

用舍选法产生二维随机向量

In [1]:



```
1 import numpy as np
2 import matplotlib.pyplot as plt
3 import time
```

In [2]:

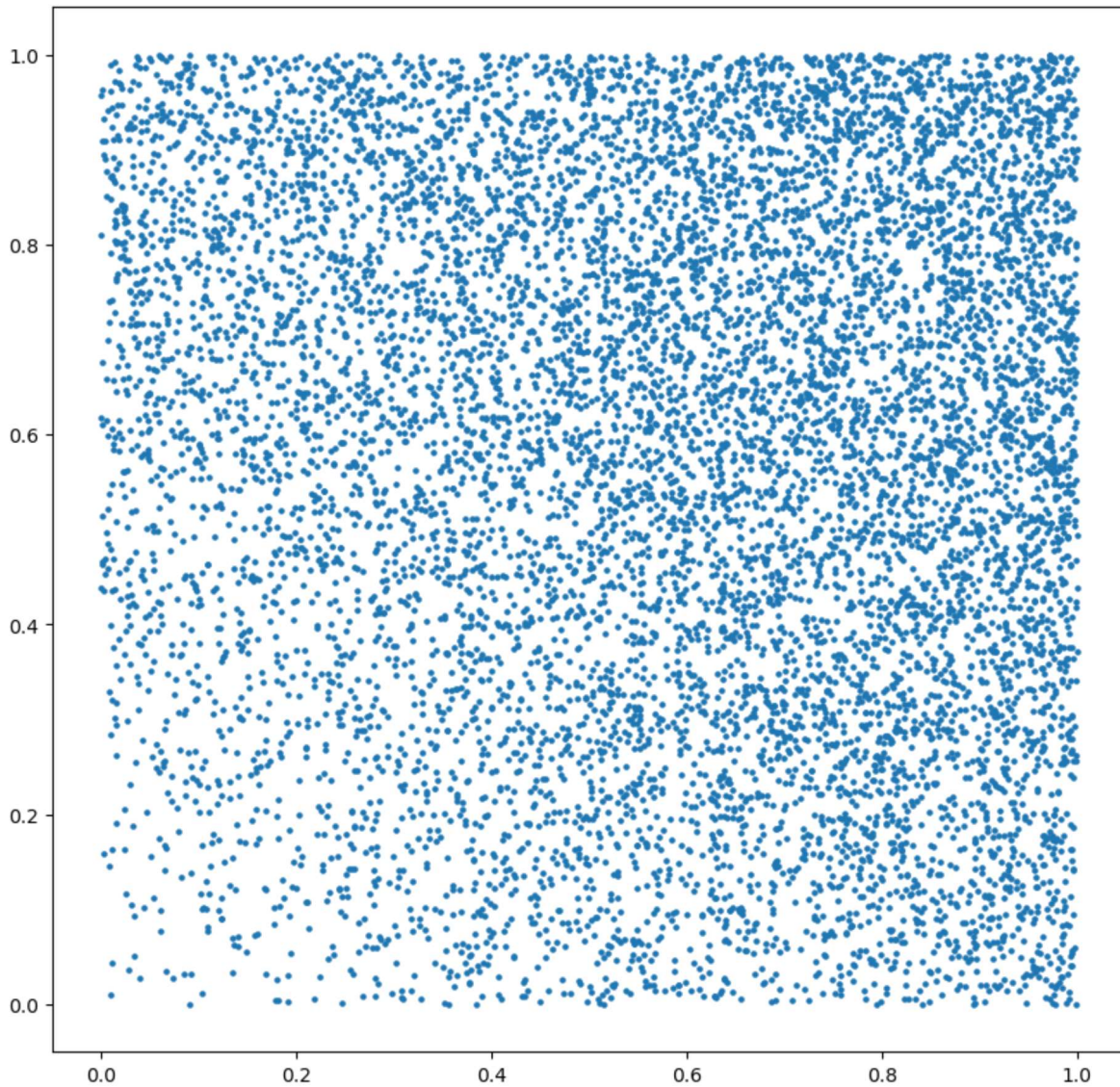


```
1 def fxy(x, y):
2     return (x + y)/2
3 X = []
4 Y = []
5 N = 0
6 #start = time.time()
7 while N < 10000:
8     a, b, c = np.random.random(3)
9     if fxy(a, b) >= c:
10         X.append(a)
11         Y.append(b)
12         N += 1
13 #print(f"Time: {time.time() - start} s")
```

In [3]:



```
1 plt.figure(figsize=(10,10), dpi=100)
2 plt.scatter(X, Y, 5)
3 plt.show()
```



In [4]:



```
1 # 绘制三维柱形图的准备工作
2 H, x_, y_ = np.histogram2d(X, Y, bins=10, range=[[0, 1], [0, 1]])
3 x_ = (x_[1:] + x_[:-1])/2
4 y_ = (y_[1:] + y_[:-1])/2
5 xx_, yy_ = np.meshgrid(x_, y_)
6 x_, y_ = xx_.ravel(), yy_.ravel()
7 top = H.ravel() / 100.0
8 bottom = np.zeros_like(top)
9 width = depth = 0.1
```

In [5]:

```
1 # 绘制三维网格图的准备工作
2 x = np.linspace(0, 1, 11)
3 y = np.linspace(0, 1, 11)
4 x, y = np.meshgrid(x, y)
5 z = fxy(x, y)*2
```

In [6]:

```
1 fig = plt.figure(figsize=(10, 10), dpi=100)
2 ax = plt.axes(projection='3d')
3 ax.bar3d(x_, y_, bottom, width, depth, top, shade=True, color='yellow', label='XY Distribution')
4 ax.plot_wireframe(x, y, z, color='blue', label='Theoretical Distribution')
5 plt.show()
```

