CLASSICATION OF ARRYTHMIA BY USING DEEP LEARNING WITH 2-D ECG SPECTRAL IMAGE REPRESENTATION

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PREREQUISITES :

1. Programming

Programming is the fundamental requirement of deep learning. You can't perform deep learning without using a programming language. Deep learning professionals use Python or R as their programming language because of their functionalities and effectiveness. Before you study the various concepts of deep learning, you'll have to study programming and get familiar with one of these two prominent languages.

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Both of these languages are entirely different in terms of their applications as well. Python is a versatile language that finds applications in data science, ML, as well as app development. On the other hand, R is a more focused language and finds uses in data science and AI correctly. A general understanding of how these programming languages work and how to use them is a must to become deep learning professional.

2. Statistics

Statistics refer to the study of using data and its visualization. It helps in gaining information from the raw data you have. Statistics is a crucial part of data science (which we've discussed later) and its relevant disciplines. As a deep learning professional, you'd have to gain insights from data for which you'll need to use statistics.

In statistics, you plot charts, create graphs, and understand relations between different data points. It also helps you gain insights from samples of data and classifying the available information in different segments according to your requirements.

3. Calculus

Calculus forms the basis for many machine learning algorithms. So, you'll have to study calculus too as a part of deep learning prerequisites. In deep learning, you'll be building models according to the features present in your data. Calculus will help you in using those features and making the model accordingly.

Having a basic understanding of calculus, integration, and other topics can help you in becoming a better ML expert. However, as a deep learning professional, you'll mainly need to study the basic principles of calculus and not its advanced concepts.

4. Linear Algebra

Probably one of the most important deep learning prerequisites is linear algebra. Linear algebra deals with matrices, vectors, and linear equations. It focuses on the representation of linear equations in vector spaces. The linear algebra will help you in building models of various sorts (classification, regression, etc.), and it is another building block for numerous concepts of deep learning.

5. Probability

Probability is a branch of mathematics that focuses on describing how likely an event can occur or how possible it is valid through numbers. The probability of any event ranges from 0 to 1, where 0 indicates impossibility, and 1 represents absolute certainty.

In ML and deep learning, you have to build models for predictive analysis. You have to train them to predict specific outcomes. That's why probability is an essential subject to study for a deep learning student.

6. Data Science

Data science is the field of analysing and using data to gain valuable insights. As a deep learning professional, you must be familiar with various concepts of data science as you'd have to build models that handle data. Knowing deep learning will help you in using data to get

the desired results, but before using deep learning, you'll have to learn about data science.

The two most programming languages necessary for data science are Python and R. Although data science is a vast subject and covers many topics along with deep learning, you must know its basics first. Data science helps companies in making predictions about customer behaviour, sales, and market trends. This is just one example of how vital data science is, so you must be familiar with it to move onto deep learning.

7. Work on Projects

While learning these subjects will help you in building a strong foundation, you will also have to work on deep learning projects to make sure you understand everything correctly. Projects will help you in applying what you've learned and identified your weak areas. Deep learning finds applications in multiple areas so you can easily find a project of your interest.