Code to determine if a set of vectors is linearly independent

**import** numpy **as** np

'''Function to check if the generated vectors fulfil the independency requirements'''

#input two lists a & b, each contains 4 vectors

#Return "True" if any 3 pairs of vectors from (a1,b1),(a2,b2),(a3,b3),(a4,b4) are linearly independent

**def** check\_dependency(a,b):

#

**for** v1 **in** range(1,3): #1st vector from 1 to 2

**for** v2 **in** range(v1+1,4):

**for** v3 **in** range(v2+1,5):

squareMatrix = np.vstack((a[v1], b[v1], a[v2], b[v2],a[v3], b[v3]))

determinant = np.linalg.det(squareMatrix)

**if** determinant == 0: #if determinant is 0, the vectors are not linearly dependent

**return** False

# check if a0,b0 and any two random selected pairs of vectors are linearly independent

**for** v1 **in** range(1,4): #1st vector from 1 to 3

**for** v2 **in** range(v1+1,5):

squareMatrix = np.vstack((a[0], b[0], a[v1], b[v1], a[v2], b[v2]))

determinant = np.linalg.det(squareMatrix)

**if** determinant == 0: #if determinant is 0, the vectors are not linearly dependent

**return** False

**return** True