

CISC 271 Class 1

Introduction

In this course, we will use linear algebra as a language for describing how to perform basic analysis of structured data. Fundamental concepts that we will assume as known, from prerequisite material, include:

- Vectors as members of vector spaces
- Spanning sets and basis sets of a vector space
- Vector norms, especially the Euclidean norm $\| \cdot \|_2$
- Transpose of a vector
- Orthogonal vectors, relating norms to transposes
- Partitioning a matrix into blocks
- A matrix as an ordered list of vectors
- A linear equation as a matrix-vector equation
- A system of linear equations as a matrix-vector equation
- Representing a linear equation as an augmented matrix
- The reduced row echelon form (RREF) of a matrix
- The null space, or kernel, of a matrix
- The column span of a matrix
- The determinant of a matrix
- For a nonsingular matrix, the inverse of a matrix
- Elementary properties of eigenvalues and eigenvectors