# Session 2. Graph Pattern Mining: Apriori-Based Approach

Apriori-Based Approach

- ❑ The Apriori property (anti-monotonicity): A size-k subgraph is frequent if and only if all of its subgraphs are frequent

- ❑ A candidate size-$(k+1)$ edge/vertex subgraph is generated if its corresponding two k-edge/vertex subgraphs are frequent

- ❑ Iterative mining process:

  - ❑ Candidate-generation → candidate pruning → support counting → candidate elimination

k-edge

(k+1)-edge

G

G'

G''

G_1

G_2

...

G_n
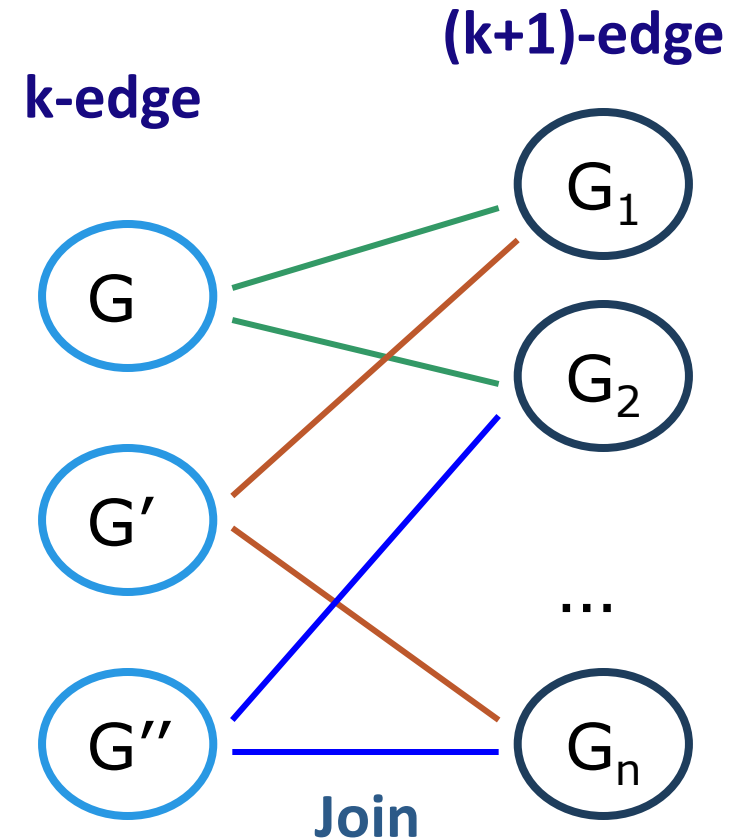
Join

Candidate Generation: Vertex Growing vs. Edge Growing

❏ Methodology: breadth-search, Apriori joining two size-k graphs

    ❏ Many possibilities at generating size-(k+1) candidate graphs
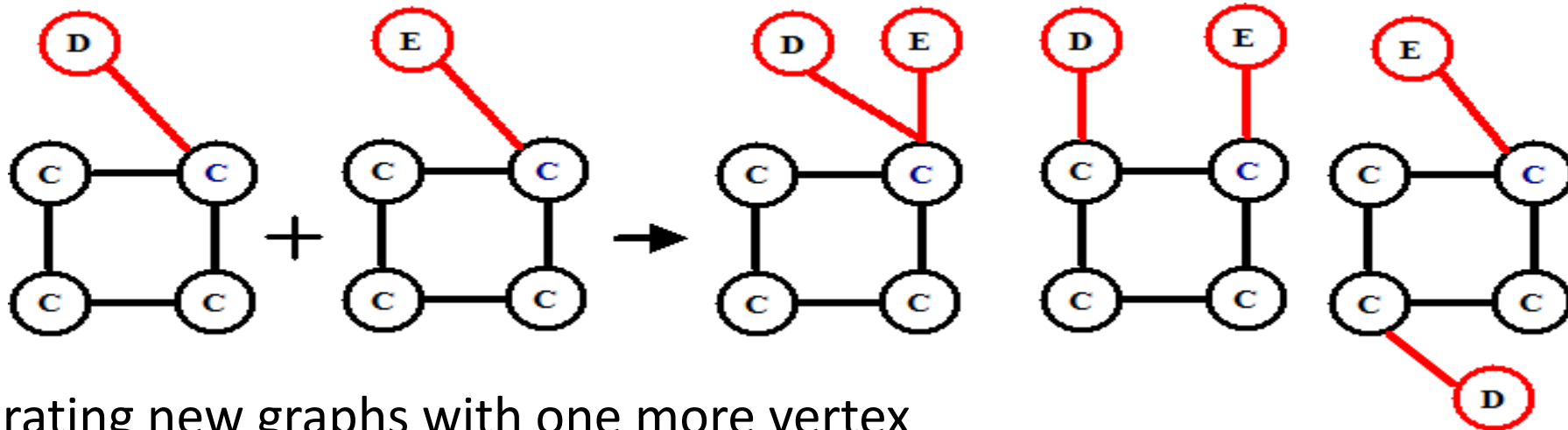
❏ Generating new graphs with one more vertex

    ❏ AGM (Inokuchi, et al., PKDD'00)

❏ Generating new graphs with one more edge

    ❏ FSG (Kuramochi and Karypis, ICDM'01)

❏ Performance shows *via edge growing* is more efficient