**Linear Algebra Assignment 5**

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**Applications of Linear Algebra on Page Rank Algorithm**

**Python code (executed on IDLE) :**

import numpy as np

import scipy as sc

import pandas as pd

from fractions import Fraction

def display\_format(my\_vector, my\_decimal):

return np.round((my\_vector).astype(np.float), decimals=my\_decimal)

my\_dp = Fraction(1,3)

Mat = np.matrix([[0,0,1],

[Fraction(1,2),0,0],

[Fraction(1,2),1,0]])

Ex = np.zeros((3,3))

Ex[:] = my\_dp

beta = 0.7

Al = beta \* Mat + ((1-beta) \* Ex)

r = np.matrix([my\_dp, my\_dp, my\_dp])

r = np.transpose(r)

previous\_r = r

for i in range(1,100):

r = Al \* r

print(display\_format(r,3))

if (previous\_r==r).all():

break

previous\_r = r

print ("Final:\n", display\_format(r,3))

print ("sum", np.sum(r))

**Output screenshots :**

