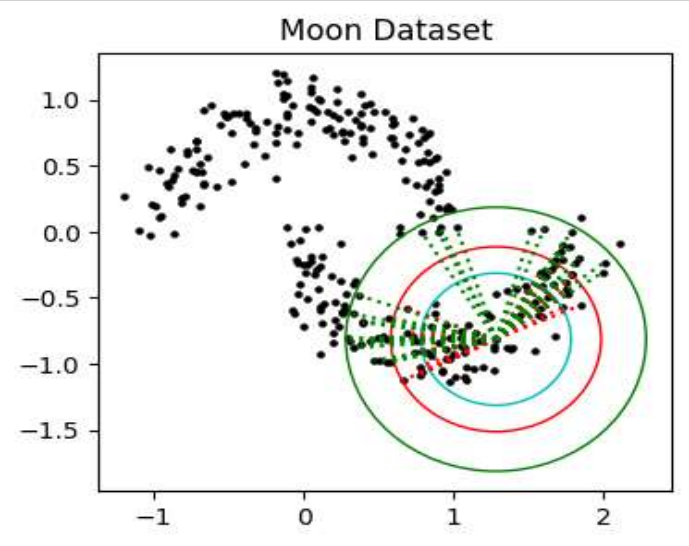
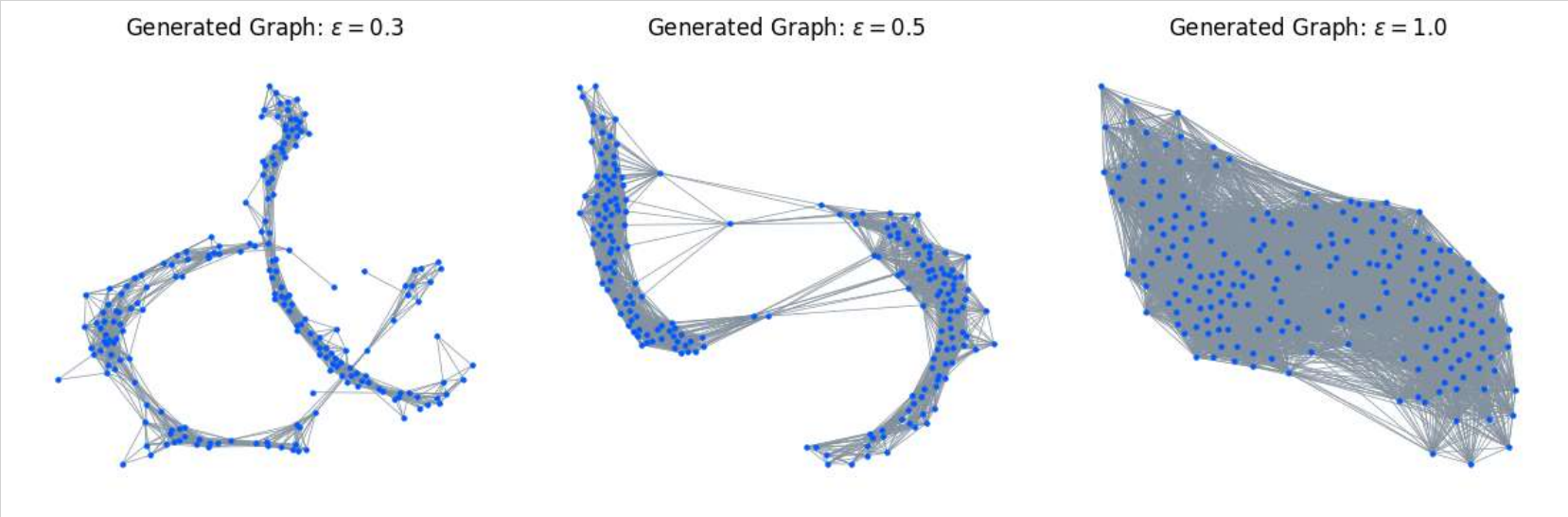
Generate Graph Structure from Vector Data





https://github.com/ChengxiPan/INFSCI-2415/blob/main/main.ipynb

The above two graphs describe the progress of a Clustering Algorithm called $\varepsilon - boom$, which generate different graph structures with the increase of ε.

- The left image shows the original distribution of Moon Dataset and the basic idea of generating graph using $\varepsilon - boom$.
  - In the shown case, $\varepsilon = [0.3, 0.5, 1.0]$, respectively.
  - Draw a circle (with radius = ε) around each node, and build edges to other nodes that fall within this circle. With the increase of ε, the number of generated edges also increase.
- The right image illustrates generated graph by different ε.
  - Nodes have few connections when ε is small, meaning it can only capture local information.
  - When ε grows to a limit, the spring_layout of graph resembles the original distribution.
  - It can be predicted that connections will be built between every 2 nodes when ε is extremely large.