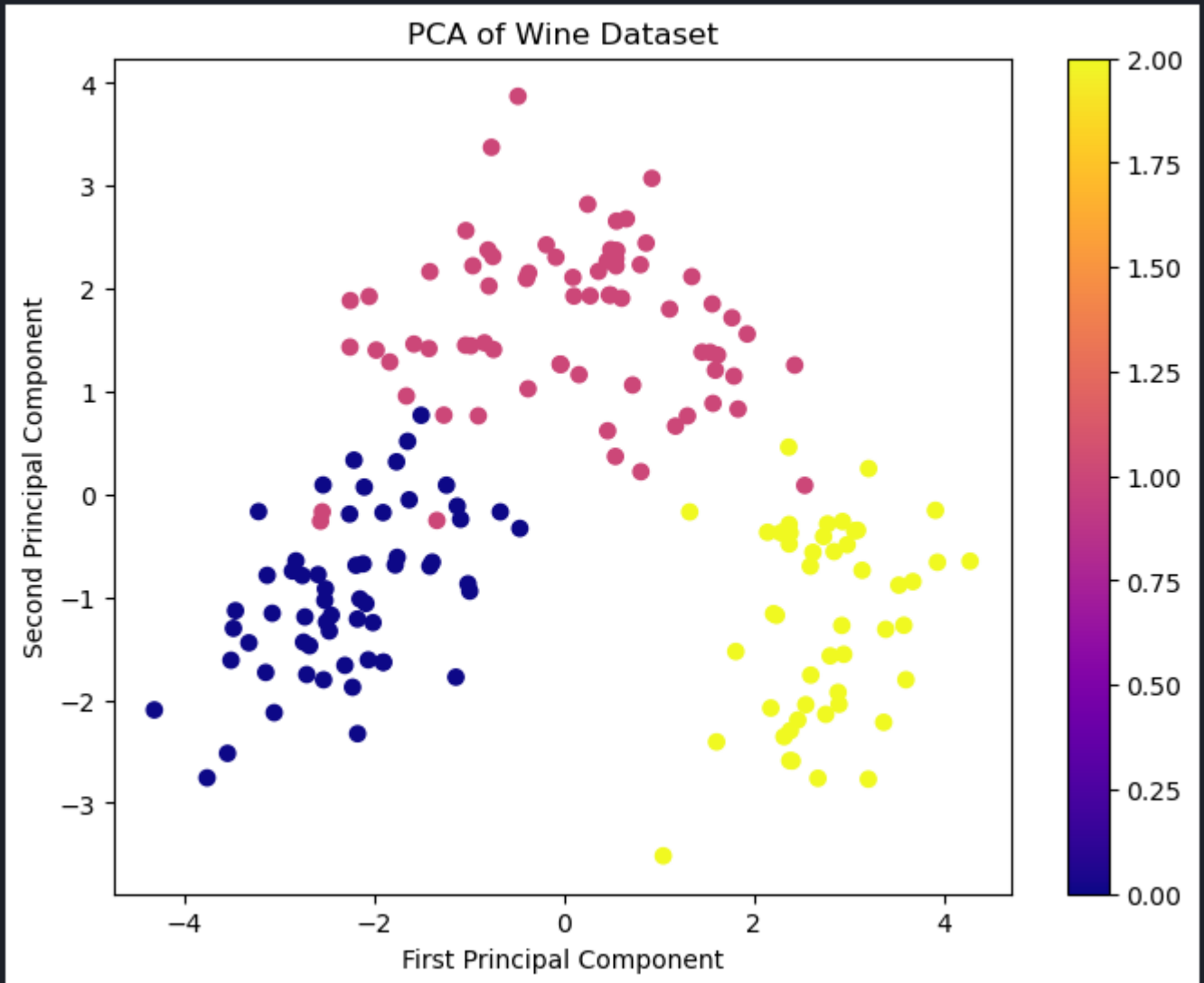
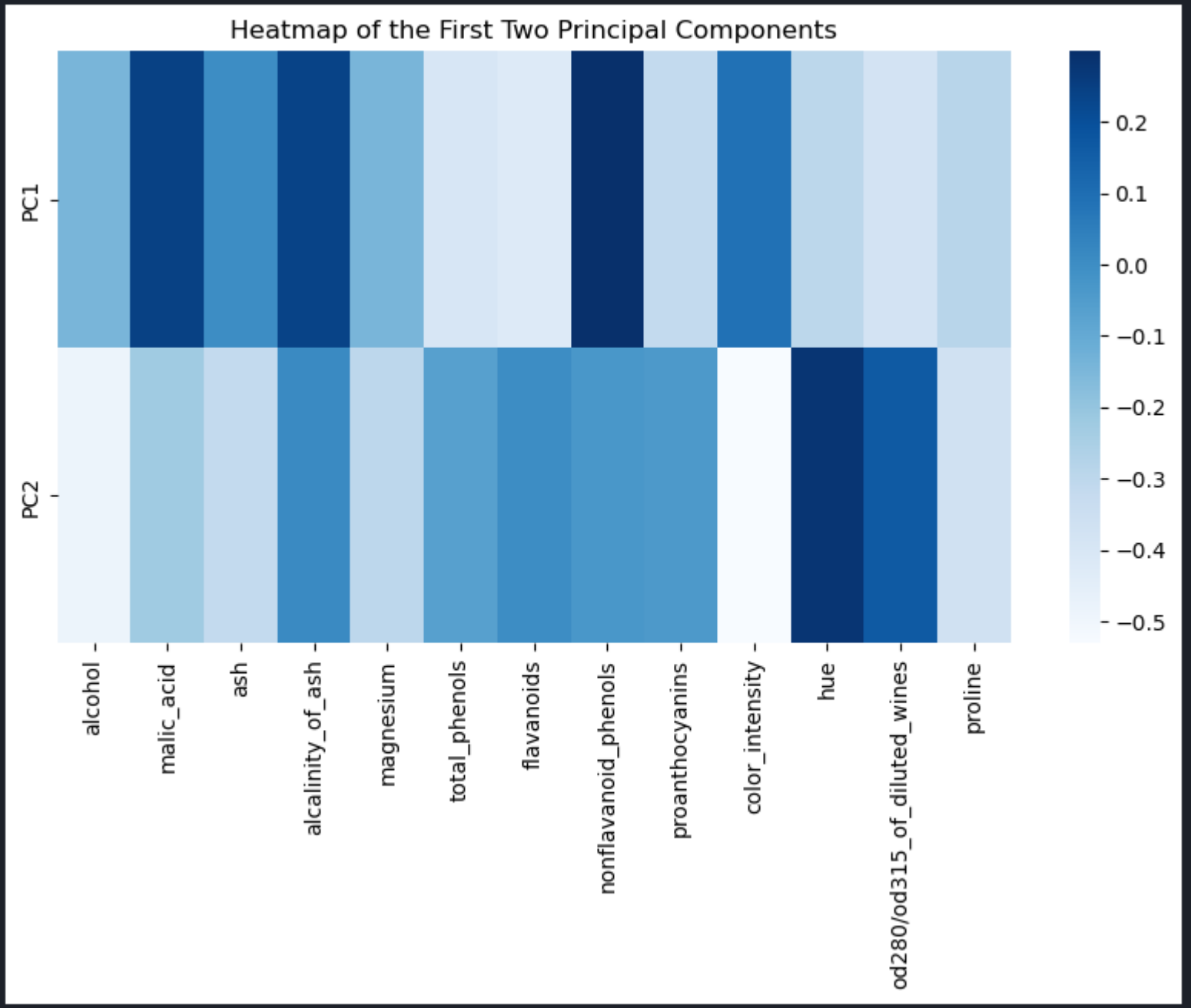
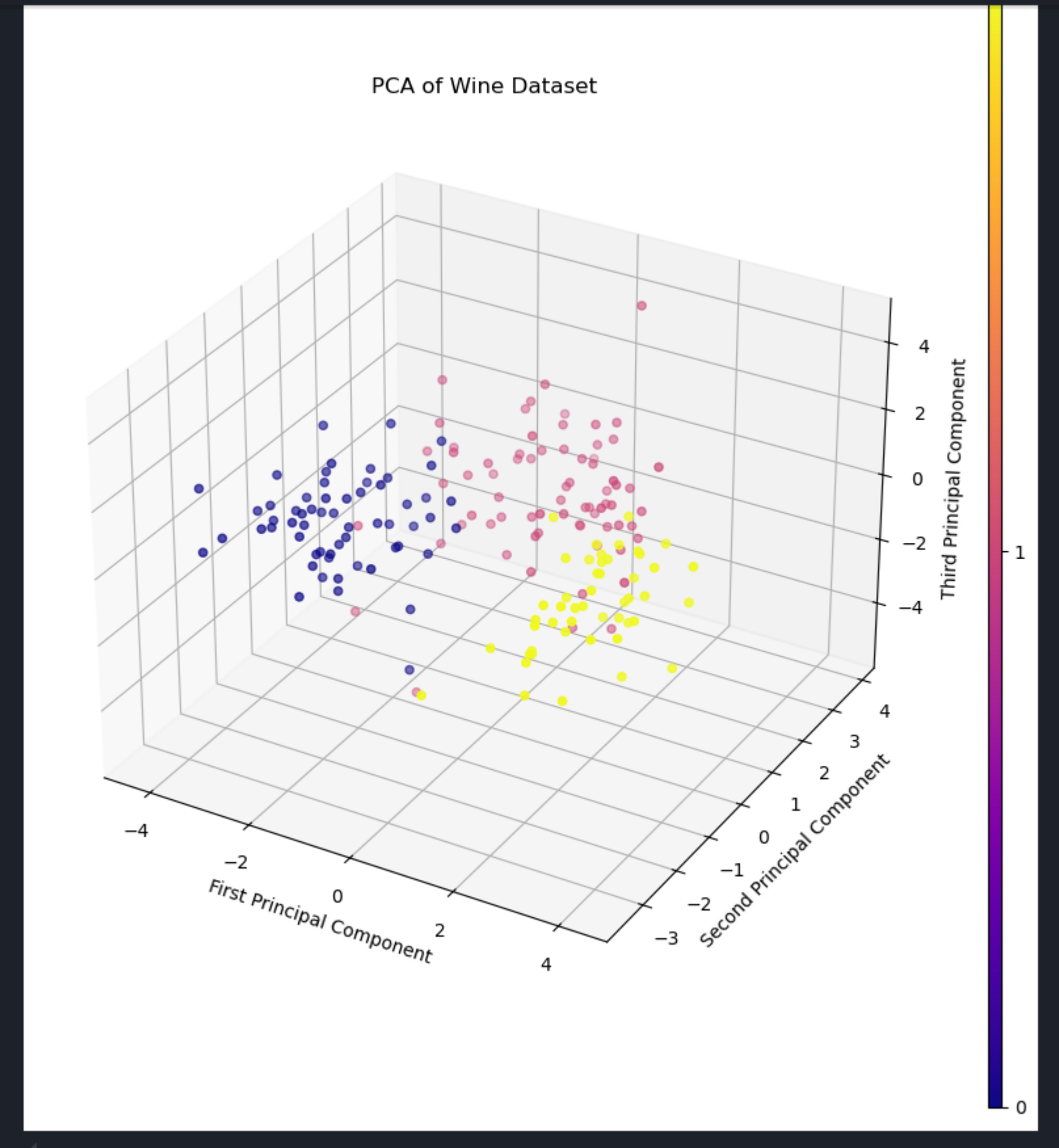
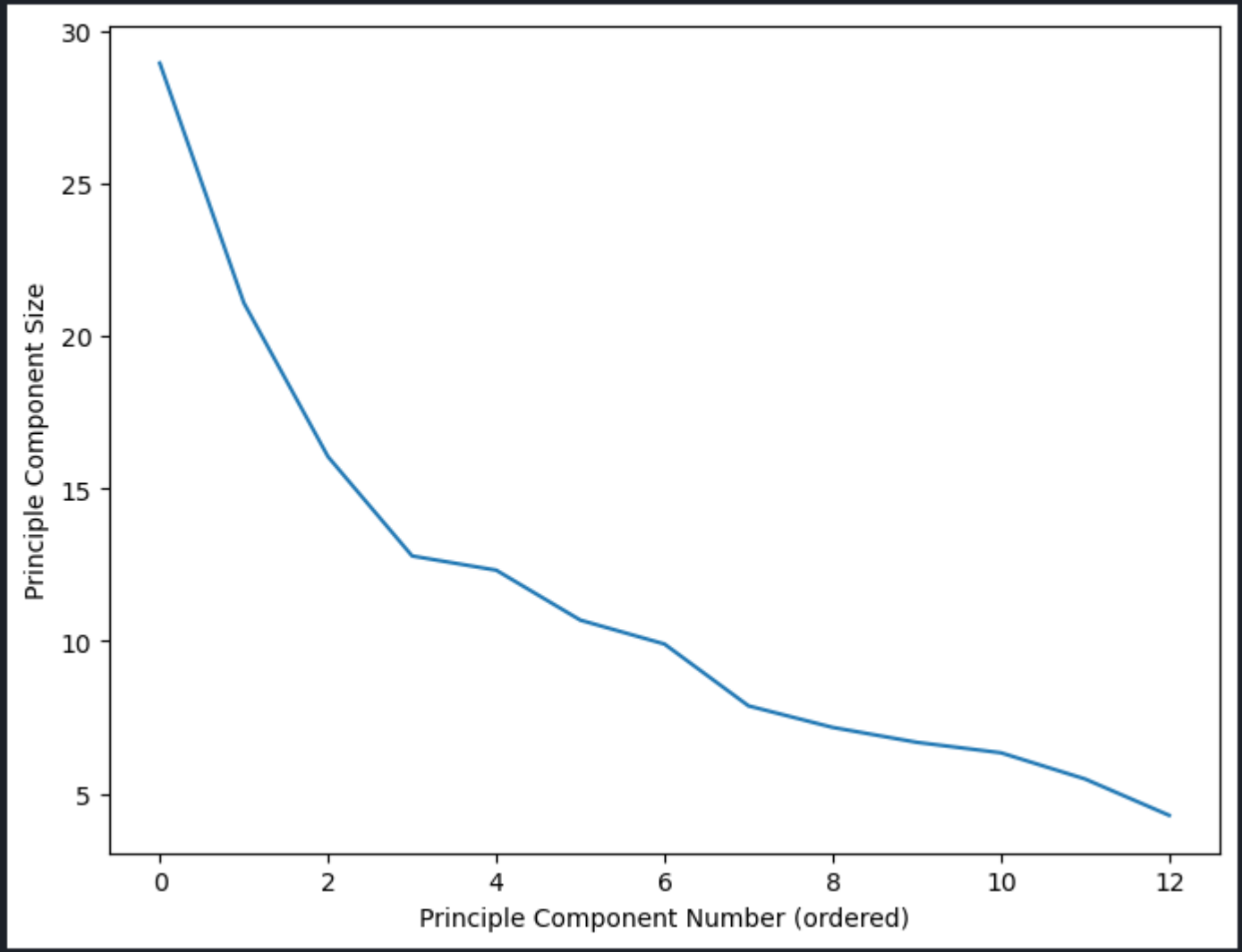
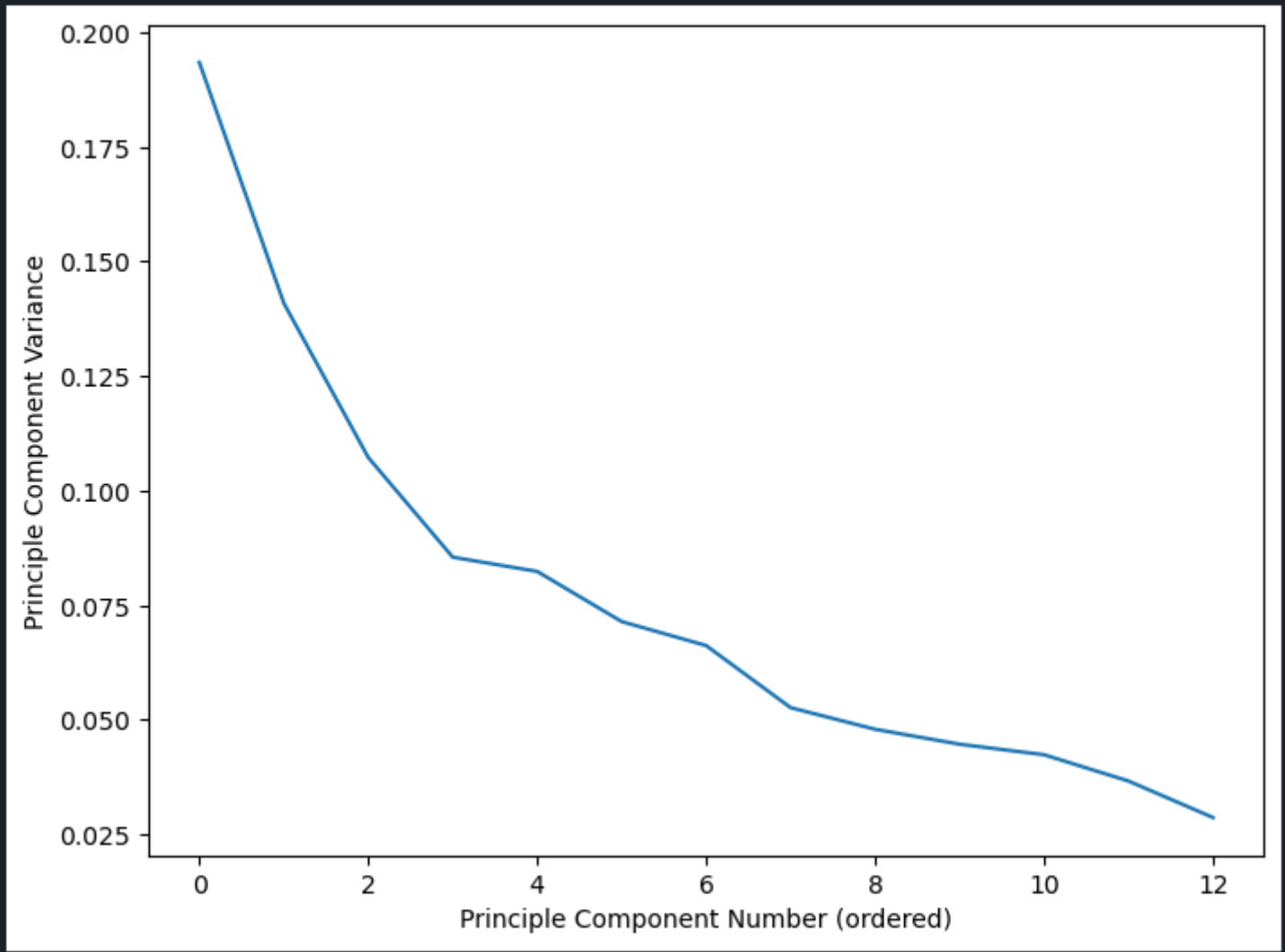
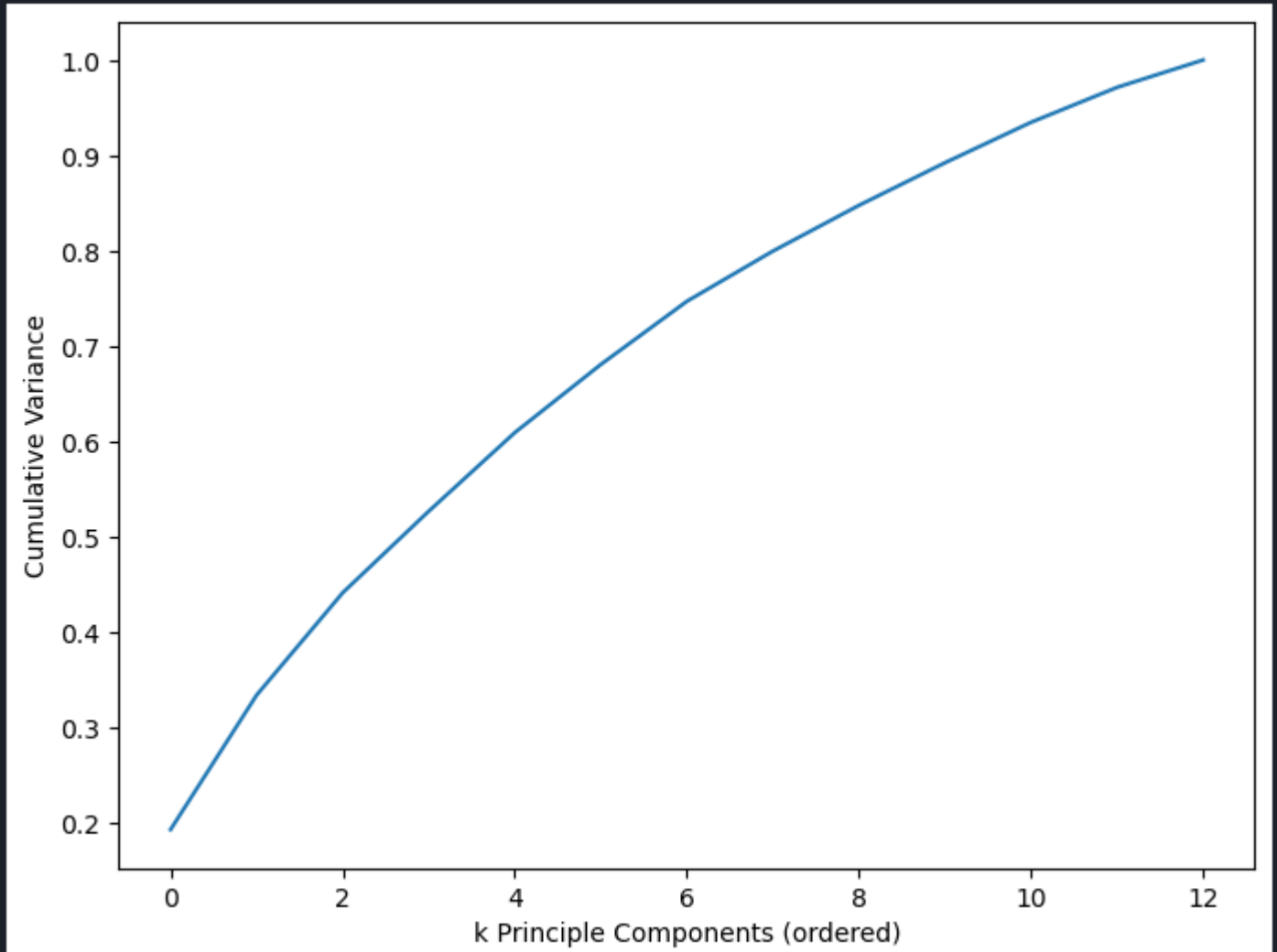

PCA of Wine Dataset
Second Principal Component
First Principal Component
4
3
2
1
0
−1
−2
−3
−4
−2
0
2
4
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00

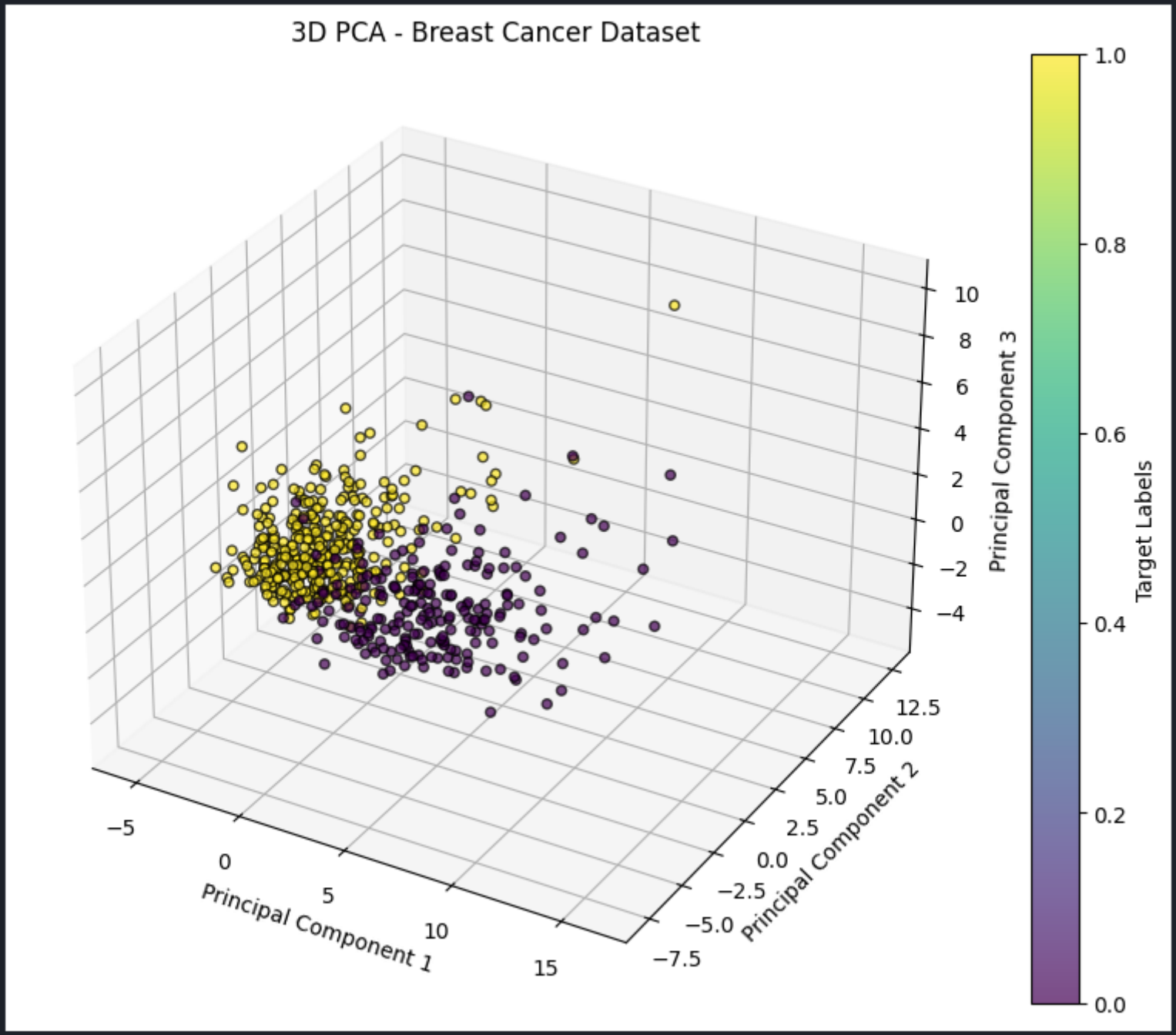

Heatmap of the First Two Principal Components
PC1
PC2
alcohol
malic_acid
ash
alcalinity_of_ash
magnesium
total_phenols
flavanoids
nonflavanoid_phenols
proanthocyanins
color_intensity
hue
od280/od315_of_diluted_wines
proline
0.2
0.1
0.0
−0.1
−0.2
−0.3
−0.4
−0.5

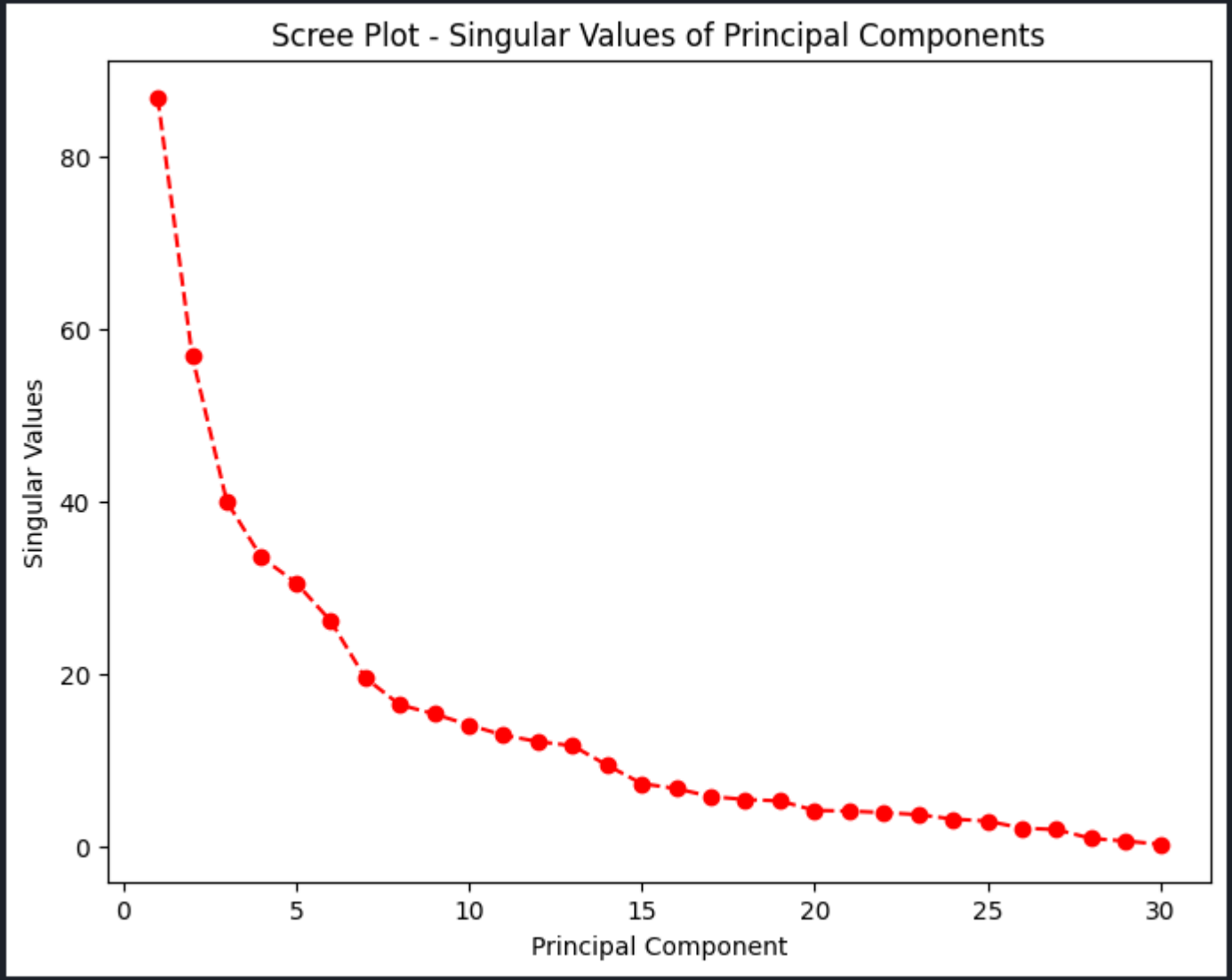

PCA of Wine Dataset
First Principal Component
Second Principal Component
Third Principal Component
−4
−2
0
2
4
−3
−1
1
3

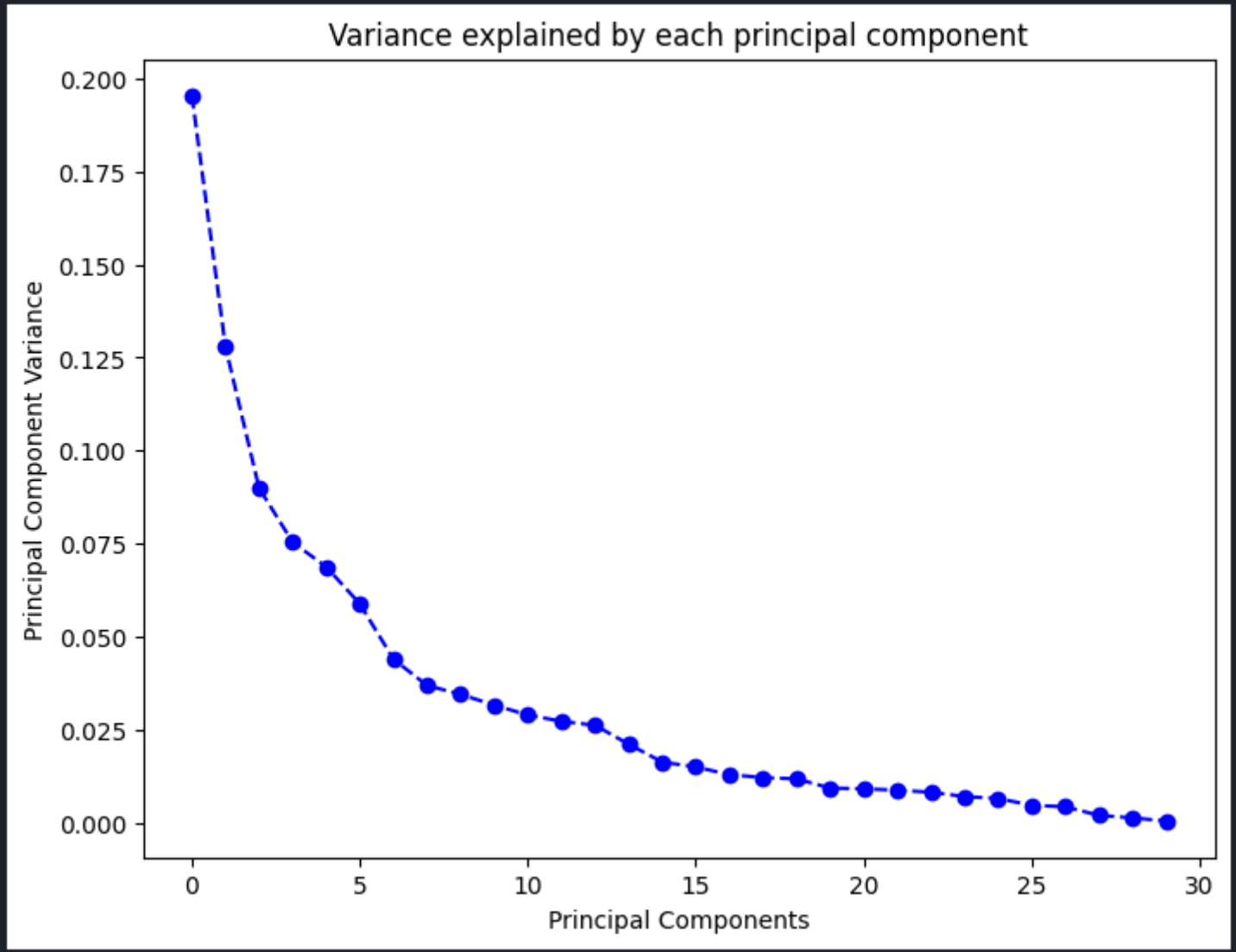

30
25
20
15
10
5
Principle Component Size
0
2
4
6
8
10
12
Principle Component Number (ordered)

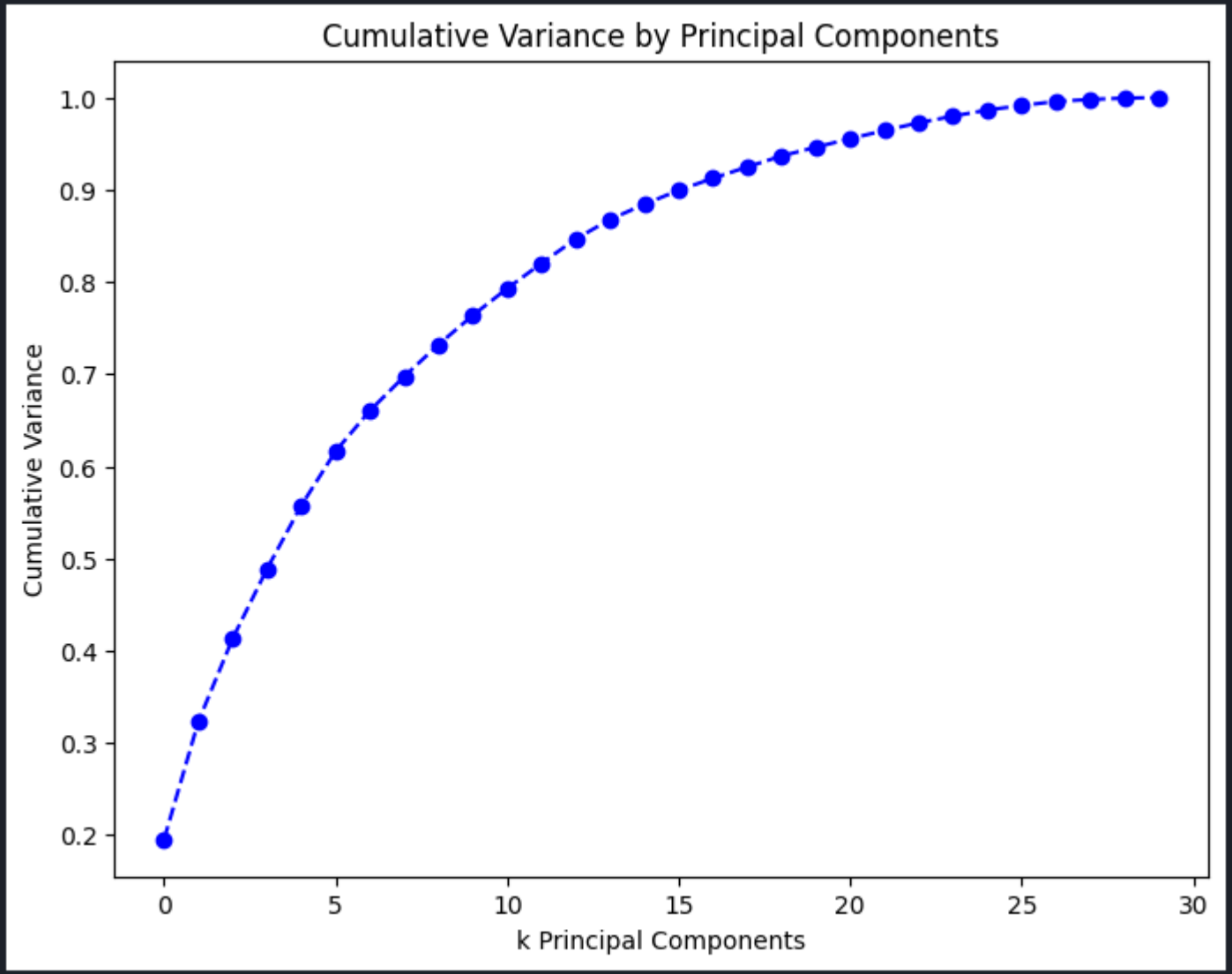

0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
Principle Component Variance
0
2
4
6
8
10
12
Principle Component Number (ordered)

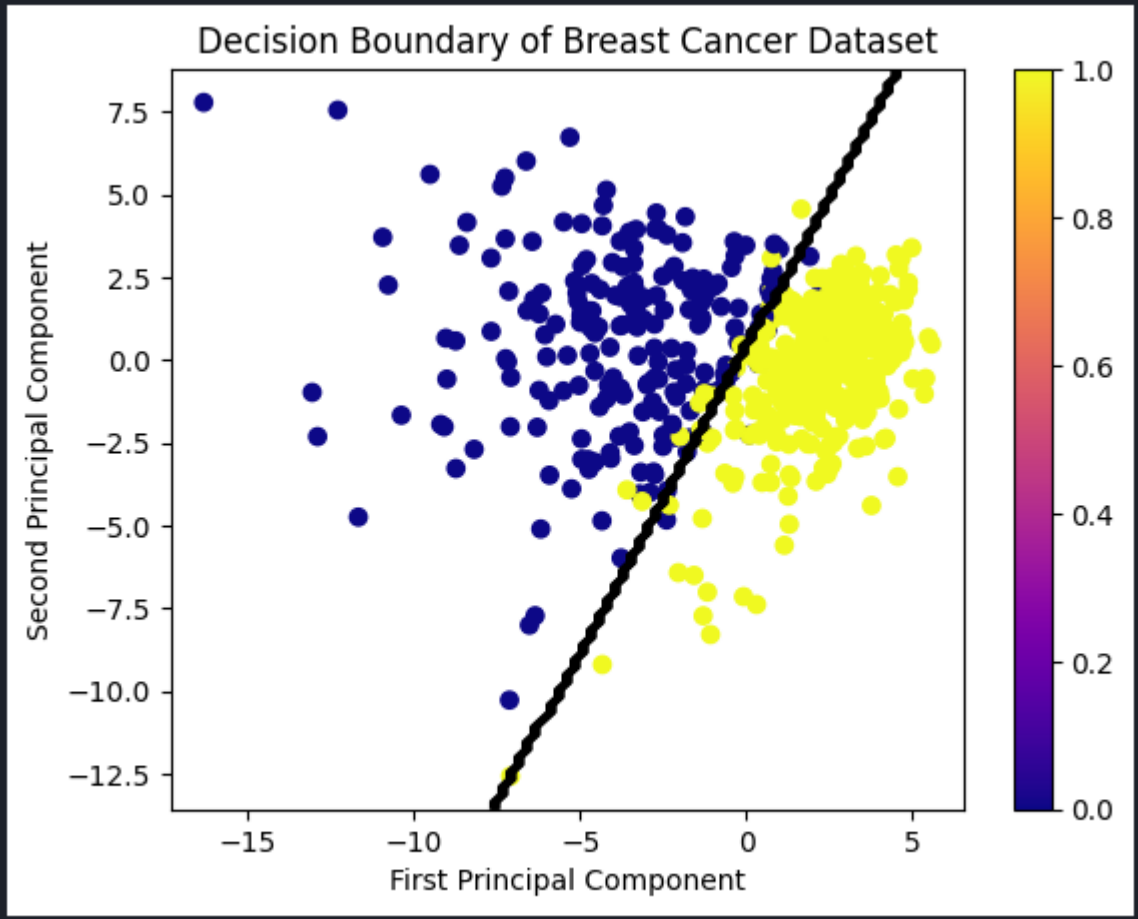

Cumulative Variance
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0
2
4
6
8
10
12
k Principle Components (ordered)


3D PCA - Breast Cancer Dataset
Principal Component 1
Principal Component 2
Principal Component 3
Target Labels
−5
0
5
10
15
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
10
8
6
4
2
0
−2
−4
1.0
0.8
0.6
0.4
0.2
0.0


Scree Plot - Singular Values of Principal Components
Singular Values
Principal Component
0
20
40
60
80
0
5
10
15
20
25
30


Variance explained by each principal component
Principal Component Variance
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
5
10
15
20
25
30
Principal Components


Cumulative Variance by Principal Components
Cumulative Variance
k Principal Components
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0
5
10
15
20
25
30


Decision Boundary of Breast Cancer Dataset
Second Principal Component
First Principal Component
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−12.5
−15
−10
−5
0
5
1.0
0.8
0.6
0.4
0.2
0.0