

# 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