

Methodology

This section presents the methodological approach used in this research project, demonstrating various mathematical concepts and notation.

Mathematical Framework

We employ standard mathematical notation throughout our analysis. Consider the following optimization problem:

$$\min_{x \in \mathbb{R}^n} f(x)$$

subject to:

$$g_i(x) \leq 0, \quad i = 1, \dots, m$$

$$h_j(x) = 0, \quad j = 1, \dots, p$$

where $f : \mathbb{R}^n \rightarrow \mathbb{R}$ is the objective function.

Algorithm Development

The proposed algorithm follows these steps:

1. Initialization