TRIBHUVAN UNIVERSITY



**Sagarmatha College of Science &**

**Technology**

Lab Report On: Neural Network

Lab Report No.: 04

Date: 2077-08-21

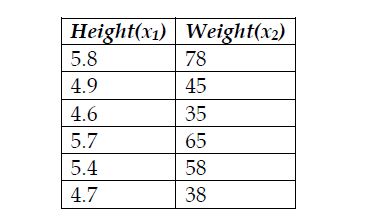
**SUBMITTED BY SUBMITTED TO**

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**Question 01:**

Write a python program to implement MinMax, Mean, and Standard Scaler.



**Source Code:**

1. **MinMax Scalar**

import pandas as pd

data = pd.DataFrame([[5.8, 78], [4.9, 45], [4.6, 35], [5.7, 65], [5.4, 58], [4.7, 38]],

columns = ["Height", "Weight"])

print(f"Original Data:\n{data}")

for col in data.columns:

min = data[col].min()

max = data[col].max()

data[col] = (data[col] - min) / (max - min)

print(f"\nNormalized Data:\n{data}")

**OUTPUT**

Original Data:

Height Weight

0 5.8 78

1 4.9 45

2 4.6 35

3 5.7 65

4 5.4 58

5 4.7 38

Normalized data:

Height Weight

0 1.000000 1.000000

1 0.250000 0.232558

2 0.000000 0.000000

3 0.916667 0.697674

4 0.666667 0.534884

5 0.083333 0.069767

1. **Mean Scalar**

import pandas as pd

data = pd.DataFrame([[5.8, 78], [4.9, 45], [4.6, 35], [5.7, 65], [5.4, 58], [4.7, 38]],

columns = ["Height", "Weight"])

print(f"Original Data:\n{data}")

for col in data.columns:

  m = data[col].mean()

  min = data[col].min()

  max = data[col].max()

  data[col] = (data[col] - m) / (max - min)

print(f"\nNormalized Data:\n{data}")

**OUTPUT**

Original Data:

Height Weight

0 5.8 78

1 4.9 45

2 4.6 35

3 5.7 65

4 5.4 58

5 4.7 38

Normalized Data:

Height Weight

0 0.513889 0.577519

1 -0.236111 -0.189922

2 -0.486111 -0.422481

3 0.430556 0.275194

4 0.180556 0.112403

5 -0.402778 -0.352713

1. **Standard Scalar**

import pandas as pd

data = pd.DataFrame([[5.8, 78], [4.9, 45], [4.6, 35], [5.7, 65], [5.4, 58], [4.7, 38]], columns = ["Height", "Weight"])

print(f"Original Data:\n{data}")

for col in data.columns:

m = data[col].mean()

sd = data[col].std()

data[col] = (data[col] - m) / sd

print(f"\nNormalized Data:\n{data}")

**OUTPUT**

Original Data:

Height Weight

0 5.8 78

1 4.9 45

2 4.6 35

3 5.7 65

4 5.4 58

5 4.7 38

Normalized Data:

Height Weight

0 1.187509 1.480467

1 -0.545612 -0.486865

2 -1.123319 -1.083026

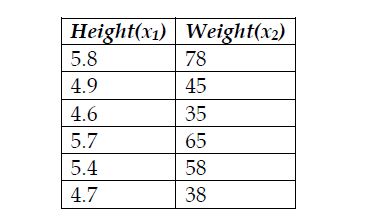
3 0.994940 0.705457

4 0.417233 0.288145

5 -0.930750 -0.904178

**Question 02:**

Create a class named MinmaxNorm, define method scale to normalize data using MinMax Scaler. Finally, create a object of the class and normalize the data.



**Source Code:**

import pandas as pd

class MinMaxNorm:

  def \_\_init\_\_(self):

    pass

  def scale(self, data):

    for col in data.columns:

      min = data[col].min()

      max = data[col].max()

      data[col] = (data[col] - min) / (max - min)

    return data

data = pd.DataFrame([[5.8, 78], [4.9, 45], [4.6, 35], [5.7, 65], [5.4, 58], [4.7, 38]],

columns = ["Height", "Weight"])

print(f"Original Data:\n{data}")

minmax = MinMaxNorm()

norm\_data = minmax.scale(data)

print(f"\nNormalized data:\n{norm\_data}")

**Output:**

Original Data:

Height Weight

0 5.8 78

1 4.9 45

2 4.6 35

3 5.7 65

4 5.4 58

5 4.7 38

Normalized data:

Height Weight

0 1.000000 1.000000

1 0.250000 0.232558

2 0.000000 0.000000

3 0.916667 0.697674

4 0.666667 0.534884

5 0.083333 0.069767