Study Notes of Matrix and Tensor

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Contents

Preface

The notes mainly refer to:

- From Algebraic Structures to Tensors

- Matrix and Tensor Decompositions in Signal Processing

Chapter 1

Matrix Algebra

1.1 Notations and definitions

Scalars, column vectors, matrices, and hypermatrices/tensors of order higher than two will be denoted by lowercase letters $(a, b, ...)$, bold lowercase letters $(\mathbf{a}, \mathbf{b}, ...)$, bold uppercase letters $(\mathbf{A}, \mathbf{B}, ...)$, and calligraphic letters $(\mathcal{A}, \mathcal{B}, ...)$ respectively.

A matrix $\mathbf{A}$ of dimensions $I \times J$, with I and $J \in \mathbb{N}^*$