AI505 – Optimization

Sheet 08, Spring 2025

Exercises with the symbol $^+$ are to be done at home before the class. Exercises with the symbol * will be tackled in class. The remaining exercises are left for self training after the exercise class. Some exercises are from the text book and the number is reported. They have the solution at the end of the book.

Exercise 1$^+$ (13.1)

Filling a multidimensional space requires exponentially more points as the number of dimensions increases. To help build this intuition, determine the side lengths of an n-dimensional hypercube such that it fills half of the volume of the n-dimensional unit hypercube.

Exercise 2$^+$

Generate a full factorial set of design points in Python using `numpy.meshgrid` for two dimensions and plot the generated points. Fina a function from the benchmark suite and evaluate the function in those points.
Repeat the same process for a function with $n = 3$ and for $n > 3$ dimensions.