CLASSICATIONOFARRYTHMIABYUSINGDEEPLE ARNING WITH 2-D ECG SPECTRAL IMAGEREPRESENTATION

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Teamid	PNT2022TMID14992
ProjectName	Classification of arrhythmia by using deeplearning with2-d ecg spectral image representation

PREREQUISITES:

1. Programming

Programming is the fundamental requirement of deep learning. Youcan't perform deep learning without using a programming language.Deep learning professionals use Python or R as their programminglanguage because of their functionalities and effectiveness. Before youstudythevariousconceptsofdeeplearning,you'llhavetostudyprogra mmingandgetfamiliarwithoneofthesetwoprominentlanguages.

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Bothoftheselanguagesareentirelydifferentintermsoftheirapplicationsas well.Pythonisaversatilelanguagethatfindsapplications in data science, ML, as well as app development. On theother hand, R is a more focused language and finds uses in data scienceand AI correctly. A general understanding of how these programminglanguagesworkandhowtousethemisamusttobecomedeep learningprofessional.

2. Statistics

Statisticsrefertothestudyofusingdataanditsvisualization.Ithelpsingaini ng information from the raw data you have. Statistics is a crucialpartofdatascience(whichwe've discussedlater)anditsrelevantdisciplines. As a deep learning professional, you'd have to gain insightsfrom datafor which you'llneedtousestatistics.

In statistics,you plot charts, create graphs, and understand relationsbetweendifferentdatapoints.Italsohelpsyougaininsightsfroms amples of data and classifying the available information in differentsegments accordingtoyour requirements.

3. Calculus

Calculus forms the basis for many machine learning algorithms.So,you'llhavetostudycalculustooasapartofdeeplearningprer equisites.In deep learning, you'll be building models according to the featurespresent in your data. Calculus will help you in using those features andmakingthemodel accordingly.
Having a basic understanding of calculus, integration, and other topicscanhelpyouinbecomingabetterMLexpert.However,asadeeplearni ngprofessional,you'llmainlyneedtostudythebasicprinciplesofcalculus andnotitsadvanced concepts.

4. LinearAlgebra

Probablyoneofthemostimportantdeeplearningprerequisitesislinear algebra. Linear algebra deals with matrices, vectors, and linearequations.Itfocusesontherepresentationoflinearequationsinvect orspaces. The linear algebra will help you in building models of varioussorts(classification,regression,etc.),anditisanotherbuildingbloc kfornumerous conceptsofdeeplearning.

5. Probability

Probability is a branch of mathematics that focuses on describing howlikely an event can occur or how possible it is valid through numbers.The probability of any event ranges from 0 to 1, where 0 indicatesimpossibility,and1 representsabsolutecertainty.
InMLanddeeplearning,youhavetobuildmodelsforpredictiveanalysis.
You have to train them to predict specific outcomes. That'swhy probability is an essential subject to study for a deep learningstudent.

6. DataScience

Data science is the field of analysing and using data to gain valuableinsights. As a deep learning professional, you must be familiar withvarious concepts of data science as you'd have to build models thathandledata.Knowingdeeplearningwillhelpyouinusingdatatoget

thedesiredresults,butbeforeusingdeeplearning,you'llhavetolearn aboutdatascience.
The two most programming languages necessary for data science arePythonandR.Althoughdatascienceisavastsubjectandcoversmanytopi csalongwithdeeplearning,youmustknowitsbasicsfirst.Datascience helps companies in making predictions about customerbehaviour,sales,andmarkettrends.Thisisjustoneexa mpleofhowvitaldatascienceis,soyoumustbefamiliarwithittomoveontod eeplearning.

7. WorkonProjects

Whilelearningthesesubjectswillhelpyouinbuildingastrongfoundation, you will also have to work on deep learning projects tomake sure you understand everything correctly. Projects will help youin applying what you've learned and identified your weak areas. Deeplearning finds applications in multiple areas so you can easily find aprojectof yourinterest.