2019년 05월 21일

example) If $x_1 = x_2 = x_3 = 1$

$$\begin{pmatrix} x_1 + x_2 = 2 \\ x_2 + x_3 = 2 \\ x_1 + x_2 + x_3 = 3 \\ x_1 + x_2 + 2x_3 = 4 \end{pmatrix} \quad \text{"} \quad \text{"} \quad \text{"} \quad \approx 4.1$$

- If we consider "predicted values" and "target value", we haven't predicted 100%. However, we could consider it as "mostly predicted".

- Since there are many problems that we can't solve due to $N \neq M$. However, we could try to solve the problems by minimizing differences between "predicted values" and "targets".

↳ The difference between "predicted values" and "target values" is called "residual".

$$e = Ax - b$$

↳ Since the residual(e) is a vector, we could solve problem by minimizing the vector's norm.

↳ Previously, minimizing "norm" is equal to minimizing "square of norm"

$$e^T e = \|e\|^2 = (Ax-b)^T(Ax-b)$$

"Minimizing"

$$x = \arg\min_x e^T e = \arg\min_x (Ax-b)^T(Ax-b)$$

↳ We call it as "Least Square Problem".