Does a Least-Squares solution exists?

1分

Check out the description of the pseudoinverse

(https://en.wikipedia.org/wiki/Moore%E2%80%93Penrose_pseudoinverse#Minimum_norm_solution_to_a_linear_system). What does this say about the existence of a solution to the least-squares problem?

Specifically, suppose we have some matrix A that is $m \times n$ comprised of real entries. Also suppose there is a b that is $m \times 1$. When does a solution to

$$min \|b - Ax\|_2$$

exist?

选项*

- Always
- Only if b is all zero
- Only when A is non-singular
- Only when b is the in the column space of A

参考答案: 'Always'.