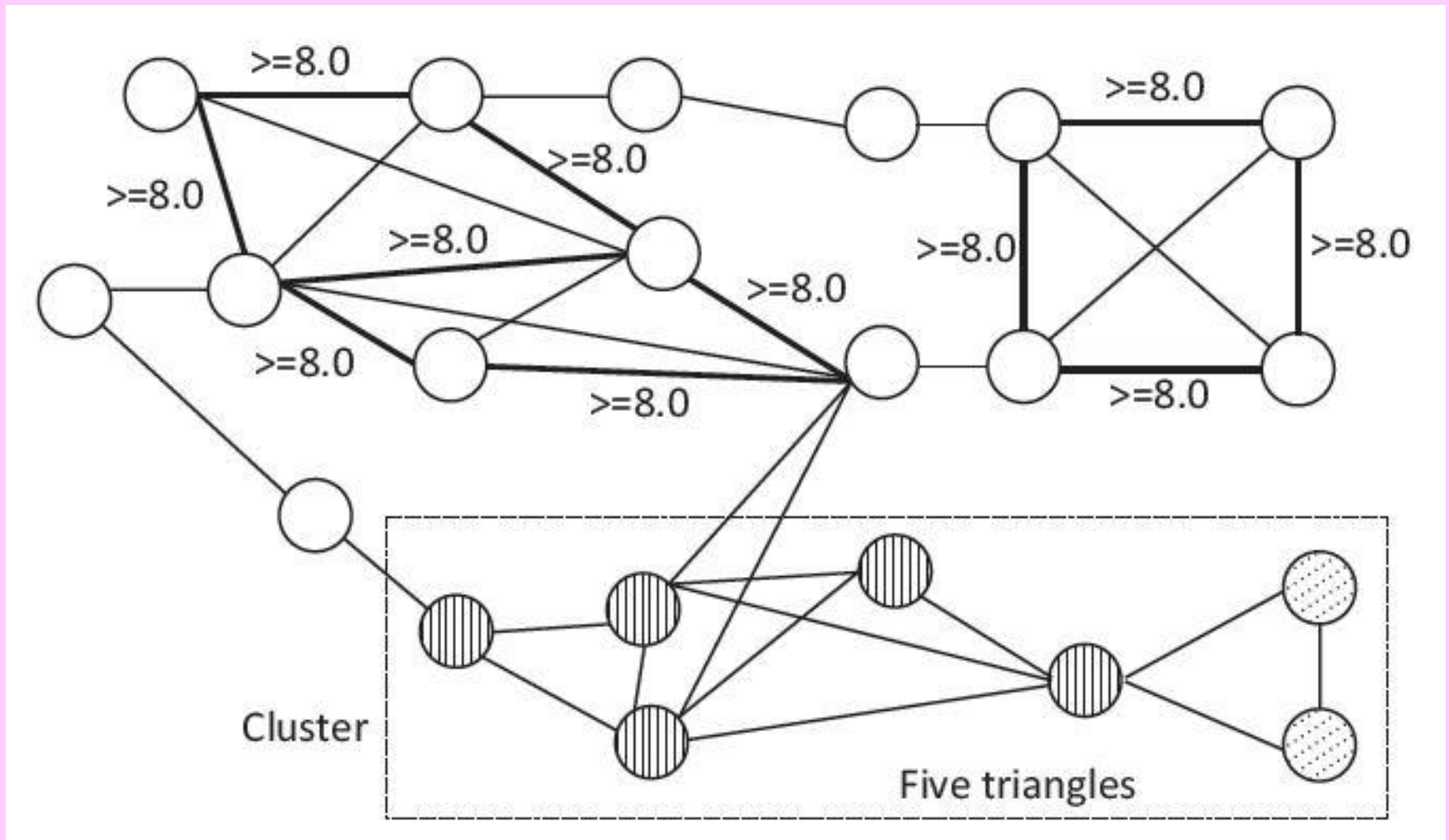# Lesson 12

Counting Triangles and Communities In Social Network Graph

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Triangles Counting

- A triangle means three vertices forming a triangle with edges interconnecting them.

- Triangle count refers to the number of triangles passing through each vertex. The count is a measure of clustering.

Figure 9.14 Clustering of five triangles and three matches of graphs

"Big Data Analytics ", Ch.09 L12: Text, Web, ...Social Network Analytics,
Raj Kamal and Preeti Saxena, © McGraw-Hill Higher Edu. India

SparkGraphX Triangle-Count Algorithm

- Computes the number of triangles passing through each vertex

- The count is a measure of clustering.

TriangleCount

- Requires the edges to be in canonical orientation (srcId < dstId)

- Source vertex ID is srcId and Destination vertex ID is dstID

- Graph is partitioned using *Graph. partitionBy operator*

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Discovery of Communities

- Three metrics identify groups and communities from a social graph

- 1. Cliques – A clique forms by a set of vertices when each of the vertices directly connects to every other individual vertex through the edges. Detecting the cliques leads to direct discovery of communities.
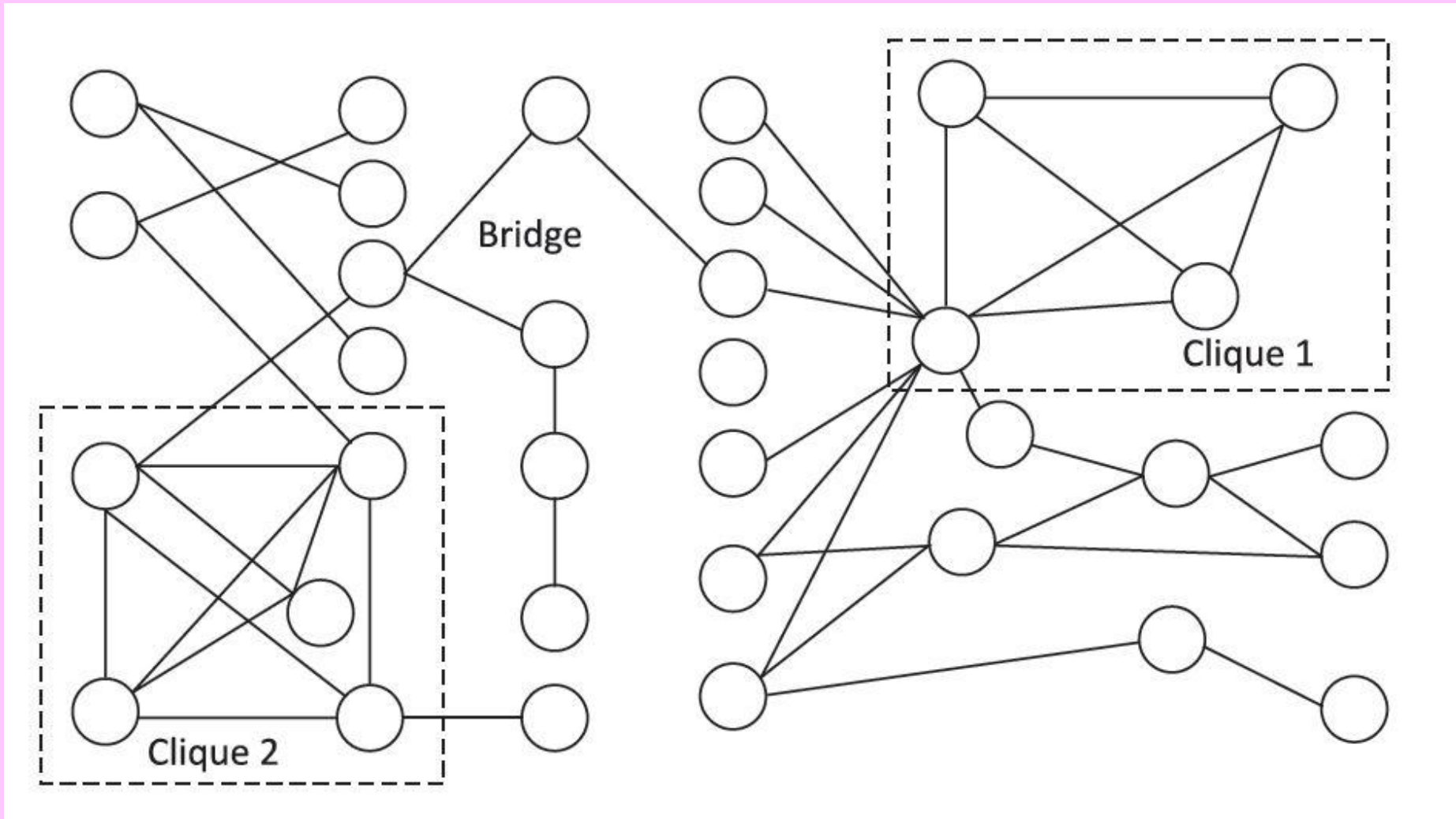
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Discovery of Communities

2. Structurally cohesive blocks.

3. Social circles from connections and neighbourhoods

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Bridge

- Enables the link between two groups

- Applications of analyzing communities, SimRanks and bridges

- Finding a set of experts, specific areas of expertise, and ranking the expertise in an organization.

Figure 9.15 Two cliques in a social graph network and a bridge between the cliques

Bridge

Clique 1

Clique 2

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Summary

We learnt:

- Clustering of triangles and matches of graphs

- Triangle Counts

- Analyzing communities

- Cliques

- Bridge between cliques

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End of Lesson 12 on
Counting Triangles and Communities In Social Network Graph