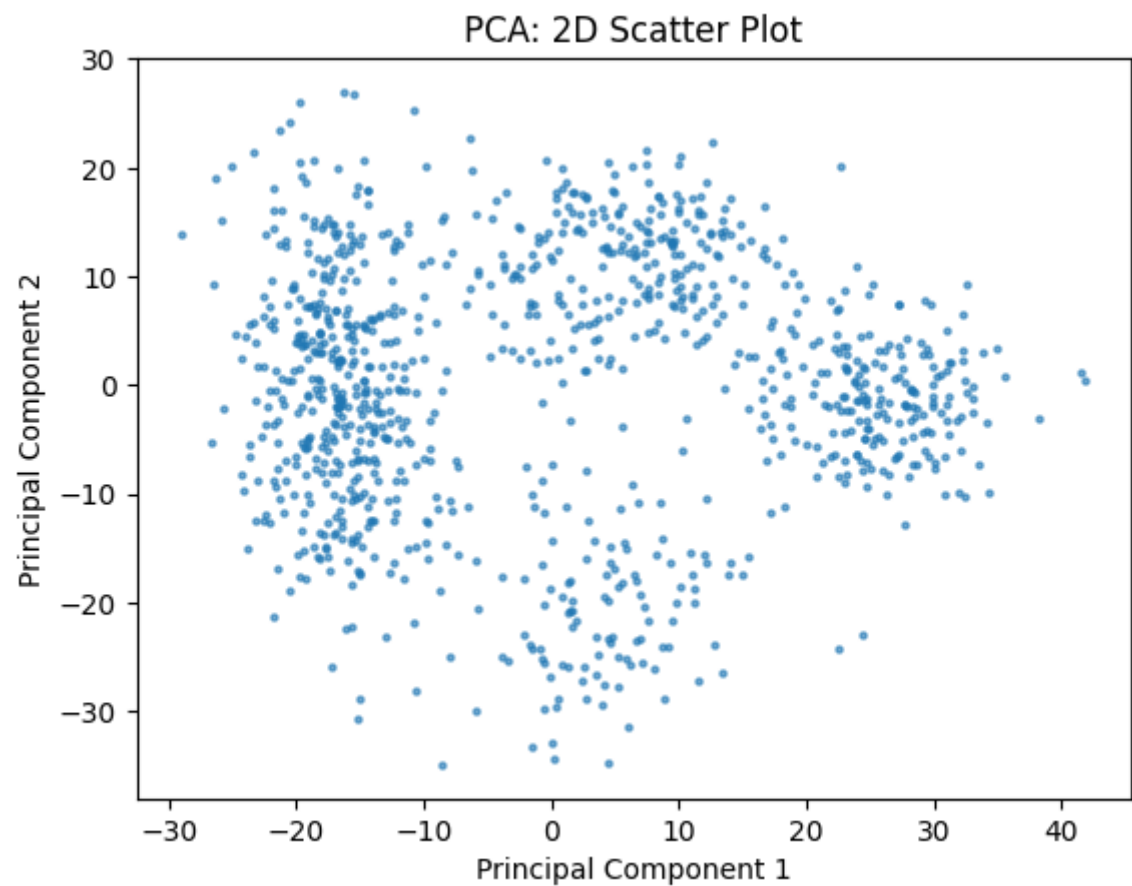


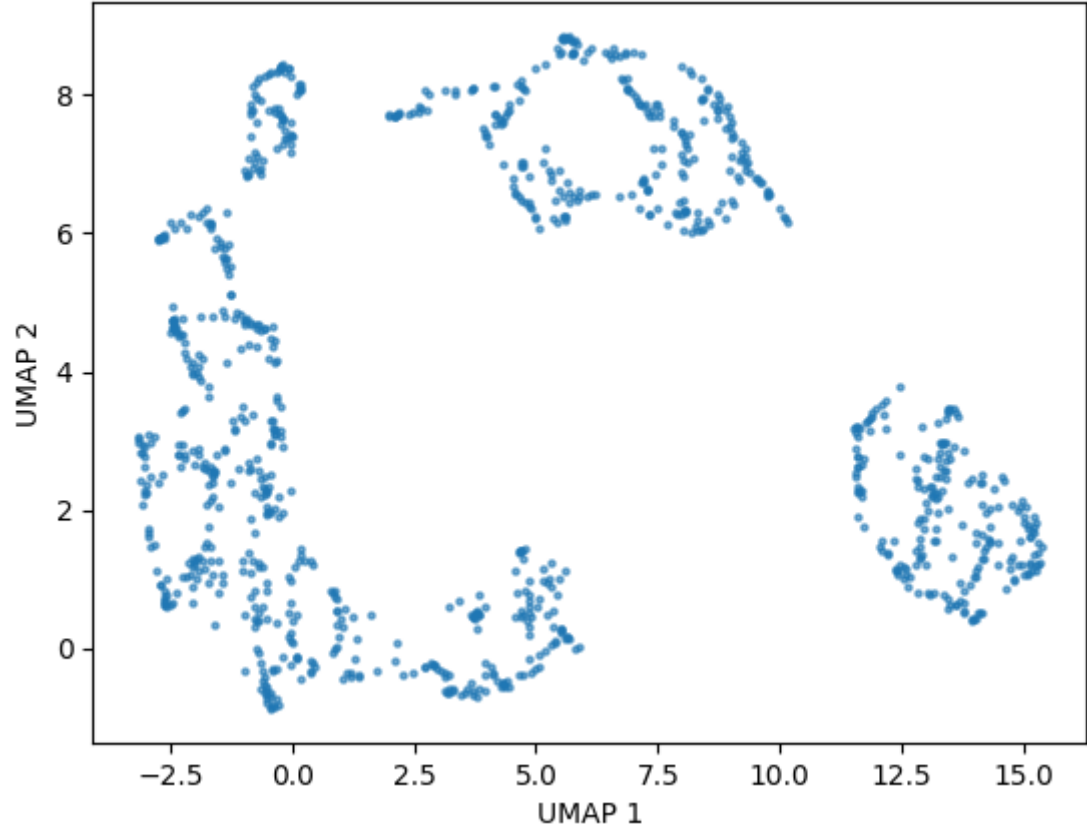
Assignment 4: Principal component analysis (PCA) and expectation-maximization (EM) algorithm

1905066 - Abir Muhtasim

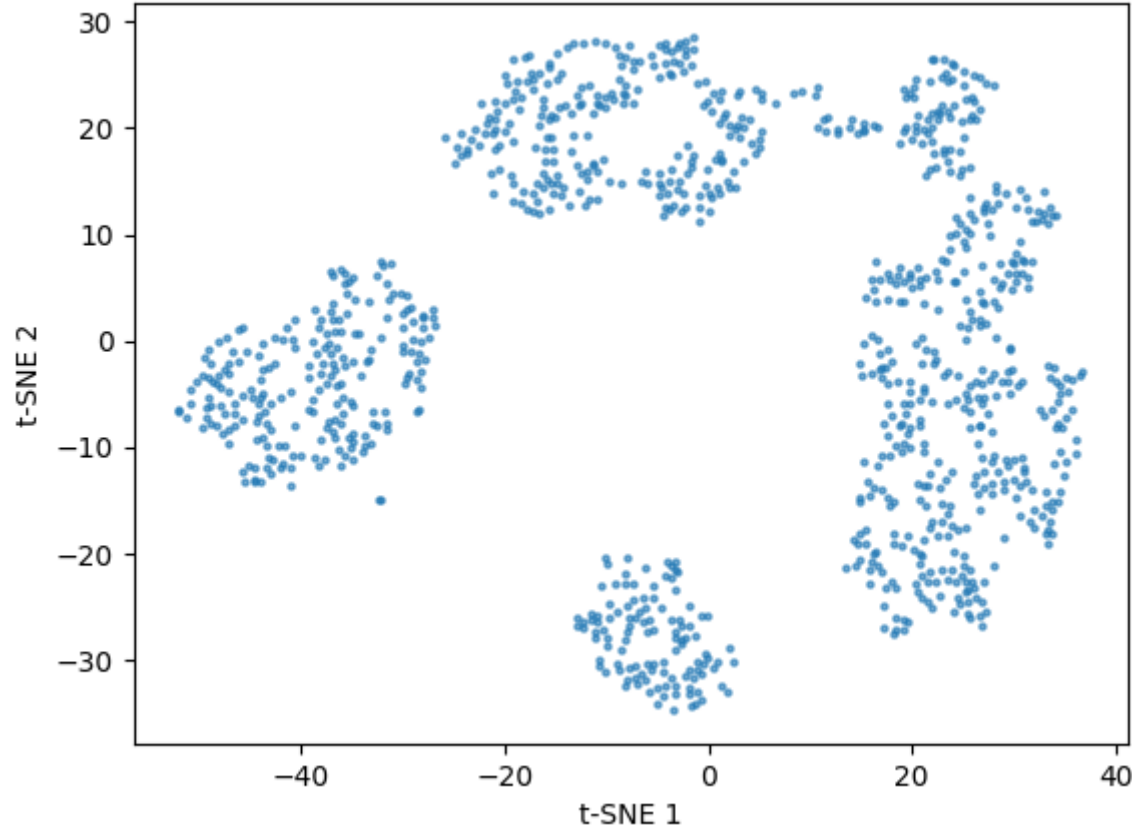
Task - 1 : PCA



UMAP: 2D Scatter Plot



t-SNE: 2D Scatter Plot



How to run

Set the dataset path

```
data = np.loadtxt('path/to/data')
```

Need numpy version 2.0 for umap-learn library

Task - 2 : EM Algorithm

```
Mean children with family planning: 1.7893097099558297  
Mean children without family planning: 4.9165784861760615  
Proportion family planning: 0.35800520079672793  
Proportion without family planning: 0.6419947992032721
```

How to run

Set the dataset path

```
data = np.loadtxt('path/to/data')
```