

# Linear Algebra

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## 15 - Singular Value Decomposition

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# Learning objectives

After this lecture, you should be able to:

# Matrix decomposition

A **matrix decomposition** or **matrix factorization** is a factorization of a matrix into a product of matrices.

For example,  $A$  is decomposed into the multiplication of matrices:

$$A = P_1 \times P_2 \times \cdots \times P_k$$

## Ways of decomposing matrix:

1. QR-decomposition
2. LU-decomposition
3. Singular Value Decomposition (SVD)

# QR-decomposition *revisited*

# LU-decomposition

# Singular Value Decomposition (SVD)