The dot product is a projection of a vector onto a column space. (It's kind of like the closest vector to the out-of-range one that is in range). We can find this vector for the column space of A by taking A^Tb . Thus, when we see this

$$AA^Tx$$

we are somehow 'projecting' \boldsymbol{x} on to range \boldsymbol{A} .

Taproot · 2020-2021 Page 1 of 1