COL726: Minor-2 Take Home

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We know that . Let the where and unitary matrices and is a diagonal matrix. Hence,

Where is a diagonal matrix with only positive entries (since is real.) Notice that is unitary, hence . Hence, with .

Then, , which is of the form .

Hence, we can simply compute the Eigenvalue decomposition of A, and get both and .

(a) I’m not sure what -dimensional vector means here… But I suppose that we could look at the entries of . If there are non-zero diagonal entries, then we have vectors.

(b) If has , then could be transformed into a x matrix.

(c) Read them from .

(d) Let’s say our approximation for is . We know and can estimate   . The residual error would be . However, we could also make the residual error.

Since is already orthonormal, really all we must do is to consider only the first two singular values of .

**Extra Light:**

1.

2.

Positive definite condition is that

which means that

3.

4.

5.