

MACHINE LEARNING HOMEWORK 6

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Github repository Link

https://github.com/PERAMRAMYA/Assignment6/blob/main/700728550_Assignment6.ipynb

Single Link Proximity:

- In **Single Linkage**, the distance between two clusters is the minimum distance between members of the two clusters

	p1	p2	p3	p4	p5	p6
p1	0	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0	0.1483	0.2042	0.1388	0.254
p3	0.2218	0.1483	0	0.1513	0.2843	0.11
p4	0.3688	0.2042	0.1513	0	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0	0.3921
p6	0.2347	0.254	0.11	0.2216	0.3921	0

smallest distance from above data is 0.11

so p3 and p6 forms first cluster

	p1	p2	p36	p4	p5
p1	0	0.2357	0.2218	0.3688	0.3421
p2	0.2357	0	0.1483	0.2042	0.1388
p36	0.2218	0.1483	0	0.1513	0.2843
p4	0.3688	0.2042	0.1513	0	0.2932
p5	0.3421	0.1388	0.2843	0.2932	0

smallest distance from above data is 0.1388

so p2 and p5 forms 2nd cluster

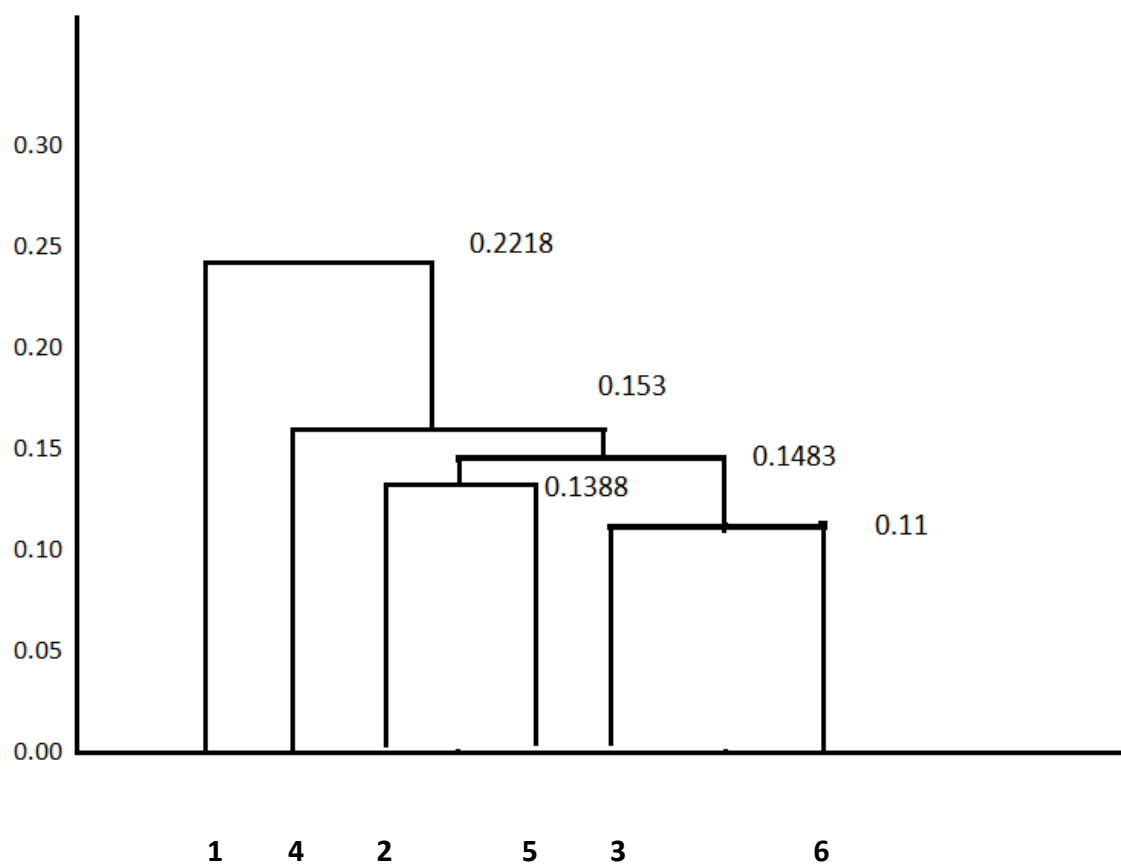
	p1	p25	p36	p4
p1	0	0.2357	0.2218	0.3688
p25	0.2357	0	0.1483	0.2042
p36	0.2218	0.1483	0	0.1513
p4	0.3688	0.2042	0.1513	0

smallest distance from above data is 0.1483
so p25 and p36 forms 3rdcluster

	p1	p(25)(36)	p4
p1	0	0.2218	0.3688
p(25)(36)	0.2218	0	0.1513
p4	0.3688	0.1513	0

smallest distance from above data is 0.153
so p(25)(36)and p4 forms 4thcluster

	p1	p4(25)(36)
p1	0	0.2218
p4(25)(36)	0.2218	0



Complete Link Proximity:

- In **Complete Linkage**, the distance between two clusters is the maximum distance between members of the two clusters

	p1	p2	p3	p4	p5	p6
p1	0	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0	0.1483	0.2042	0.1388	0.254
p3	0.2218	0.1483	0	0.1513	0.2843	0.11
p4	0.3688	0.2042	0.1513	0	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0	0.3921
p6	0.2347	0.254	0.11	0.2216	0.3921	0

smallest distance from above data is 0.11
so p3 and p6 forms first cluster

	p1	p2	p36	p4	p5
p1	0	0.2357	0.2347	0.3688	0.3421
p2	0.2357	0	0.254	0.2042	0.1388
p36	0.2347	0.254	0	0.2216	0.3921
p4	0.3688	0.2042	0.2216	0	0.2932
p5	0.3421	0.1388	0.3921	0.2932	0

smallest distance from above data is 0.1388
so p2 and p5 forms 2nd cluster

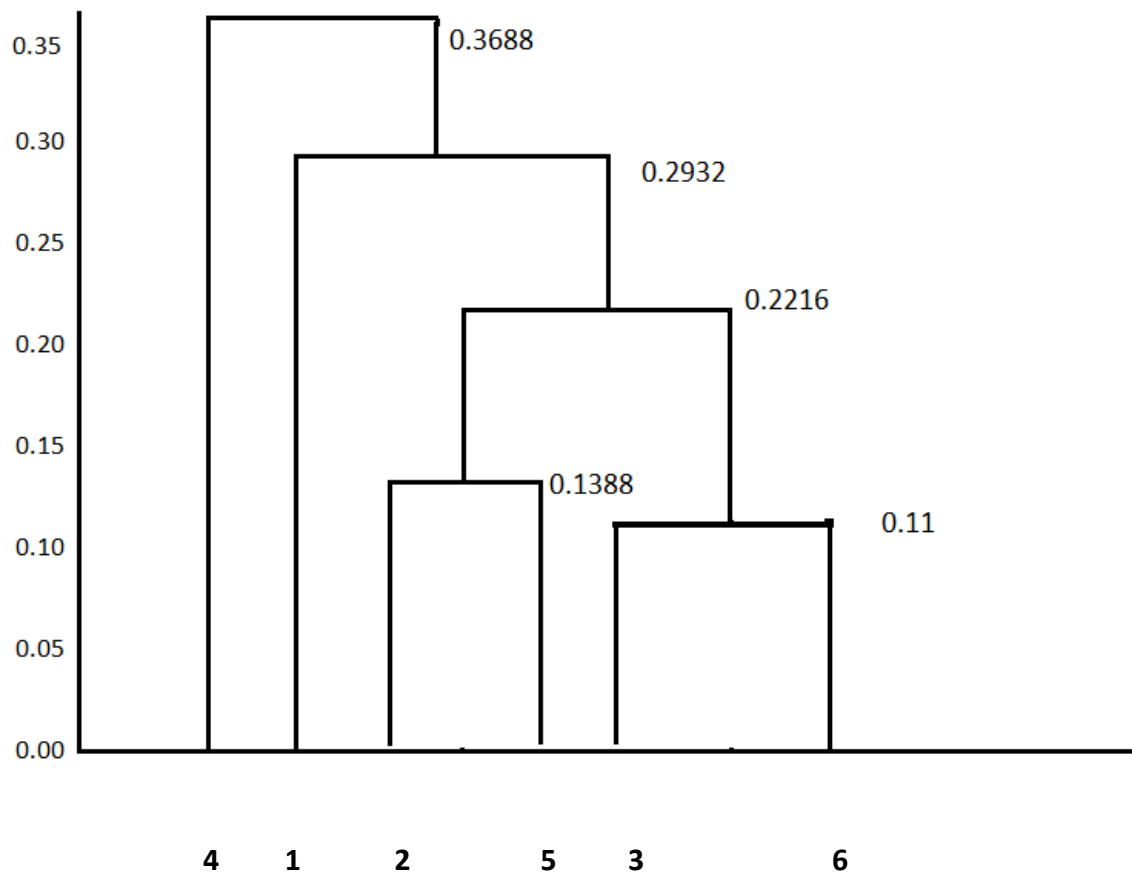
	p1	p25	p36	p4
p1	0	0.3421	0.2347	0.3688
p25	0.3421	0	0.3921	0.2932
p36	0.2347	0.3921	0	0.2216
p4	0.3688	0.2932	0.2216	0

smallest distance from above data is 0.2216
so p25 and p36 forms 3rd cluster

	p1	p(25)(36)	p4
p1	0	0.3421	0.3688
p(25)(36)	0.3421	0	0.2932
p4	0.3688	0.2932	0

smallest distance from above data is 0.2932
so p(25)(36) and p1 forms 4th cluster

	p1(25)(36)	p4
p1(25)(36)	0	0.1483
p4	0.3688	0



Average Link Proximity:

In **Average Linkage**, the distance between two clusters is the average of all distances between members of the two clusters

	p1	p2	p3	p4	p5	p6
p1	0	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0	0.1483	0.2042	0.1388	0.254
p3	0.2218	0.1483	0	0.1513	0.2843	0.11
p4	0.3688	0.2042	0.1513	0	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0	0.3921
p6	0.2347	0.254	0.11	0.2216	0.3921	0

smallest distance from above data is 0.11

so p3 and p6 forms first cluster

	p1	p2	p36	p4	p5
p1	0	0.2357	0.22825	0.3688	0.3421
p2	0.2357	0	0.20115	0.2042	0.1388
p36	0.22825	0.20115	0	0.18645	0.3382
p4	0.3688	0.2042	0.18645	0	0.2932
p5	0.3421	0.1388	0.3382	0.2932	0

smallest distance from above data is 0.1388

so p2 and p5 forms 2nd cluster

	p1	p25	p36	p4
p1	0	0.2889	0.2347	0.3688
p25	0.2889	0	0.269675	0.2487
p36	0.2347	0.269675	0	0.18645
p4	0.3688	0.2487	0.18645	0

smallest distance from above data is 0.18645

so p25 and p36 forms 3rd cluster

	p1	p(25)(36)	p4
p1	0	0.2618	0.3688
p(25)(36)	0.2618	0	0.217575
p4	0.3688	0.217575	0

smallest distance from above data is 0.217575

so p(25)(36) and p1 forms 4th cluster

	p1(25)(36)	p4
p1(25)(36)	0	0.3153
p4	0.3153	0

