (2) Velocity, (3) Variability, (4) Volume

C. (1) Variability, (2) Variety, (3) Velocity, (4) Volume

D. (1) Volume, (2) Velocity, (3) Variety, (4) Variability

7. Leia as afirmações abaixo:

I Atualmente, está cada vez mais complexa a análise dos dados coletados, uma vez que esses são oriundos de diversas fontes. Contudo, a não conexão e a não correlação desses dados podem torná-los inúteis.

II Boas análises de dados podem revelar fraudes dentro das empresas e a conexão dos sistemas, inclusive com os departamentos de polícia, pode levar a investigações e prisões mais ágeis e eficientes.

III As análises dos dados coletados feitas pelas empresas podem ajudar os consumidores a economizar, pois, partindo dos hábitos individuais de compras, cupons de descontos personalizados podem ser gerados nos pontos de venda.

De acordo com o TEXTO 2, marque a alternativa que apresente apenas as proposições corretas.

A. Todas estão corretas.

B. Apenas (II) e (III) estão corretas.

C. Apenas (I) e (II) estão corretas.

D. Apenas (I) e (III) estão corretas.

8. According to TEXT 2, we CANNOT afirm that

A. the use of big data can help companies in the difficult task of building customer rapport.

B. in health care, the use of activity trackers to gather lifestyle data can help patients under treatment.

C. applying analytics to big data can help producers manage problems and make decisions more quickly.

D. the insights that emerge from big data analysis are able to help the educational system as a whole.

9. "YET" in "That means there's even more potential to glean key insights from business information – yet only a small percentage of data is actually analyzed" conveys an idea of

A. contrast.

B. conclusion.

C. reason.

D. addition.

10. Which option holds an example of a word which is labeled as a false cognate?

A. "Big data is a term that describes the large volume of data – both structured and unstructured – that **inundates** a business on a day-to-day basis".

B. "However, it's necessary to connect and **correlate** relationships, hierarchies and multiple data linkages or your data can quickly spiral out of control".

C. "With **comprehensive** amounts of information streaming in from countless sources, banks are faced with finding new and innovative ways to manage big data".

D. "When it comes to health care, everything needs to be done quickly, accurately – and, in some cases, with enough **transparency** to satisfy stringent industry regulations".