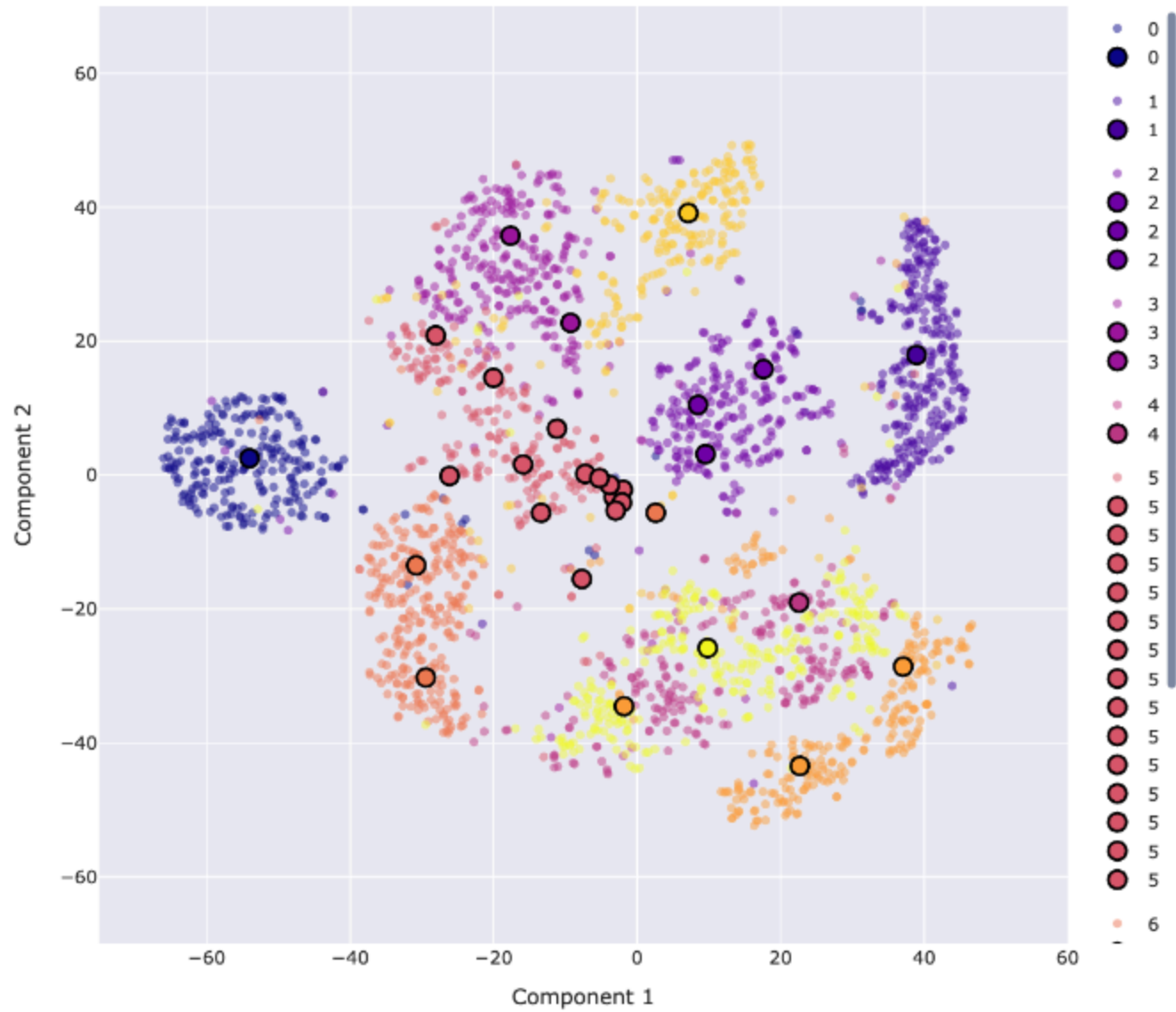


# Clusters



# Gradient-Based Clustering

The optimization problem is:

$$\arg \min_{S, \gamma_j \geq 0} |S| \quad \text{s.t.} \quad \max_{w \in W} \|\nabla_w F(w, V) - \nabla_w F(w, S)\| \leq \epsilon$$

# Greedy Algorithms

## 1. Subset Selection:

$$F(S_k) \geq \left(1 - \frac{1}{e}\right) F(\text{OPT})$$

## 2. Complexity:

- Time Complexity:  $O(nk)$ .