**DAILY ASSESSMENT FORMAT**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date:** | **16 july 2020** | **Name:** | **Sanketh S Acharya** |
| **Course:** | **Coursera** | **USN:** | **4AL17EC084** |
| **Topic:** | **Mathematics for Machine Learning: Linear Algebra** | **Semester & Section:** | **6TH SEDM & ‘B’ SEC** |

|  |
| --- |
| **FORENOON SESSION DETAILS (9.00am to 1.00pm)** |
| C:\Users\cw\Desktop\16 j1.PNG  C:\Users\cw\Desktop\16 j2.PNG  **Scalars, Vectors and Matrices**  **A vector is a list of numbers (can be in a row or column), A matrix is an array of numbers (one or more rows, one or more columns).**  **vector in matrix algebra**  **It can be said that the matrix algebra notation is shorthand for the corresponding scalar longhand. Vectors. A vector is a column of numbers. {\bf a} = \left[ \begin{array}{c} a\_1 \\ a\_2 \\ \vdots \\ a\_p \end{array} \right] The scalars a\_i are the elements of vector {\bf a}.**  **Row Matrix and example**  **In an m × n matrix, if m = 1, the matrix is said to be a row matrix. Definition of Row Matrix: If a matrix have only one row then it is called row matrix. Examples of row matrix: ... [13025] is a row matrix.**  **Elements of Matrix :**  **The numbers, symbols, or expressions in the matrix are called its entries or its elements. The horizontal and vertical lines of entries in a matrix are called rows and columns, respectively.**  **So as long as we stick to matrices of the same size, we do in fact have a vector space. So the long and short of it is that vectors can be matrices and matrices can be vectors. Now, Matrices are vectors - from the vector space of matrices - but not all vectors are matrices.**  **Scalars, Vectors and Matrices**  **A vector is a list of numbers (can be in a row or column), A matrix is an array of numbers (one or more rows, one or more columns).**  **The father of matrices :**  **Arthur Cayley (1821-1895), English mathematician and lawyer, who first published an abstract definition of a matrix in his Memoir on the Theory of Matrices in 1858, thus establishing it as a branch of mathematics. So this man was the father of matrix.**  **Vectors are a type of matrix having only one column or one row. A vector having only one column is called a column vector, and a vector having only one row is called a row vector. For example, matrix a is a column vector, and matrix a' is a row vector.**  **A matrix is a collection of numbers arranged into a fixed number of rows and columns. Usually the numbers are real numbers. In general, matrices can contain complex numbers but we won't see those here. Here is an example of a matrix with three rows and three columns: The top row is row 1.**  **The series primarily consists of a trilogy of science fiction action films beginning with The Matrix (1999) and continuing with two sequels, The Matrix Reloaded and The Matrix Revolutions (both in 2003), all written and directed by the Wachowskis and produced by Joel Silver.**  **Main point of the Matrix**  **The Matrix trilogy suggests that everyone has the individual responsibility to make the choice between the real world and an artificial world. Though Neo is the exemplar of free will, fate plays a large role in his adventure. Neo relies on the Oracle, and everything she says comes true in some way.**  **Application of Matrices**  **Almost every branch of physics, including classical mechanics, optics, electromagnetism, quantum mechanics, and quantum electrodynamics, matrices are used to study physical phenomena, such as the motion of rigid bodies.**  **Matrices have also come to have important applications in computer graphics, where they have been used to represent rotations and other transformations of images. is a 2 × 3 matrix. A matrix with n rows and n columns is called a square matrix of order n**  **Matrices are classified according to the number of rows and columns, and the specific elements therein. (i) Row Matrix: A matrix which has exactly one row is called a row matrix. The above two matrices are row matrices because each has only one row.**  **Matrices are a useful way to represent, manipulate and study linear maps between finite dimensional vector spaces (if you have chosen basis). Matrices can also represent quadratic forms (it's useful, for example, in analysis to study hessian matrices, which help us to study the behavior of critical points).**  **The numbers in a matrix can represent data, and they can also represent mathematical equations. Even more frequently, they're called upon to multiply matrices. Matrix multiplication can be thought of as solving linear equations for particular variables.**  **The term matrix was introduced by the 19th-century English mathematician James Sylvester, but it was his friend the mathematician Arthur Cayley who developed the algebraic aspect of matrices in two papers in the 1850s.**  **In biology, matrix  is the material (or tissue) in animal or plant. Structure of connective tissues is an extracellular matrix. ... It is found in various connective tissue. It is generally used as a jelly like structure instead of cytoplasm in connective tissue.**  **In the mitochondrion, the matrix is the space within the inner membrane. The word "matrix" stems from the fact that this space is viscous, compared to the relatively aqueous cytoplasm.**  **The extracellular matrix (ECM) is the non-cellular component present within all tissues and organs, and provides not only essential physical scaffolding for the cellular constituents but also initiates crucial biochemical and biomechanical cues that are required for tissue morphogenesis, differentiation and homeostasis.** |