



Decentralized Graph Algorithms

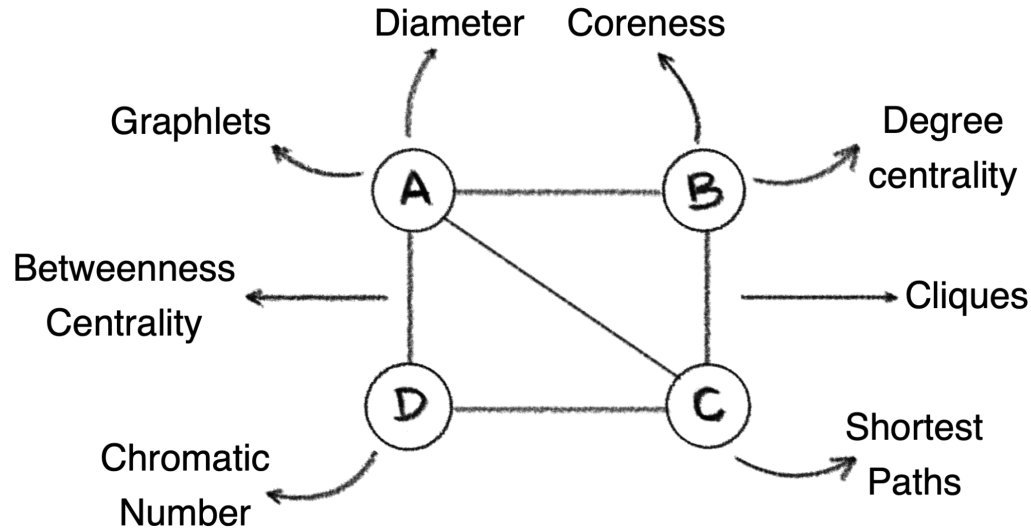
or the think like a vertex paradigm

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Common Graph Problems

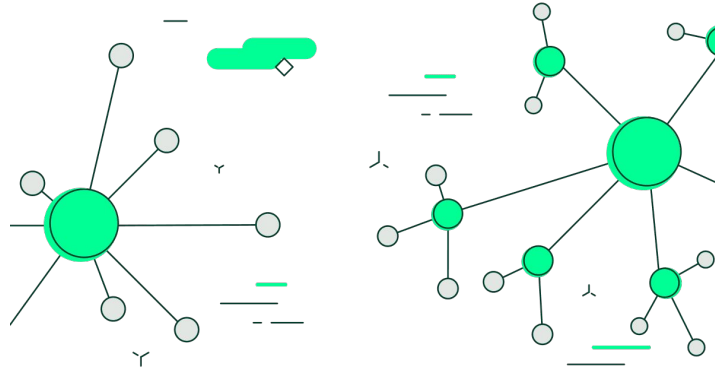
- Pattern extraction (cores, graphlets, cliques etc.)
- Metric computation (centrality, trussnes etc.)
- Temporal adaptation of static counterparts



Think like a vertex

Decentralized graph algorithms are a game-changer for managing large datasets!

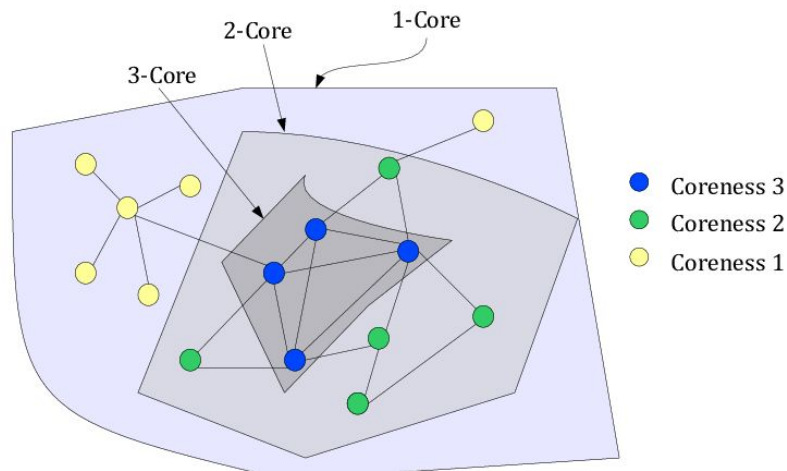
- Exploit local knowledge about your neighbors only
- Enhanced scalability
- Crucial for handling nowadays large graphs



Current work: core decomposition

k-core: induced subgraph with all nodes having degree $\geq k$

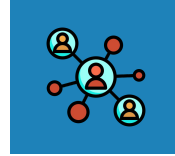
- Adaptation to temporal graph
- Each node computes its own k-core value
 - ◆ Exchange messages only with neighbors
- Challenge: avoid messages whenever possible
 - ◆ Reduced overhead on distributed architectures



Other fields of (decentralized) interest



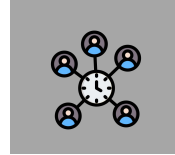
Privacy preserving graph analysis



Community detection



Pattern Mining / Enumeration



Adaptations to temporal graphs

Thank you!

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