Distributed Graph Processing Systems: Methodology, Implementation, Application

- **Introduction**
  - Large Graph Computation
  - Distributed Computation
  - Intro to Distributed Graph Computation
  - Structure of the Paper

- **Computation Phases**
  - Graph Partition
    - Edge-Cut
    - Vertex-Cut
    - Hybrid-Cut
    - Grid-Cut
    - Streaming
    - HBP
  - Memory Management
    - Single Machine (Shared Memory)
    - Distributed System (Shared Nothing)
    - Process in Memory
  - Vertex-Level--Message Passing
    - Push
    - Pull
    - Hybrid
  - Machine-Level Communication
    - P2P (Unicast)
    - Collective (BroadCast)
  - Task Scheduling
    - Syn.
    - Asyn.
    - AAP
    - BSP

- **System Objectives**
  - Flexibility
    - Simplicity
    - Efficiency
    - Scalability
  - Balance between machines
    - Load Balance (Storage)
      - Static
        - Deterministic
        - Probabilistic
      - Dynamic
        - Cooperative
        - Incorperative
    - Workload Balance (Computation)
      - Evaluation
      - Strategies
  - Fault Tolerance
    - Fault Check
      - Global
      - Local
    - Restoration
      - Vertex
      - Log
      - Replication
      - Algorithm
    - Mode
      - Positive
      - Negative

- **Algorithms**
  - Libraries
    - MPI
    - Open-MPI
  - implementation
    - Community discovery Algorithms
    - Dense Subgraph Mining Algorithms
    - Centrality Calculation Algorithms
    - Graph Matching Algorithms
    - Other Basic Graph Algorithms

- **Applications**
  - Typical Graph Processing Systems
  - Distributed Graph Database (brief)
  - Distributed GNN (brief)

- **Overview**
  - Future
  - Conclusions