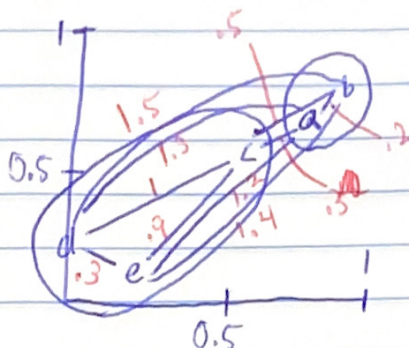


# Silhouette Homework

Evan Nuss

|   |    |    |
|---|----|----|
| a | .8 | .7 |
| b | .9 | .8 |
| c | .6 | .6 |
| d | 0  | .2 |
| e | .2 | .1 |



$$a(a) = |.8 - .9| + |.7 - .8| = .2$$

$$b(a) = \frac{\text{dist}_{ac} + \text{dist}_{ad} + \text{dist}_{ae}}{3} = \frac{0.3 + 1.3 + 1.2}{3} = .933$$

$$\text{dist}_{ac} = |.8 - .6| + |.7 - .6| = .3$$

$$\text{dist}_{ad} = 1.3$$

$$\text{dist}_{ae} = 1.2$$

$$s(a) = \frac{.933 - .2}{.933} = .786$$

$$a(b) = .2$$

$$\text{dist}_{bc} = .5$$

$$b(b) = 1.133$$

$$\text{dist}_{bd} = 1.5$$

$$s(b) = \frac{1.133 - .2}{1.133}$$

$$\text{dist}_{be} = 1.4$$

$$s(b) = .823$$

$$s(\{a, b\}) = \frac{.786 + .823}{2} = s(\{a, b\}) = .805$$

$$\text{dist}_{cd} = 1$$

$$a(c) = \frac{\text{dist}_{cd} + \text{dist}_{ce}}{2} = .95$$

$$\text{dist}_{ce} = .9$$

$$s(c) = \frac{.4 - .95}{.95}$$

$$\text{dist}_{de} = .3$$

$$b(c) = \frac{\text{dist}_{ac} + \text{dist}_{bc}}{2} = .4$$

$$s(c) = -.579$$

$$a(d) = .65$$

$$s(d) = \frac{1.4 - .65}{1.4} = s(d) = .536$$

$$b(d) = 1.4$$

$$a(e) = .6$$

$$s(e) = \frac{1.3 - .6}{1.3} = s(e) = .538$$

$$b(e) = 1.3$$

$$s(\{c, d, e\}) = \frac{-.579 + .536 + .538}{3} = s(\{c, d, e\}) = .165$$

$$s(\text{entire clustering}) = \frac{.805 + .165}{2} = s(\text{entire clustering}) = .485$$