



# Positive Definite Matrices

## 1 Why

## 2 Definition

A matrix  $A$  is *positive definite* if all quadratic forms with the same vector on each side are positive.

### 2.1 Notation

Let  $A \in \mathbf{R}^{d \times d}$ .  $A$  is positive definite if for every  $x \in \mathbf{R}^d$ ,  $x^T A x > 0$ .