Lista 8 Zadanie 1

Marko Golovko

29 kwietnia 2020

Wyznaczamy prostą regresji temperatury(Y) względem wysokości npm(X). $\hat{y}_i = ax_i + b$ prosta regresji, gdzie

$$a = \frac{\sum_{i=1}^{n}(x_i - \overline{x})(y_i - \overline{y})}{\sum_{i=1}^{n}(x_i - \overline{x})^2}$$

$$b = \overline{y} - a\overline{x}$$

Wyniki obliczeń: $\overline{x} = 172.9375; \overline{y} = 8.09375; a = 0.000218586; b = 8.05594$

```
with open('climate.csv', newline='') as csvfile:
    spamreader = csv.reader(csvfile, delimiter=';')
    alt = []; temp = []; lat = []; long = []
    for row in spamreader:
        if row[5] != "'Alt'":
            alt.append(int(row[5]))
            y = float(row[4][0])+float(row[4][2])/10
            temp.append(y)
            lat.append(float(row[1].replace(',','.')))
            long.append(float(row[2].replace(',','.')))
    y_sum = 0
    x_sum = 0
    count = len(alt)
    for x in alt:
      x_sum += x
    for y in temp:
      y_sum += y
    x_avg = x_sum / count
    y_avg = y_sum / count
    sum1 = 0
    sum2 = 0
    for i in range(count):
        sum1 += (alt[i] - x_avg) * (temp[i] - y_avg)
        sum2 += math.pow(alt[i] - x_avg,2)
    a = sum1/sum2
    b = y_avg - a*x_avg
```