



**Ganpat
University**

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-----PRACTICAL 04-----

(1) Coefficient of correlation between two variables.

✓ **Source Code :**

```
clc;
clear all;
close all;
x = [0 -2 -1 3 -4 -2 -1 2];
y = [-1 3 -4];
n = 3;

for i = 1:length(x) + 1 - length(y)
    temp = [x(i) x(i + 1) x(i + 2)]
    A = n * sum(temp .* y) - sum(temp) * sum(y);
    B = sqrt(n * sum(temp.^2) - sum(temp)^2);
    C = sqrt(n * sum(y.^2) - sum(y)^2);
    r(i) = A / (B * C);
endfor

r
index = find(r == max(r))
```

✓ **Output :**

```
temp =
    0   -2   -1

temp =
   -2   -1    3

temp =
   -1    3   -4

temp =
    3   -4   -2

temp =
   -4   -2   -1

temp =
   -2   -1    2

r =

   -0.5695   -0.6996    1.0000   -0.3554   -0.2485   -0.6611

index = 3
>>
```

(2) Coefficient of correlation on speech signal.

✓ **Source Code :**

```
clc; clear all; close all;
T = audioread('Sample_Audio.wav');
#sound(T)
S = audioread('good_morning.wav');
#sound(S)
n = length(S);

for i = 1:length(T) - length(S) + 1
    A = n * sum(T(i:i + (length(S) - 1)) .* S) - sum(T(i:i +
        (length(S) - 1))) * sum(S);
```

```

B = sqrt(n * Fsum(T(i:i + (length(S) - 1)).^2) - sum(T(i:i+
(length(S) - 1)).^2));
C = sqrt(n * sum(S.^2) - sum(S)^2);
r(i) = A / (B * C);
endfor

max_r = max(r)
index = find(r == max(r))
subplot(3, 1, 1);
plot(T);
title('Sample Audio')
subplot(3, 1, 2);
plot(S);
title('good morning')
subplot(3, 1, 3);
plot(r);
title('Correlation')

```

✓ **Output :**

```

max_r = 1
index = 6265
>>

```

✓ **Graph :**

