

CS 557: STATISTICAL PATTERN RECOGNITION & LEARNING
FALL 2016
EXERCISE FOR EIGEN VALUES AND EIGEN VECTORS

1. Compute the eigen values and eigen vectors for the following matrices:

$$\begin{pmatrix} 3 & 0 \\ 8 & -1 \end{pmatrix} \quad \begin{pmatrix} 10 & -9 \\ 4 & -2 \end{pmatrix}$$

2. Prove that for a diagonal matrix, upper and lower triangular matrix the eigen values are the values on the diagonals. Where would the eigen vectors lie for such matrices?

3. What are the eigen vectors and eigen values for:

$$\begin{pmatrix} 3 & 0 & 0 \\ 0 & 10 & 0 \\ 0 & 0 & 100 \end{pmatrix}$$