# 4ynougipo

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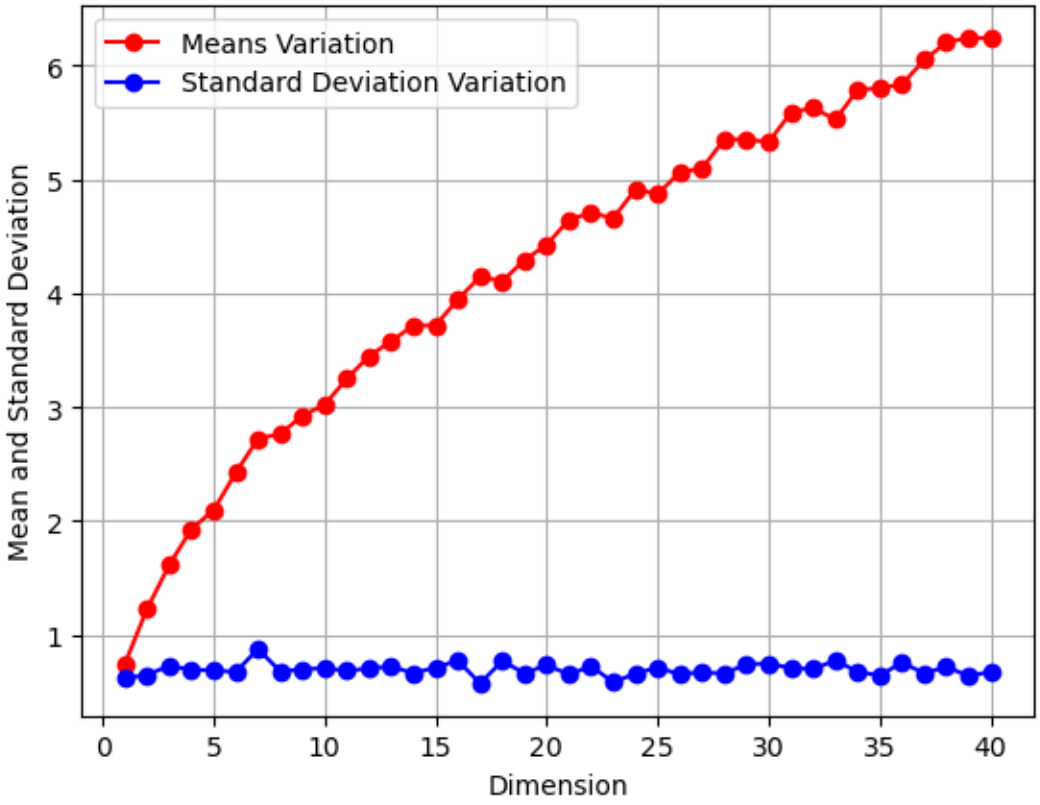
[1]:
```
import sys
import numpy as np
import time

import matplotlib.pyplot as plt
```

[5]:
```
dimensions =␣
 ↪[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,
radii = np.zeros(40)
radiiMeans = np.zeros(40)
radiiStd = np.zeros(40)
for m in dimensions:
    # Sample from an m-dimensional Gaussian distribution
    points = np.random.normal(0, 1, (100, m))

    # Compute the radii of the points
    points_radii_sq = np.sum(points**2, axis=1)
    #print(points_radii_sq.shape)
    points_radii = np.sqrt(points_radii_sq)

    # Compute the mean and standard deviation of the radii
    mean_radius = np.mean(points_radii)
    std_radius = np.std(points_radii)

    radiiMeans[m-1] = mean_radius
    radiiStd[m-1] = std_radius

cl = ['red', 'blue']
plt.plot(dimensions, radiiMeans, cl[0], ls = '-', marker = 'o', label = 'Means␣
 ↪Variation')
plt.plot(dimensions, radiiStd, cl[1], ls = '-', marker = 'o', label = 'Standard␣
 ↪Deviation Variation')
plt.grid()
plt.legend()
plt.xlabel('Dimension')
plt.ylabel('Mean and Standard Deviation')
```

[5]: Text(0, 0.5, 'Mean and Standard Deviation')

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