**Unsupervised Learning**

A screenshot of a cell phone

Description automatically generated

**Optimization objective**

**A screenshot of a cell phone

Description automatically generated**

**Random initialization**

A picture containing bird

Description automatically generated

A close up of a map

Description automatically generated

**Dimensionality Reduc1on**

**A screenshot of a cell phone

Description automatically generated**

**A screenshot of a cell phone

Description automatically generated**

**A map with text

Description automatically generated**

**A screenshot of a cell phone

Description automatically generated**

**A screenshot of a cell phone

Description automatically generated**