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LEAST-NORM SOLUTION OF LEAST SQUARE PROBLEM

LECTURE NOTE

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Demo: https://colab.research.google.com/drive/1AtUrdCJkDr2P8CSTYd_evvm6Jl4Da7rr

1 What is Least-Norm Solution?

In this discussion section, we will go over the Problem 1 and 2 in the worksheet which introduces and proves some basic properties of the least-norm solution of the least square problem (its uniqueness, the pseudo-inverse, etc.).

2 SGD Finds the Least-Norm Solution

The demo will show that (stochastic) gradient descent is guaranteed to find the least-norm solution when the weight is initialized as zero. The intuition is that all the gradient updates live in the row space of the data matrix \mathbf{X} , and the least-norm solution is the only solution in the row space.

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