6.0 Module Overview: Eigenvalues, Eigenvectors, Eigenspaces

Module Overview

In this module we will talk about eigenvalues, eigenvectors, and eigenspaces of a matrix. You will learn how to compute these values and how to use them to identify diagonalizable matrices. In addition, you will learn to diagonalize a matrix when it is possible.

We will come back to the notion of symmetric matrices and an important subclass of positive-definite matrices will be introduced.

Finally, the Cholesky factorization will be introduced, and you will learn methods to compute it.

Module Outcomes

As a result of this module, you will be able to do the following:

1. **Compute** the eigenvalues, eigenvectors, and eigenspaces of a matrix.
2. **Identify** diagonalizable matrices and diagonalize them.
3. **Compute** the Cholesky factorization of a positive-definite matrix.

Assigned Reading

- Chapter 6: Sections 6.1, 6.2, 6.4, 6.5

Module Outline

In this module, we will cover the following:

+ A. Lecture Videos

+ B. Live Session

+ C. Assessments