Introduction to machine learning

Mardônio França / Vinicius Sampaio

boitatá lab

objeto quadrado = o1

objeto círculo = o2

objeto triângulo = 03

m1,2 = m(o1, o2)

m2,3 = m(o2, 03)

m1,3 = m(o1,03)

Introduction

1 Similarity measure

1-1 Pearson’s correlation

1 -2 Spearman’s correlation

1- 3 Kendall’s Tau

1- 4 Cosine similarity

1-5 Jaccard similarity

Introduction

Cosine Measure

m = [1,1], n = [2,2], ang(m,n) = 0, cos(0) = 1

m = [1,1], n = [1,-1], ang(m,n) = 180, cos(180) = - 1

y = [y0, ...y29] -> y '[y'0,y'1]

k = [k0, ...k29] -> k

z = [z0, ...z29] -> z

---

m = [0,1], n =[1,1], ang(m,n) = 45, cos(45) = sqrt(2)/2

A = [1,2,4,7],B = [1,2,4,9], C = [2,3,4,11], A.B = |A|.|B| cos(∝);cos(∝) = A.B/(|A|.|B|)

Introduction

Pearson correlation coefficient

A = [1,2,6,7], $\hat{A}$ =avg(A)= 4 , A* = [-3,-2,2,3]

B = [1,4,5,10], avg(A)= 5, B* =[-4,-1,0,5]

$\cos(\propto^*) = A^*.B^*/(|A^*|.|B^*|)$

Introduction

1 Pearson's correlation

Ref : 6a End. Math. Methods for Physicists Arfken & Weber | pg.1122

$$-1 <= (\mathrm{cov}(X,Y)/ \sigma(X)\ \sigma(Y)) <= 1$$

Introduction

2 Distance Based Metrics

- 1-1 Euclidean distance
- 1- 2 Manhattan distance

Thank you !