

Collaborative filtering — Separating classmate sim
 Recommendⁿ of item based on other user's choice.
 Dislike / Dislike
 Good / Bad

Q. solve the problem using collaborative filtering
 → Here movie Rating is given for 5 movies (m₁-m₅)
 ratings are in the form of (1-5)

Movies	M ₁	M ₂	M ₃	M ₄	M ₅	Avg	Dislike	like
customers								
cust 1	5	3	4	4	2	4	3	
cust 2	3	1	2	3	3	2.25	3/4	2.25
cust 3	4	3	4	3	5	3.5	14/4	
cust 4	3	3	1	5	4	3		
cust 5	1	5	5	2	1	3.25		

Step 1:- Ignore the missing Reading column & calculate the average of the remaining rows.

Step 2:- choose Two Rows whose similarity is to be calculated using formula

rating avg
 → r₁ avg = $\frac{5+3+4+4}{4} = 4$
 of cust 1

r₂ avg = $\frac{3+1+2+3}{4} = 2.25$

?? - 1, 2, 3, 4, 5

NO
 Customer has given rating 2.

$$\text{Sim}(a, b) = \frac{\vec{a} \cdot \vec{b}}{|\vec{a}| \times |\vec{b}|}$$

dot product
 magnitudes

Note: The range of similarity will be always between
 -1 to 1
 exact
 sim(C_i, C_j) =

particular

$$= \frac{\sum (r_{ip} - r_{iavg})(r_{jp} - r_{javg})}{\sqrt{\sum (r_{ip} - r_{iavg})^2} \cdot \sqrt{\sum (r_{jp} - r_{javg})^2}}$$

calculate the similarity between c_1 & c_2 .

$$= \frac{(5-4)(3-2.25) + (3-4)(1-2.25) + (4-4)(2-2.25) + (4-4)(3-2.25)}{\sqrt{(5-4)^2 + (3-4)^2 + (4-4)^2 + (4-4)^2}}$$

$$\times \sqrt{(3-2.25)^2 + (1-2.25)^2 + (2-2.25)^2 + (3-2.25)^2}$$

$\text{Sim}(c_1, c_2) = \underline{0.85}$ ✓ max. Hence it is assumed that customer 1 will

$\text{Sim}(c_1, c_3) = 0.7$ given rating similar to

$$(c_1, c_4) = 0$$

customer 2 i.e. 3

$$(c_1, c_5) = -0.79$$

~~1.5~~

x