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"""
Registration : xxxx
Description  : Coin Toss and Binomial Distribution
Author      : AKB
"""

import numpy as np
import matplotlib.pyplot as plt

n = 2000 # Number of Trials
N = np.arange(1, n)
X = np.random.choice([0, 1], size=n) # Throw dice and populate a sequence of n Heads
(1's) and Tails (0's)
Y = np.array([float(np.sum(X[:i]))/i for i in N]) # Fraction of Head in Total Trial

# Plot
plt.figure(1)
plt.subplot(2,1,1)
plt.plot(N, Y, '.', lw=2, ms=6, c='olive')
plt.axhline(0.5, lw=2) # draw a horizontal line
plt.xlabel('Number of Trials'); plt.xticks(size=12);
plt.ylabel('Fraction of Head'); plt.yticks(size=12);
plt.grid()

# Probability of Occuring Head
plt.subplot(2,1,2)
nn, bins, patches = plt.hist(Y, 'sturges', density=True, color='seagreen',
edgecolor='slategray', label=r'$N=${str(n)}');
plt.legend(loc='best', prop={'size':16})
plt.grid(axis='y', alpha=0.75)
plt.xlabel('Fraction of Head'); plt.xlim([0, 1]); plt.xticks(size=12);
plt.ylabel('Probability of Occurence'); plt.yticks(size=12);
plt.show()
```