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Total No. of Pages : 03

Total No. of Questions : 17

MBA (Sem.-3)
DATA SCIENCES USING R

Subject Code : MBA-962-18

M.Code : 77058

Date of Examination : 05-01-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A** contains **EIGHT** questions carrying **TWO** marks each and students has to attempt **ALL** questions.
2. **SECTION-B** consists of **FOUR** Subsections : Units-I, II, III & IV. Each Subsection contains **TWO** questions each carrying **EIGHT** marks each and student has to attempt any **ONE** question from each Subsection.
3. **SECTION-C** is **COMPULSORY** and consists of **ONE** question carrying **TWELVE** marks.

SECTION-A

Explain briefly :

1. What is Big Data?
2. What is Supervised Learning?
3. What is a decision tree?
4. What is Support Vector Machine?
5. What is Bagging?
6. What is Boosting?
7. What is Bootstrap Method?
8. What is cross-validation in Data Science?

SECTION-B

UNIT-I

9. What is Data Science? Discuss the need and relevance of Data Science by citing examples.

10. Write notes on :

- a. Applications of Web Analytics.
- b. Role and responsibility of Data Scientist

UNIT-II

11. Discuss in detail the applications and limitations of linear regression. Explain by citing examples.

12. Discuss the need and relevance of logistic regression. Explain by citing examples.

UNIT-III

13. What is Density-based Spatial Clustering? Discuss in detail the applications of K-means clustering.

14. Write notes on :

- a. Applications of Hierarchical clustering
- b. Different Ensemble Methods

UNIT-IV

15. Discuss the need and relevance of evaluation and validation in Data Science. Explain by citing relevant examples.

16. Write notes on :

- a. Applications of Confusion Matrix
- b. Applications of Scalable Machine learning

SECTION-C

17. Technology is helping countries to strictly enforce the quarantine of the individuals who are either came in contact with an infected person or themselves are infected during COVID-19 pandemic. Taiwan's government is providing the mobile phone with GPS tracking to all quarantined persons. In case of any breach of quarantine, an automatic message is sent to the health authorities' regarding the possible breach. In South Korea, the quarantined individuals are required to download the mobile app so that health authorities can track the movement of the quarantined individuals. The Hong Kong government has made it mandatory for quarantined individuals to wear a special wristband. The data regarding the movement of quarantined individuals is transferred through cloud technology and automatic alerts are sent to the authorities if there is any breach. Technology is also playing a vital role in providing medical care during the pandemic. Canada has witnessed a whopping jump in virtual cases to 14000 per day virtual consultations. To avoid the further spread of the virus, Canada has adopted a virtual care platform to consult doctors virtually. Similarly, American and Australian authorities are taking the route of virtual platforms to provide medical care to COVID-19 patients. Another pioneering application of technology is COVID-Net. COVID-Net is an open-source deep convolutional neural network AI-based application that holds a lot of potential for early detection of COVID-19 patients. Though still at the developing phase, COVID-Net can help doctors detect the start of the COVID-19 virus in patients by scanning the chest X-ray. The system works on a neural network that is trained even to detect minor changes in the lungs of the infected patients. Although the technology is helping the authorities to tackle the COVID-19 virus the technology also poses certain challenges. Internet speed and mobile connectivity are two main challenges that are roadblocks in implementing technology to track the spread of the virus. Moreover, tracking of individuals, especially quarantined patients, also raises privacy issues. The authorities need to address these issues of technology to check the spread of the COVID-19 virus.

Questions :

- a. Discuss how countries are able to do contact tracing and ensure quarantine by applying technology. In developing countries what are the key challenges you think data scientists face while developing solutions for a problem?
- b. As a user of a particular COVID-19 app, discuss the risks you feel while using the app.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.