import numpy as np

# Data points (X) and initial centers (C)

X = np.array([[5.9,3.2],[4.6,2.9],[6.2,2.8],[4.7,3.2],

[5.5,4.2],[5.0,3.0],[4.9,3.1],[6.7,3.1],

[5.1,3.8],[6.0,3.0]])

C = np.array([[6.2,3.2],[6.6,3.7],[6.5,3.0]]) # Initial centers

for i in range(100): # Max iterations

# Assign points to nearest center

D = np.sqrt(((X[:,None] - C)\*\*2).sum(axis=2)) # Euclidean distances

L = np.argmin(D, axis=1) # Labels

# Update centers

new\_C = np.array([X[L==k].mean(axis=0) for k in range(3)])

# Check convergence

if np.allclose(C, new\_C):

print(f"Converged in {i+1} iterations")

break

C = new\_C

# Print requested info

if i == 0: print(f"After 1 iteration (red): {np.round(C[0], 3)}")

if i == 1: print(f"After 2 iterations (green): {np.round(C[1], 3)}")

print(f"Final center (blue): {np.round(C[2], 3)}")