

# Optimization

An optimization problem is a situation which requires deciding for one choice from a set of possible alternatives in order to reach a predefined or required benefit at minimal costs.

Solving an optimization problem requires finding an input element  $x^{\star}$  within a set  $\mathbb{X}$  of allowed elements for which a mathematical function  $f: \mathbb{X} \mapsto \mathbb{R}$  takes on the smallest possible value.