Dimensionality Reduction-3

Assignment Questions

PW SKILLS

Q1. What are Eigenvalues and Eigenvectors? How are they related to the Eigen-Decomposition approach? Explain with an example.

Q2. What is eigen decomposition and what is its significance in linear algebra?

Q3. What are the conditions that must be satisfied for a square matrix to be diagonalizable using the Eigen-Decomposition approach? Provide a brief proof to support your answer.

Q4. What is the significance of the spectral theorem in the context of the Eigen-Decomposition approach? How is it related to the diagonalizability of a matrix? Explain with an example.

Q5. How do you find the eigenvalues of a matrix and what do they represent?

Q6. What are eigenvectors and how are they related to eigenvalues?

Q7. Can you explain the geometric interpretation of eigenvectors and eigenvalues?

Q8. What are some real-world applications of eigen decomposition?

Q9. Can a matrix have more than one set of eigenvectors and eigenvalues?

Q10. In what ways is the Eigen-Decomposition approach useful in data analysis and machine learning? Discuss at least three specific applications or techniques that rely on Eigen-Decomposition.

Note: *Create your assignment in Jupyter notebook and upload it to GitHub & share that github repository link through your dashboard. Make sure the repository is public.*