**DAILY ASSESSMENT FORMAT**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date:** | **17/July/2020** | **Name:** | **Prashantha naik** |
| **Course:** | **Mathematics for Machine**  **Learning: Linear Algebra** | **USN:** | **4al17ec074** |
| **Topic:** | **Week 5** | **Semester & Section:** | **6th b** |
| **GitHub Repository:** | **prashanth\_course** |  |  |

|  |
| --- |
| **SESSION DETAILS** |
| **Image of session** |
| **Report – Report can be typed or hand written for up to two pages.**  **Eigenvalues and eigenvectors feature prominently in the analysis of linear transformations. The prefix eigen- is adopted from the German word eigen for "proper", "characteristic".[4] Originally utilized to study principal axes of the rotational motion of rigid bodies, eigenvalues and eigenvectors have a wide range of applications, for example in stability analysis, vibration analysis, atomic orbitals, facial recognition, and matrix diagonalization.**  **In essence, an eigenvector v of a linear transformation T is a nonzero vector that, when T is applied to it, does not change direction. Applying T to the eigenvector only scales the eigenvector by the scalar value λ, called an eigenvalue. This condition can be written as the equation**  **Eigenvalues and eigenvectors are often introduced to students in the context of linear algebra courses focused on matrices. Furthermore, linear transformations over a finite-dimensional vector space can be represented using matrices, which is especially common in numerical and computational applications.**    **Matrix *A* acts by stretching the vector *x*, not changing its direction, so *x* is an eigenvector of *A*.**  **Consider *n*-dimensional vectors that are formed as a list of *n* scalars, such as the three-dimensional vectors**  **{\displaystyle x={\begin{bmatrix}1\\3\\4\end{bmatrix}}\quad {\mbox{and}}\quad y={\begin{bmatrix}-20\\-60\\-80\end{bmatrix}}.}**  **These vectors are said to be**[**scalar multiples**](https://en.wikipedia.org/wiki/Scalar_multiplication)**of each other, or**[**parallel**](https://en.wikipedia.org/wiki/Parallel_(geometry))**or**[**collinear**](https://en.wikipedia.org/wiki/Collinearity)**, if there is a scalar *λ* such that**  **{\displaystyle x=\lambda y.}**  **In this case {\displaystyle \lambda =-1/20}.**  **Now consider the linear transformation of *n*-dimensional vectors defined by an *n* by *n* matrix *A*** |