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1. Tabel TF-IDF

Term	DF	TF						IDF	TFxIDF					
		D1	D2	D3	D4	D5	D6		D1	D2	D3	D4	D5	D6
demak	1	0	0	0	0	1	0	0,77815	0	0	0	0	0,77815	0
gora	1	0	0	0	0	1	0	0,77815	0	0	0	0	0,77815	0
ilmuan	3	1	1	1	0	0	0	0,30103	0,30103	0,30103	0,30103	0	0	0
indonesia	1	0	0	0	1	0	0	0,77815	0	0	0	0,77815	0	0
informasi	1	0	0	1	0	0	0	0,77815	0	0	0,77815	0	0	0
islam	5	1	1	1	1	0	1	0,07918	0,07918	0,07918	0,07918	0,07918	0	0,07918
jawa	1	0	0	0	0	0	1	0,77815	0	0	0	0	0	0,77815
jepara	1	0	0	0	0	1	0	0,77815	0	0	0	0	0,77815	0
labuh	1	0	0	0	0	1	0	0,77815	0	0	0	0	0,77815	0
Perlak	1	0	0	0	1	0	0	0,77815	0	0	0	0,77815	0	0
pengaruh	1	1	0	0	0	0	0	0,77815	0,77815	0	0	0	0	0
Pusat	1	0	0	0	0	1	0	0,77815	0	0	0	0	0,77815	0
raja	3	0	0	0	1	1	1	0,30103	0	0	0	0,30103	0,30103	0,30103
rangkum	1	0	1	0	0	0	0	0,77815	0	0,77815	0	0	0	0
ringkas	1	0	0	1	0	0	0	0,77815	0	0	0,77815	0	0	0
sumbang	1	0	1	0	0	0	0	0,77815	0	0,77815	0	0	0	0
temu	1	1	0	0	0	0	0	0,77815	0,77815	0	0	0	0	0
tokoh	2	1	0	1	0	0	0	0,47712	0,47712	0	0,47712	0	0	0

2. Model vector Document

D1 = (0, 0, 0.30103, 0, 0, 0.07918, 0, 0, 0, 0, 0.77815, 0, 0, 0, 0, 0, 0.77815, 0.47712)

$$\frac{x}{\sqrt{0.30103^2 + 0.07918^2 + 0.77815^2 + 0.77815^2 + 0.47712^2}}$$

$$= \frac{x}{\sqrt{0.09061 + 0.00626 + 0.60551 + 0.60551 + 0.22764}}$$

$$= \frac{x}{\sqrt{1,53553}}$$

$$= \frac{x}{1,23916}$$

|D1| = (0, 0, 0.24293, 0, 0, 0.06389, 0, 0, 0, 0, 0.62796, 0, 0, 0, 0, 0, 0.62796, 0.38503)

D2 = (0, 0, 0.30103, 0, 0, 0.07918, 0, 0, 0, 0, 0, 0, 0, 0.77815, 0, 0.77815, 0, 0)

$$= \frac{x}{\sqrt{0.30103^2 + 0.07918^2 + 0.77815^2 + 0.77815^2}}$$

$$= \frac{x}{\sqrt{0.09061 + 0.00626 + 0.60551 + 0.60551}}$$

$$= \frac{x}{\sqrt{1.30789}} = \frac{x}{1.14363}$$

|D2| = (0, 0, 0.26322, 0, 0, 0.06923, 0, 0, 0, 0, 0, 0, 0, 0.68042, 0, 0.68042, 0, 0)

$D3 = (0, 0, \underline{0.30103}, 0, \underline{0.77815}, \underline{0.07918}, 0, 0, 0, 0, 0, 0, 0, 0, \underline{0.77815}, 0, 0, \underline{0.47712})$

$$\boxed{\begin{aligned} &= \frac{x}{\sqrt{0.30103^2 + 0.77815^2 + 0.07918^2 + 0.77815^2 + 0.47712^2}} \\ &= \frac{x}{\sqrt{0.09061 + 0.60551 + 0.00626 + 0.60551 + 0.22764}} \\ &= \frac{x}{\sqrt{1,53553}} = \frac{x}{1,23916} \end{aligned}}$$

$|D3| = (0, 0, \underline{0.24293}, 0, \underline{0.62796}, \underline{0.06389}, 0, 0, 0, 0, 0, 0, 0, 0, \underline{0.62796}, 0, 0, 0.38503)$

$D4 = (0, 0, 0, \underline{0.77815}, 0, \underline{0.07918}, 0, 0, 0, \underline{0.77815}, 0, 0, \underline{0.30103}, 0, 0, 0, 0, 0)$

$$\boxed{\begin{aligned} &= \frac{x}{\sqrt{0.77815^2 + 0,07918^2 + 0.77815^2 + 0.30103^2}} \\ &= \frac{x}{\sqrt{0.60551 + 0,00626 + 0.60551 + 0.09061}} \\ &= \frac{x}{\sqrt{1,30789}} = \frac{x}{1.14363} \end{aligned}}$$

$|D4| = (0, 0, 0, \underline{0.68042}, 0, \underline{0.06923}, 0, 0, 0, \underline{0.68042}, 0, 0, \underline{0.26322}, 0, 0, 0, 0, 0)$

$D5 = (\underline{0.77815}, \underline{0.77815}, 0, 0, 0, 0, 0, \underline{0.77815}, \underline{0.77815}, 0, 0, \underline{0.77815}, \underline{0.30103}, 0, 0, 0, 0, 0)$

$$\boxed{\begin{aligned} &= \frac{x}{\sqrt{0.77815^2 + 0.77815^2 + 0.77815^2 + 0.77815^2 + 0.77815^2 + 0.30103^2}} \\ &= \frac{x}{\sqrt{0.60551 + 0.60551 + 0.60551 + 0.60551 + 0.60551 + 0.09061}} \\ &= \frac{x}{\sqrt{3.11816}} = \frac{x}{1.76583} \end{aligned}}$$

$|D5| = (\underline{0.44067}, \underline{0.44067}, 0, 0, 0, 0, 0, \underline{0.44067}, \underline{0.44067}, 0, 0, \underline{0.44067}, 0.17047, 0, 0, 0, 0, 0)$

$D6 = (0, 0, 0, 0, 0, \underline{0.07918}, \underline{0.77815}, 0, 0, 0, 0, 0, \underline{0.30103}, 0, 0, 0, 0, 0)$

$$\boxed{\begin{aligned} &= \frac{x}{\sqrt{0.07918^2 + 0.77815^2 + 0.30103^2}} \\ &= \frac{x}{\sqrt{0.00626 + 0.60551 + 0.09061}} \\ &= \frac{x}{\sqrt{0.70238}} = \frac{x}{0.83808} \end{aligned}}$$

$|D6| = (0, 0, 0, 0, 0, \underline{0.09447}, \underline{0.92849}, 0, 0, 0, 0, 0, \underline{0.35919}, 0, 0, 0, 0, 0)$

3. Query : "Tokoh Ilmuan Islam dan Penemuannya"

Case folding => "tokoh ilmuan islam dan penemuannya"

Stopword => "tokoh ilmuan islam penemuannya"

Stemming => "tokoh ilmuan islam temu"

Model vektor => (0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1)

$\Rightarrow (0, 0, \underline{0.30103}, 0, 0, \underline{0.07918}, 0, 0, 0, 0, 0, 0, 0, 0, 0, \underline{0.77815}, \underline{0.47712})$

$$= \frac{x}{\sqrt{0.30103^2 + 0.07918^2 + 0.77815^2 + 0.47712^2}}$$

$$= \frac{x}{\sqrt{0.09061 + 0.00626 + 0.60551 + 0.22764}}$$

$$= \frac{x}{\sqrt{0.93000}}$$

$$= \frac{x}{0.96436}$$

Model vektor yg telah dinormalkan $\Rightarrow (0, 0, \underline{0.31215}, 0, 0, \underline{0.08210}, 0, 0, 0, 0, 0, 0, 0, 0, 0, \underline{0.80690}, \underline{0.49475})$

4. Menghitung Kemiripan

$$\text{Cosine}(D1,Q) = \frac{0.24293 \times 0.31215 + 0.06389 \times 0.08210 + 0.62796 \times 0.80690 + 0.38503 \times 0.49975}{\sqrt{(0.24293^2 + 0.06389^2 + 0.62796^2 + 0.62796^2 + 0.38503^2) \times (0.31215^2 + 0.08210^2 + 0.80690^2 + 0.49975^2)}}$$

$$= \frac{0.77826}{\sqrt{1.00001 \times 1.0000}} = \frac{0.77826}{1.00000} = 0.77826$$

$$\text{Cosine}(D2,Q) = \frac{0.26322 \times 0.31215 + 0.06389 \times 0.08210}{\sqrt{(0.26322^2 + 0.06923^2 + 0.68042^2 + 0.68042^2) \times (0.31215^2 + 0.08210^2 + 0.80690^2 + 0.49475^2)}}$$

$$= \frac{0.08740}{\sqrt{1.00002 \times 1}} = \frac{0.08740}{1.00001} = 0.08739$$

$$\text{Cosine}(D3,Q) = \frac{0.24293 \times 0.31215 + 0.06389 \times 0.08210 + 0.38503 \times 0.49475}{\sqrt{(0.24293^2 + 0.62796^2 + 0.06389^2 + 0.62796^2 + 0.38503^2) \times (0.31215^2 + 0.08210^2 + 0.80690^2 + 0.49475^2)}}$$

$$= \frac{0.27156}{\sqrt{1.00001 \times 1}} = \frac{0.27156}{1} = 0.27156$$

$$\text{Cosine}(D4,Q) = \frac{0.06923 \times 0.08210}{\sqrt{(0.68042^2 + 0.06923^2 + 0.68042^2 + 0.26322^2) \times (0.31215^2 + 0.08210^2 + 0.80690^2 + 0.49475^2)}}$$

$$= \frac{0.00568}{\sqrt{1.00002 \times 1}} = \frac{0.00568}{1.0001} = 0.00567$$

$$\text{Cosine}(D5,Q) = 0$$

$$\text{Cosine}(D6,Q) = \frac{0.09447 \times 0.31215}{\sqrt{(0.09447^2 + 0.92849^2 + 0.35919^2) \times (0.31215^2 + 0.08210^2 + 0.80690^2 + 0.49475^2)}}$$

$$= \frac{0.02948}{\sqrt{1.00003 \times 1}} = \frac{0.02948}{1.00001} = 0.02947$$

5. Perangkingan

Query = "Tokoh Ilmuan Islam dan Penemuannya"

1. D1 = 0.77826
2. D3 = 0.27156
3. D2 = 0.08739
4. D6 = 0.02947
5. D4 = 0.00567
6. D5 = 0

Kesimpulannya, Dokumen 1 memiliki kemiripan paling tinggi dengan Query