Homework 6

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Theory

Q1. $A_{(m \times n)}$ matrix represents data for 2000 houses with 15 features

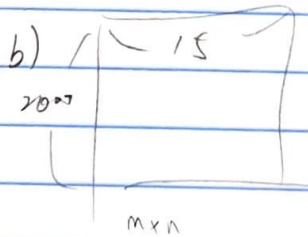
$A \rightarrow (2000 \times 15)$

a) Total count of elements for matrix A

$\Rightarrow 2000 \times 15 = 30,000$

$\therefore$ 30,000 elements

b)



$\Rightarrow U \cdot \Sigma \cdot V^T$

$\Rightarrow 2000 \times 2000 + 2000 \times 15 + 15 \times 15$

$= 4030225$

$\Rightarrow$ We will require 4030,225 elements

c) $k = 5$

$U \quad \Sigma \quad V^T$

$\Rightarrow 2000 \times 5 + 5 \times 5 + 5 \times 15 = 10100$

$\therefore$ We need to preserve 10,100 elements when conducting SVD with $k = 5$