ME 542

Assignment – 6

Eigenvalue Problems

- Students need to save all the programs in a zipped file and name it with your roll number and submit it on MS TEAMS.
- The programs are to be compiled and checked before submitting.
- Results obtained by your code should be written (do not copy image file of your run) in a pdf file and keep it in the same zipped folder.
- Make one program that can solve both problems.

Write programs for (a) Normalized Power Iteration, (b) Inverse Iteration and find the maximum and minimum eigenvalues and their corresponding eigenvectors.

$$(1)\ A = \begin{bmatrix} -4 & 0 & 1/2 & 1/2 \\ 1/2 & -2 & 0 & 1/2 \\ 1/2 & 1/2 & 0 & 0 \\ 0 & 1 & 1 & 4 \end{bmatrix}$$

Use may use $x^{(0)} = (0,0,0,1)^T$

$$(2)\ A = \begin{bmatrix} 1 & -1 & 0 \\ -2 & 4 & -2 \\ 0 & -1 & 2 \end{bmatrix}.$$ Use may use $x^{(0)} = (-1,2,1)^T$.